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ABSTRACT

We provide fresh evidence regarding the relation between compensation consultants and CEO pay. First, firms that employ consultants have higher-paid CEOs—this result is robust to firm fixed-effects and matching on economic and governance variables. Second, while this relation is partly due to consultant conflicts of interest, it is largely explained by the impact consultants have on the composition and complexity of CEO pay plans; notably, this impact fully mediates the consultant-CEO pay relation. Third, firms with higher-paid CEOs and more complex pay plans are more likely to hire a consultant. Lastly, say-on-pay voting patterns suggest shareholders view positively the advice consultants provide but only when consultants do not provide other services. We also find suggestive evidence of boards “layering” new equity incentive plans over existing ones, thereby increasing the impact of composition and complexity on CEO pay beyond the premium the CEO would demand for bearing additional compensation risk.

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I. INTRODUCTION

Large corporations routinely retain consultants to advise on the level and structure of compensation for their directors and top executives. Since 2006, the Securities and Exchange Commission (SEC) has required companies to identify any consultants who provide advice on executive compensation. Research enabled by these disclosures shows that CEOs in firms retaining consultants are paid significantly more than CEOs in firms not retaining consultants.¹ The purpose of this paper is to explain the relation between the use of consultants and CEO pay (henceforth, the “CEO Pay Premium”). Specifically, we examine whether CEO Pay Premium is related to the reasons provided by firms for retaining consultants in their proxy statements.

Various studies have examined whether the CEO Pay Premium is explained by consultants that provide (or could provide) other services to their client firms in addition to providing advice

¹ Prior academic studies documenting higher 2006 CEO pay in companies using consultants include Cadman, Carter, and Hillegeist (2010), and Armstrong, Ittner, and Larcker (2012).

on CEO compensation (e.g., advice on actuarial services, benefits management, etc.). These “conflicted consultants” could be tempted to advise the board to pay more to their client firms’ CEOs, since such CEOs can then decide whether or not to engage them to provide the additional services.² We show, however, that consultant conflicts of interest explain only a small fraction of the CEO Pay Premium. Figure 1 shows CEO Pay Premiums associated with both consultants providing and not providing other services based on regression results discussed below in Section 3, controlling for firm size and a variety of other firm, industry, CEO, and governance characteristics. The CEO Pay Premiums from using consultants that do *not* provide other services has grown from 36% in 2006 to 49% in 2014, reaching a maximum of 70% in 2012. Over the same period, the additional CEO Pay Premium associated with using consultants rendering other services has fallen from 22% in 2006 to 17% in 2014. The figure therefore suggests that the CEO Pay Premium is large and persistent, but not driven exclusively by consultants with conflicts of interest associated with the provision of services beyond executive pay advice.

We explore the CEO Pay Premium using a nine-year time series from 2,347 ExecuComp firms and 16,815 firm-years reporting the use (or non-use) of consultants from the introduction of the 2006 disclosure rules through the end of fiscal 2014. We show that the CEO Pay Premium suggested by Figure 1 persists and accounts for 8.8% of CEO pay even after controlling for governance variables and firm fixed effects, while the additional premium associated with consultants providing other services remains significantly positive, accounting for 4.1% of pay.³

We begin our investigation of the CEO Pay Premium examining *why* firms engage

² Murphy and Sandino (2010) (using US and Canadian data,) document a CEO pay premium for firms retaining conflicted consultants in a sample of firms using consultants. However, Conyon, Peck, and Sadler (2009) (using UK data), Cadman et al. (2010), and Armstrong et al. (2012) find no evidence that conflicts of interest lead to high pay. Chu, Faasse, and Rau (2018) suggest that not all firms retaining conflicted consultants pay more to their CEOs, but only those where the board is more likely to be under the influence of the CEO.

³ As discussed in Section 3.1 and Appendix B, we exclude observations from 16 CEOs with total pay less than one dollar per month for at least one year during our sample period.

consultants. Based on a textual analysis of proxy disclosures, we find that firms retain consultants to provide: (1) competitive-benchmarking information (e.g., identifying benchmarking peers); (2) advice on incentive compensation (“composition”); and (3) advice on the myriad forms of pay that should be included in the executive employment agreements (“complexity”).

We examine whether composition, complexity, and benchmarking explain (or, more specifically, “mediate”) the relation between the use of compensation consultants and CEO pay. Figure 2 depicts the Baron and Kenny (1986) mediation framework, adjusted to our setting. The first step in a mediation analysis is to establish the effect of the use of consultants on the level of CEO pay, represented in the figure by the arrow labeled A. The “mediator” is any variable that might be affected by the treatment and might, in turn, affect the outcome. Our hypothesis is that pay composition, pay complexity, and the use of peers for benchmarking are mediator variables, which are affected by the use of consultants and which, in turn, lead to higher levels of CEO pay.

The second step in our mediation analysis is to establish a relationship between the use of consultants and composition, complexity, and benchmarking (arrow labeled B), followed by establishing a relationship between composition, complexity, and benchmarking, and the level of CEO pay (arrow labeled C). We conjecture that our mediators will be associated with higher CEO pay because (a) risk-averse CEOs are expected to demand a risk premium for higher incentive pay (i.e., pay composition); (b) CEO pay is likely to increase with pay complexity if new pay components are layered on top of existing ones with no (or only partial) offsets; and (c) companies’ use of peers for benchmarking (especially their selection of peers larger than themselves) can bias the levels of CEO pay. We measure “composition” as the fractions of CEO total pay conveyed in the form of both non-equity incentive plans and the grant-date value of equity-related instruments. We measure “complexity” as a count of all pay components (salary, discretionary bonus, the

number of non-equity incentive plans, stock options, restricted stock, performance shares, deferred pay, pensions, and other pay); and, alternatively, the number of performance measures used in equity and non-equity plans. We measure “benchmarking” by the number of peers selected by the company and the extent to which those peers deviate from the company’s industry and size.

We show that the CEO Pay Premium is “fully mediated” by our measures of the composition and complexity of pay (but not by our benchmarking measures, suggesting firms using consultants do not select peers in a way that incrementally biases CEO pay).⁴ Specifically, the use of consultants is associated with greater reliance on equity-pay and greater pay complexity (regardless of whether complexity is measured based on the number of pay components or the number of performance measures used in incentive plans). In turn, we show that controlling for composition and complexity reduces the CEO Pay Premium associated with consultants not providing other services from 8.8% to 1.6%, rendering it insignificant, while the additional premium associated with consultants providing other services increases slightly from 4.1% to 4.4%. These results suggest that composition and complexity fully mediate the relation between CEO pay and the use of consultants, but do not explain the relation between CEO pay and the use of (conflicted) consultants providing other services.

Our result that CEO pay is positively related to the number of pay components may reflect that adding components increases the risk of the compensation package. However, we find no evidence that firms introducing equity incentive plans reduce any amount of existing compensation beyond that explained by changes in economic and governance determinants, which suggests that risk does not fully explain the relation between CEO pay and our measure of complexity.

⁴ If controlling for pay composition, pay complexity, and benchmarking eliminates the CEO Pay Premium (i.e., the observed relation between consultants and the level of CEO pay becomes insignificant), we would conclude that these variables “fully mediate” the relation between consultants and CEO pay. If the CEO Pay Premium is reduced but not eliminated by these variables, we would conclude that the mediation is “partial.”

Ultimately, we conclude that new plans are “layered” on top of existing plans and find that “layering” for new restricted stock grants is especially prevalent for firms using consultants.

To account for the possibility that the relations in arrows A and C of Figure 2 are reversed, we analyze the firm’s decision to retain a consultant based on a subsample of firms that have not used consultants over the prior three years. We show that firms paying more to their CEOs and including more components in their pay package are more likely to retain a consultant in the subsequent year. This result suggests that the relation between the use of consultants, pay levels, and complexity is nuanced with causality plausibly running in both directions: on one hand, consultants add to complexity (and hence add to pay) by recommending and designing additional components of pay; on the other hand, firms are more likely to retain consultants when they already have high CEO pay and when they already have complex pay packages.

We conclude our analyses by exploring whether the use of consultants is associated with the shareholders’ “Say-on-Pay” voting outcomes (see dotted lines in Figure 2). While we expect (and others have documented) that the percentage of favorable Say-on-Pay votes will be negatively related to the level of CEO pay but positively related to performance-based pay (as captured by our proxies for composition), we have no a priori prediction on whether voting outcomes will be related to our proxies for consultant use, pay complexity, and benchmarking. We show that the percentage of favorable votes is, indeed, negatively related to pay levels and positively related to grants of performance shares (but not to other forms of performance-based pay). In addition, we find that favorable votes are positively related to the use of non-conflicted consultants (but unrelated to the use of conflicted consultants) and also to complexity (measured as the number of components in the pay package). We find no evidence that shareholders react to our proxies for benchmarking. Overall, these results suggest that shareholders view positively the advice provided

by compensation consultants. In addition, the results suggest that shareholders are not concerned when firms add new components to the CEO pay package, despite that additional components are often layered on top of existing ones without reducing any amount of existing compensation.

Our study contributes to an emerging literature exploring the role of compensation consultants on executive pay.⁵ It is the first to show that the positive association between the use of consultants and CEO pay, previously documented in cross-sectional analysis, is robust to firm fixed effects and over time. It is also the first to show that the association between the use of consultants and CEO pay is largely driven by the composition and complexity of the pay package. To our knowledge, our study is the first to explore the role of the levels, pay composition, pay complexity, and benchmarking on a firm's decision to hire pay consultants, and the first to examine how consultant use, composition, complexity, and benchmarking relate to Say-on-Pay votes.⁶

Our paper continues as follows. Section 2 describes our data. Section 3 establishes the CEO Pay Premium and presents our mediation analysis. Section 4 examines whether the mediating relations run opposite to the direction previously hypothesized. Section 5 explores the effects of consultants and our mediator variables on Say-on-Pay votes. Section 6 concludes.

II. DATA AND INSTITUTIONAL BACKGROUND

Evolving Disclosure Rules on Executive Compensation Consultants

In 2006, the SEC introduced for the first time a set of disclosure rules for executive compensation consultants. The rules, applying to publicly traded corporations with fiscal year closings after December 15, 2006, require these firms to identify any consultants that provide advice on executive or director compensation; to indicate whether or not the consultants are

⁵ See, for example, Murphy and Sandino (2010); Cadman et al. (2010); Armstrong et al. (2012); Conyon et al. (2009); Goh and Gupta (2010); Gong, Mande, and Son (2017); and Chu et al. (2018).

⁶ A contemporaneous study, Gong et al. (2017), examines the effect of consultant use on Say-on-Pay votes.

appointed by the companies' compensation committees; and to describe the nature of the assignments for which the consultants are engaged. The SEC expanded this rule in 2009 to require firms to disclose fees paid to their executive compensation consultants whenever the consultants received more than \$120,000 for providing any other services to the firm beyond those related to executive and director pay. The SEC exempted from these requirements firms that retain at least one consultant that works exclusively for the board, and also exempted disclosing consultants that affect executives' and directors' compensation only through providing advice related to broad-based plans that do not discriminate executives and/or directors from other employees. The rule became effective for corporations filing their proxy statements after February 2010.

More recently, Section 952 the Dodd-Frank Wall Street Reform Act of 2010 ("Dodd-Frank") instructed the SEC to expand the rules once more to ensure that compensation committees have authority and funding to retain compensation consultants (a right that would in principle increase independence from management). In addition, while neither the Act nor the June 2012 Final Rule issued by the SEC required compensation advisors to be independent, the SEC imposed a list of independence criteria that boards must consider in retaining a consultant.⁷ In addition, proxy statements issued in connection with annual shareholder meetings in 2013 and after must disclose whether the work of the consultant has raised any conflict of interest and, if so, the nature of the conflict and how the conflict is being addressed.

Data Sources and Trends

Taking advantage of the SEC disclosure rules described above, we extracted compensation

⁷ In particular, compensation committees must consider: (1) whether the firm retaining the compensation consultant engages the consultant for other services; (2) the amount of fees that the client firm pays to the consultant as a percentage of the consultant's total revenues; (3) the policies and procedures of the consultant designed to prevent conflicts of interest; (4) any relationship between the compensation adviser representing the consultant and a member of the compensation committee; (5) whether the adviser representing the consultant owns any stock in the client firm; and (6) any relationship between the compensation consultant and the client firm's executive officers.

consultant information in the years 2006 through 2014 from the proxy statements of 2,347 firms (16,815 firm years). Our sample comprises all firms included in the Standard and Poor's ExecuComp dataset that filed proxy statements after the SEC disclosure rules requiring the identification of compensation consultants took effect in 2006. For 2012-2014, we supplemented our hand-collected data with consultant data extracted from ISS's Incentive Lab database. Figure 3 depicts the use of compensation consultants by our sample firms from 2006 to 2014, showing that the percentage of sample firms using consultants rose from 78% in 2006 to 86% in 2014.⁸

While some consultants are "boutique" firms focused exclusively on executive compensation, many are integrated corporations offering a full-range of compensation, benefits, actuarial and other human resources services. The bottom line in Figure 3 summarizes the percentage of our sample firms reporting that one or more of their consultants have conflicts of interest due to providing services beyond giving advice on executive or director pay. Information on "other services" reflect three sources: (a) voluntary firm disclosures of other services (2006-2011); (b) fee disclosures for other services as mandated by the 2009 SEC rules (2009-2014);⁹ and (c) information from Schedule B of Form 5500 identifying the company's actuary (available for firms with defined-benefit pension plans 2006-2007, 2009-2011).¹⁰ As shown in Figure 3, among companies retaining consultants, the percentage of companies reporting that they used consultants

⁸ Our sample covers a reasonable time period, starting with the year when compensation consultant disclosures were mandated and ending after the last regulatory changes with respect to consultant disclosures and say-on-pay took place. It also includes diverse economic conditions (including years before and after the U.S. financial crisis).

⁹ We categorized firms that used a single consultant but did not disclose fees (or disclosed fees less than \$120,000) as using "consultants that did not provide other services" and firms with any disclosed fees above \$120,000 as using "consultants that provided other services." Unless there is explicit information on other services in the proxy statement, we are unable to classify firms with multiple consultants that do not disclose fees under either category and have dropped those observations from our tests that included "consultant that provided other services" as an explanatory variable. We re-estimated our primary results after redefining "consultants provided other services" (a) using only fee data; and (b) excluding firm-years with multiple consultants and no fee data. The statistical significance on our conflicted-consultant variable became stronger after this re-definition.

¹⁰ Our Form 5500 methodology follows Murphy and Sandino (2010). Schedule B (which included actuarial information) was unavailable for Form 5500s filed in 2008. We re-estimated our primary results after defining "consultant provides other services" without using Form 5500 actuarial data. Our results are unchanged.

that provided other services grew from 12% to 24% from 2006 to 2009, but has decreased monotonically to only 4% in 2014. The timing of the peak and the subsequent decrease is consistent with the increased scrutiny on consultant independence and the 2009 rule requiring fee disclosure for consultants providing other services.

We examine the extent to which the relation between the use of consultants and CEO pay is mediated by pay composition, pay complexity, and benchmarking. We measure composition as the ratio of bonuses to total pay and equity incentives to total pay.¹¹ We use two measures of complexity: (a) the number of components in the CEO pay package (easily calculated from the Summary Compensation Table and the Grants of Plan-Based Awards Tables);¹² and (b) a count of the number of performance measures used in equity and non-equity incentive plans (using information extracted from the Compensation Discussion and Analysis (CD&A) portion of the proxy statement). We rely on ExecuComp data to measure the number of components, and rely on data from Incentive Lab (now a division of Institutional Shareholder Services, or ISS) to compute the count of performance measures. We also rely on Incentive Lab data for our benchmarking variables, also extracted from CD&A disclosures, including the number of compensation peers used, the percentage of peers outside the focal firm's 3-digit SIC industry, the % of peers with revenues greater than 250% (or smaller than 40%) of the focal firms, revenues.¹³ Since the Incentive Lab data covers a smaller group of (generally larger) firms, we report separate analyses for results based on ExecuComp data and those based on Incentive Lab data.

¹¹ We define "bonuses" as the target values of non-equity incentive plans plus the actual payouts from discretionary plans, and define equity pay as the grant-date values of stock options, restricted stock, and performance shares.

¹² We use the Grants of Plan-Based Awards Table to determine the number of non-equity incentive plans (counting each separate plan as a component of total compensation) and distinguishing between time-lapse restricted stock plans (i.e., restricted stock vesting solely with the passage of time) and performance shares (i.e., restricted stock vesting in whole or in part based on achieving pre-specified performance hurdles).

¹³ ISS uses these same revenue thresholds (40% and 250%) in its peer-group selection methodology; see <https://www.issgovernance.com/file/policy/uspeerfaq.pdf>.

Figure 4 shows 2006-2014 time trends in our proxies for composition (Panel A), complexity (Panel B), and benchmarking (Panel C). As shown in Panel A, the percentage of equity incentives to total CEO pay has increased by nearly 20% from 38.5% of total CEO pay in 2006 to 46.1% in 2014. However, total bonuses (consisting of discretionary bonuses and target values for non-equity incentives) have remained relatively constant at about a quarter of total compensation during our sample period.¹⁴ As shown in Panel B, the average number of incentive plans (i.e., discretionary bonuses, the number of target-based plans, stock options, restricted stock, and performance shares) has increased from 2.4 in 2006 to 2.7 in 2014, while the average number of all pay plans (incentive plans plus base salaries, deferred pay, pensions, and other pay) have increased from 5.1 to 5.4. The number of performance measures used has increased from 3.5 in 2006 to 5.4 in 2014.¹⁵ Finally, as shown in Panel C, the average number of compensation peers used by our sample firms increased from 13.1 to 21.7 by 2009, falling to 16.7 by 2014. The percentage of compensation peers chosen from outside the firm's 2-digit industry has increased from 64.8% in 2006 to 71.9% in 2014, while the average percentage of peers with revenues less than 40% or more than 250% of the firm's revenues has decreased from 35.2% in 2006 to 28.2% in 2014.

Table 1 presents summary statistics for our primary variables for groups of firms that (1) never used a consultant during the 2006-2014 sample period; (2) started or stopped using consultants during our sample period; or (3) always used consultants during our sample period. As evident from the table, firms never using consultants are significantly different from firms always using consultants in many dimensions. In particular, firms never using consultants are smaller, have lower CEO pay (and fewer pay components, less equity pay, and fewer compensation peers),

¹⁴ Average discretionary bonuses have fallen from 6.1% of total pay in 2006 to only 3.0% in 2014, while target values for non-equity incentives have increased from 18.5% to 20.4% of total pay over the same period.

¹⁵ Albuquerque, Carter, and Lynch (2018) also document increases in the number of pay components and the number of performance measures since 2006.

and are more likely to be led by founders with large percentage shareholdings. In addition, firms never using consultants have smaller boards with fewer independent directors.

Our primary results presented below include firm fixed-effects to control for time-invariant firm-specific factors. These results are identified by subsample (2) in Table 1, consisting of 624 firms (4,467 firm years) that start using or stop using consultants during our sample period. This subsample includes 62 firms switching once from not using to using a consultant, 53 switching once from using to not using a consultant, and 509 using consultants occasionally (switching from using to not using or vis versa more than once during our sample period). Given our identification strategy, our results are more generalizable to firms using consultants from time to time, and less generalizable to firms never using and always using consultants.

III. RELATION BETWEEN THE USE OF CONSULTANTS AND CEO PAY

In this section we explore the relation between the use of compensation consultants and CEO pay. Section 3.1 documents the existence of a positive and significant relation between the use of consultants and CEO pay from 2006-2014 and shows that this relation is robust to controlling for firm fixed effects and employing propensity-score matching techniques. In Section 3.2 we show that firms claim to hire consultants in their proxy statements for three reasons: (1) to provide advice on incentive pay (“composition”); (2) to provide advice on the pay components of the executives’ employment contracts (“complexity”) and/or (3) to provide benchmarking information useful for setting competitive pay packages (“benchmarking”). Our empirical analyses suggest that the CEO Pay Premium associated with consultants is fully mediated by our proxies for the composition and complexity of pay, but is not mediated by our proxies for benchmarking. In Section 3.3 we explore further the mechanism by which complexity relates to the use of consultants and CEO pay, examining the possibility (and finding some evidence) that firms using consultants have greater

propensity to add new components to the CEO pay package without removing other components of pay. We elaborate on our research methods and results in each of the following sub-sections.

Consultants and the Level of CEO Pay

We begin by documenting the CEO Pay Premium based on the following pooled regression:

$$\begin{aligned} \ln(\text{Total Pay}) = & \beta_0 + \beta_1 (\text{Firm used consultant}) \\ & + \beta_2 (\text{Firm used consultant that provided other services}) \\ & + \beta_3 (\text{Firm characteristics}) \\ & + \beta_4 (\text{Industry dummies}) + \beta_5 (\text{Year effects}) + \varepsilon \end{aligned} \quad (1)$$

Our dependent variable, $\ln(\text{Total Pay})$, is the natural logarithm of the firm's CEO expected total compensation, calculated as the sum of salary, discretionary bonus, the target value of non-equity incentives, the grant-date value of restricted stock, performance shares, and stock options, and other compensation (including perquisites, signing bonuses, termination payments, above-market interest paid on deferred compensation). We exclude from our analysis all observations from 16 CEOs with total pay less than one dollar per month at some point during our sample period, based on the premise that such pay is objectively symbolic and not the outcome of a competitive managerial labor market. This exclusion is important for our analysis (and for many other analyses using the logarithm of total pay as the dependent variable); the issues and implications of this exclusion, and results from alternative methodologies addressing such outlier observations (and whether, indeed, they are outliers), are discussed in detail in Appendix B.

Our explanatory variable of interest ("*Firm used consultant*") is an indicator variable identifying whether the firm used one or more consultants that year. In addition, in order to assess whether the CEO pay premium associated with the use of consultants is explained by the use of consultants that provide other services, our regressions include the indicator variable, "*Firm used consultant that provided other services*," that identifies whether the firm uses one or more consultants that provide services beyond executive or director pay advice.

We control for other key determinants of CEO pay described in prior literature. We include $\ln(\text{Revenues})$ (a measure of size estimated as the natural logarithm of prior-year firm sales) among our explanatory variables since it is well documented that larger firms pay more to their CEOs to attract greater talent (e.g., Rosen 1982). We control for the *ratio of book-to-market assets* (assets divided by assets plus market value of equity minus book value of equity) since executives receive lower pay and incentive pay in firms with lower growth options (e.g., Smith and Watts 1992). We include the firm's *shareholder return* over the current and previous two years and *current-year return on assets* in our regressions to account for the positive association between CEO pay and firm performance (Murphy 1985).¹⁶ We also control for the presence of a *new CEO* (a dummy variable equal to 1 if a new CEO took office in that year), to account for one-time payments provided to either incoming CEOs (e.g., signing bonuses or options mega-grants) or outgoing CEOs (e.g. severance payments), or to consider the possibility that the CEO was not paid for the full year. We also include industry dummies based on the Fama-French classification to account for other industry characteristics.¹⁷ Finally, we include year fixed effects to account for economic fluctuations. All of our variables and data sources are described in Appendix A.

Column (1) of Table 2 reports coefficients from estimating equation (1) using ordinary least-squares regressions with robust standard errors, clustered by firm. Consistent with results from prior studies from the 2007 proxy season, we find a positive and statistically significant association between the use of consultants and CEO pay levels. Firms retaining consultants (but not using those consultants for other services) pay approximately 68.6% more to their CEOs (computed as

¹⁶ While our measure of compensation uses “target” bonuses (which should not depend on contemporaneous performance), we also include discretionary bonuses (recorded ex post) and the grant-date values of equity awards (which are potentially influenced by contemporaneous performance through the grant date).

¹⁷ We employ the 5 Industry Portfolios Fama/French classification plus an additional dummy variable for the financial services sector (SIC codes 6000 to 6999). Our results are robust to using alternative Fama-French classifications.

$e^{0.5224} - 1$) than firms not using consultants. Firms using their consultants for other services pay their CEOs approximately 12.1% more than firms retaining consultants but not using them for other services (computed as $e^{0.5224+0.0695} - e^{0.5224}$).

Using a propensity-score matched sample of firms using or not using consultants in 2006, Armstrong, Ittner, and Larcker (2012) (henceforth “AIL”) conclude that the CEO Pay Premium disappears once they consider CEO and governance characteristics among their matching criteria. We replicate the AIL results based on propensity-score matching for 2006 in Appendix C (available online), but also show that CEO and governance characteristics do not fully explain the CEO pay premium in subsequent years. To address the AIL conclusions in multivariate regressions, column (2) of Table 2 includes a variety of governance variables similar to those employed by AIL: a dummy variable indicating whether the CEO also holds the position of Chairman; an indicator for whether the CEO is the founder of the firm;¹⁸ the percentage of common shares owned by the CEO; the number of directors; the number of directors on the compensation committee; the percentage of independent directors; the percentage of directors who are 70 years or older; the average number of public company boards in which non-employee directors served; and the percentage of independent directors hired after the CEO took office.¹⁹ As shown column (2), including CEO and governance characteristics reduces the CEO Pay Premium (for firms not using consultants for other services) from 68.6% to 51.4%, and reduces the additional premium using their consultants for other services pay their CEOs from 12.1% to 9.3%. These results are

¹⁸ We define founders as (1) individuals identified as founders in ExecuComp; or (2) individuals serving as CEO prior to the company’s initial public offering.

¹⁹ Our measure of “average number of boards” for each director is based on the name and birth year disclosed in Equilar for each director in the Russell 2000, and therefore potentially overstates directorships for directors with common names. Additionally, we re-estimated our analyses including separate board-level controls (% independent directors over age 70, average # of public boards, and % Independent Directors appointed after CEO took office) for compensation committee and non-compensation committee members. We kept these analyses untabulated since they do not affect our estimated coefficients related to the use of consultants.

consistent with those reported in Figure 1, where year-by-year analyses suggest that CEOs of firms using consultants are paid significantly more than CEOs in firms not using consultants, with an additional premium for consultants providing other services, after controlling for all the same variables that appear in Table 2, column (2) (except year fixed effects).

Table 2, column (3) presents results from estimating equation (1), using firm fixed-effects to control for factors specific to the firm and invariant over time. Adding firm fixed effects reduces the CEO Pay Premium from 51.4% in column (2) to 8.8% in column (3). While substantially diminished using firm fixed effects, the CEO Pay Premium remains highly significant. In addition, the additional premium for using consultants providing other services is reduced from 9.3% to 4.1%, also remaining highly significant in all specifications. Overall, controlling for time-invariant factors (through firm fixed effects) significantly reduces, but does not eliminate, the empirical relation between CEO pay and the use of compensation consultants.

In summary, our results in Figure 1 and Table 2 show that the association between the use of consultants and CEO pay observed throughout our sample period is persistent and robust, and that this association is not fully (nor mostly) explained by either the use of consultants that provide other services or governance characteristics. Our data, however, enable us to explore alternative explanations for this relation. In the following section we examine whether the relation between the use of consultants and CEO pay is explained by the reasons why companies claim to hire consultants. Later on, we also examine the possibility that high CEO pay and the compensation practices for which companies hire consultants precede (and drive) the use of consultants.

Mechanisms Potentially Explaining the CEO Pay Premium

As noted above, allegations that consultants are complicit in perceived abuses in pay are typically focused on conflicts of interest created when consultants provide other services beyond

pay advice. However, as shown in Figure 1 and Table 2, the CEO Pay Premium associated with using consultants is largely driven by firms whose consultants provide no other services beyond compensation advice. Moreover, the CEO Pay Premium has generally increased over time, even as the percentage of firms whose consultants provide other services has dwindled (see Figure 3). Indeed, by 2014, most consultants are retained directly by the compensation committee, work exclusively for that committee, and meet the standards of “independence” defined by the SEC. The empirical relation between CEO pay and the use of consultants must therefore reflect more than biased advice from conflicted consultants.

We start our investigation of the CEO Pay Premium not explained by consultant conflicts by examining the reasons firms provide for hiring compensation consultants in their proxy statement disclosures. We codified textual data from the proxy statements of all of the firms in our sample that hired a consultant for the first time in three or more years. Our codification methodology is based on keyword searches and is described in more detail in the Appendix D (available online).

Table 3 shows that there were three main reasons reported by firms for hiring consultants. The reason reported most frequently, representing 78.5% of the cases analyzed, was *benchmarking*. Companies interested in benchmarking asked their consultants to help them identify, and understand the pay practices employed by, peer companies recruiting executives in comparable labor markets. They also sought recommendations on competitive pay levels for their executives. A second cause for hiring consultants, mentioned in 60.2% of the proxies analyzed, was to seek advice on the *composition* of pay. In these cases, companies indicated that the role of the consultant was to support them with the design and implementation of either equity and/or non-equity incentive pay plans. The third cause for hiring consultants articulated in proxy statements and accounting for 58.6% of the cases analyzed, was to provide advice on the

complexity of pay. In these instances, firms sought advice on multiple components of the executive pay package, how different components of pay should fit together, and the complex management of diverse components of pay. Three additional (but less prominent) reasons why firms sought advice from compensation consultants, according to their proxy statements, were as follows: (a) 14.5% sought guidance related to increasing favorable Say-on-Pay votes or how to navigate the complex and evolving accounting, tax, and regulatory issues related to stock options, performance shares, formula-based bonuses, and other employment arrangements;²⁰ (b) 3.9% asked their consultants to conduct a risk assessment of their executives' compensation package; and (c) 2.3% sought legitimization (but not necessarily modification) of the company's existing pay practices.

We hypothesize that the use of consultants is associated with pay composition, pay complexity, and benchmarking and that, in turn, these three factors are associated with higher levels of pay. Our hypothesized positive relation between composition, complexity, and benchmarking and the CEO's level of pay is based on three arguments. First, to the extent that increases in variable incentive pay (i.e., pay composition) are offset by decreases in base salaries (i.e., keeping constant the certainty equivalent of total compensation), we expect total pay to increase with incentive pay since risk-averse CEOs will demand a risk premium for the increased compensation risk (Murphy 1999). Second, to the extent that increases in different components of pay are not offset by decreases in other forms of pay (as happened, for example, in the stock option explosion in the 1990s, when firms layered options on top of existing compensation arrangements (Hall and Murphy 2003), total pay will also increase. Similarly, if new pay components are layered on top of existing arrangements with no (or only partial) offsets to other plans, total compensation

²⁰ Consistent with the notion that compensation consultants provide advice on CEO pay accounting disclosures, Bettis, Bizjak, Coles, and Kalpathy (2018) find that the reported grant-date fair value of awards with performance-vesting provisions varies with the firm's usage of a high-market-share compensation consultant.

will also increase with complexity. Third, we expect CEO pay levels to increase with the number of benchmarking peers used and with the company's propensity to select peers significantly different from itself, if the use of such peers is associated with higher levels of CEO pay. Prior literature has suggested that the companies' use of peers and the propensity to use peers different from the focal company (especially larger firms) biases CEO pay upwards, either because self-serving managers use them to justify high levels of pay or because directors use peers to set pay more competitively, reflecting outside opportunities available to talented CEOs in the labor market (e.g., Bizjak, Lemmon and Nguyen 2011; Albuquerque, De Franco, and Verdi 2013).²¹

We examine the extent to which the relation between the use of consultants and CEO pay is partly or fully explained (mediated) by pay composition (which we measure with the ratio of bonuses to total pay and equity incentives to total pay), pay complexity (which we measure as the number of distinct pay components in the employment agreement, or alternatively as the number of measures used in incentive plans) and benchmarking (which we measure with the number of peers used by the company for benchmarking, or alternatively as the percentage of peer-group companies chosen from outside the industry or that are significantly larger or smaller than the sample firm). Having established a positive association between the use of consultants and CEO pay in Table 2 (arrow A in Figure 2), a mediation analysis requires us to examine both: (a) whether the use of consultants is associated with pay composition, pay complexity, and benchmarking (arrow B in Figure 2), and (b) whether the CEO pay premium associated with the use of consultants is reduced or mitigated after controlling for these three variables (arrow C in Figure 2).

To conduct these analyses we run the following regressions:

²¹ We focus not only on how peers are selected, but also on the number of peers used by companies, as companies can decide to use or add peers as a means to raise CEO pay levels either opportunistically or to reflect opportunities in the labor market.

$$\begin{aligned}
 \text{Proxies for Composition} &= \beta_0 + \beta_1 (\text{Firm used consultant}) \\
 &+ \beta_2 (\text{Firm used consultant that provided other services}) \\
 &+ \beta_3 (\text{Firm characteristics}) + \beta_4 (\text{Firm fixed effects}) \\
 &+ \beta_5 (\text{Year effects}) + \varepsilon
 \end{aligned} \tag{2}$$

$$\begin{aligned}
 \text{Proxies for Complexity} &= \beta_0 + \beta_1 (\text{Firm used consultant}) \\
 &+ \beta_2 (\text{Firm used consultant that provided other services}) \\
 &+ \beta_3 (\text{Firm characteristics}) + \beta_4 (\text{Firm fixed effects}) \\
 &+ \beta_5 (\text{Year effects}) + \varepsilon
 \end{aligned} \tag{3}$$

$$\begin{aligned}
 \text{Proxies for Benchmarking} &= \beta_0 + \beta_1 (\text{Firm used consultant}) \\
 &+ \beta_2 (\text{Firm used consultant that provided other services}) \\
 &+ \beta_3 (\text{Firm characteristics}) + \beta_4 (\text{Firm fixed effects}) \\
 &+ \beta_5 (\text{Year effects}) + \varepsilon
 \end{aligned} \tag{4}$$

$$\begin{aligned}
 \text{Ln(Total Pay)} &= \beta_0 + \beta_1 (\text{Firm used consultant}) \\
 &+ \beta_2 (\text{Firm used consultant that provided other services}) \\
 &+ \beta_3 (\text{Proxies for Composition}) \\
 &+ \beta_4 (\text{Proxies for Complexity}) \\
 &+ \beta_5 (\text{Proxies for Benchmarking}) \\
 &+ \beta_6 (\text{Firm characteristics}) + \beta_7 (\text{Firm fixed effects}) \\
 &+ \beta_8 (\text{Year effects}) + \varepsilon
 \end{aligned} \tag{5}$$

Our first analyses uses our full sample of ExecuComp firms to analyze the mediating effects of composition and complexity of pay (since our benchmarking proxies are not available for this sample of firms). We proxy for composition as the fraction of total pay conveyed as bonuses or as equity. We proxy for pay complexity using the natural logarithm of the sum of the compensation components included in the CEO's pay package. This sum includes a count of the number of non-equity incentive plans in which the CEO participates plus the sum of a set of (0,1) indicator variables indicating whether the CEO received discretionary bonuses, restricted stock (i.e., restricted shares vesting solely with the passage of time), performance shares (i.e., restricted shares vesting upon the attainment of performance goals), stock options, deferred pay, pension plans, or other forms of pay. Equation (5) examines whether CEO total pay is associated not only with the use of consultants, but also with the CEO's pay composition and complexity variables, as well as other control variables. If coefficient β_1 in equation (6) were no longer significant in this model, the result would support full mediation by the CEO's pay composition and complexity. If

coefficient β_1 decreased but were still significant in equation (6), the result would suggest partial mediation by the CEO pay composition and complexity variables.

Table 4A, columns (1)–(3), shows that the use of consultants is associated with both higher equity-to-total pay and a larger number of pay components, but not with higher bonuses-to-total pay.²² Using a consultant is associated with an increase of 3.4 percentage points in the equity-to-total pay ratio. The additional change in the equity-to-total pay ratio associated with consultants that provide other services is insignificant. Similarly, the use of a consultant is associated with a 3.5% increase in the logarithm of the number of pay components included in the CEO pay package, with no additional change associated with consultants that provide other services.

Consistent with the arrows labeled C in Figure 3, column (4) of Table 4A shows that our mediators for composition and complexity significantly predict CEO pay. Specifically, an increase in 3.4 percentage points in the equity-to-total pay ratio (due to the use of consultants) is associated with a 5.2% increase in CEO total pay (calculated as $e^{(1.4988*0.0341)} - 1$), while a 3.5% increase in the # of pay components (due to the use of consultants) is associated with a 2.2% increase in CEO total pay (calculated as $e^{(0.6144*0.0347)} - 1$). We test the significance of the mediation effect of each of these variables by estimating the following Z-statistic, based on the coefficients estimated in Table 4A, columns (1)–(3) (Baron and Kenny 1986; Kenny, Kashy, and Bolger 1998):

$$Z = \frac{ab}{\sqrt{s_a^2 s_b^2 + b^2 s_a^2 + a^2 s_b^2}} \quad (7)$$

where “ a ” is the coefficient associated with the “*Firm used consultant*” variable, in the regression predicting the mediator, “ b ” is the coefficient associated with the mediator, in the regression

²² Bonuses include target values of non-equity incentive plans and discretionary bonuses. We show that further decompositions (i.e., separating bonuses into target bonuses from formulaic plans and discretionary bonuses, or separating equity-related pay into stock options, restricted shares, and performance shares) do not increase the explanatory power of composition on CEO pay.

predicting $\ln(\text{Total Pay})$, and “ s ” is the standard error of the respective coefficient. We find that the indirect effects of the use of consultants on CEO pay explained by our mediating variables are significant, with a $Z=4.12$ and a $p\text{-value}<0.001$ in the case of *Equity-to-total pay*, and a $Z=3.85$ and $p\text{-value}<0.001$ in the case of $\ln(\# \text{ Pay Components})$.

A comparison between column (4) in Table 2 and column (4) in Table 4A reveals that introducing the mediation variables reduces the CEO Pay premium associated with the use of consultants by 82%, from 8.8% to 1.6%, eliminating its significance, suggesting these variables *fully* mediate (or explain) the association between the use of consultants and CEO Pay. In addition, the incremental effect of the “*Firm uses a consultant that provided other services*” indicator actually increases from column (4) of Table 2—where it explains an incremental 4.1% of CEO pay—to column (4) of Table 4A, where it explains an incremental and significant 4.4% of CEO pay. This result, coupled with the insignificance of the “other services” variable in columns (1), (2), and (3) of Table 4A, suggests the additional CEO Pay Premium associated with consultants hired to provide other services is robust and not driven by the composition or complexity of pay.

In Table 4B, based on our subsample of firms covered by Incentive Lab, we use an alternative measure of complexity (i.e., the # of performance measures used in equity and non-equity incentive plans) and use the number of compensation peers as our proxy for benchmarking. Identification for the Incentive Lab subsample with firm fixed effects is based on 245 firms (1,669 firm-years) that used consultants occasionally (or switched from not using to using, or from using to not using).

Table 4B yields three new results. First, columns (2) and (4) show a robust but weaker mediating effect of complexity, when measured as the logarithm of the number of performance measures used in incentive plans. The use of consultants is associated with a 0.05 increase in the $\ln(1+\# \text{ of Performance Measures})$. In turn, this increase is associated with a 0.3% increase in the

level of CEO pay (calculated as $e^{0.0497*0.0543}-1$). This mediated effect of the use of consultants on CEO pay is economically small and only marginally significant, with a $Z=1.70$ and $p\text{-value}=0.09$ (calculated based on equation (7)). Second, Columns (3) and (4) suggest that, although firms using consultants rely on a larger number of benchmarking peers, this use of peers is not associated with the level of CEO pay.²³ Third, Table 4B, Columns (1) and (4) confirm that the composition and complexity of pay fully mediate the effect of the use of consultants on CEO pay.

In Table 4C, we use three alternative proxies for benchmarking: (1) the percentage of peers significantly larger than the focal firm (which we measure as peer revenues greater than 250% of the focal firm's revenues); (2) the percentage of peers significantly smaller than the focal firm (which we measure as peer revenues less than 40% of the focal firm's revenues); and (3) the percentage of peers from outside the focal firm's 3-digit SIC industry. Our sample size is smaller than in Table 4B since we exclude firm-years from firms that do not report using a compensation peer group. As shown in Table 4C, CEO pay is positively related to the percentage of peers significantly larger than the focal firm, but unrelated to our other benchmarking proxies. Moreover, the use of these peer-group characteristics are unrelated to the use of consultants and therefore do not mediate the empirical relation between CEO pay and consultants.

Collectively, our results in this section suggest that although firms using consultants are more likely to use benchmarking peers and use a larger number of peers, they do not select those peers in a way that incrementally biases CEO pay relative to other firms. Hence, the selection of peers

²³ We examined whether the results in these two columns differed depending on whether (a) we redefined our number of peers as a dummy equal to 1 if the firm used peers and 0 otherwise, or (b) we conditioned our analyses only on the subsample of firms using peers. In case (a), we find a strong relation between the use of peer groups and the use of consultants, but no effect of the use of peer groups on $\text{Ln}(\text{Total Pay})$ (given our other mediating variables and controls). In case (b), we find a positive but insignificant relation between the number of peers used (conditional on using peers) and the use of consultants, and a positive effect of the number of peers on $\text{Ln}(\text{Total Pay})$. In neither case do we find that the use of peers by firms engaging consultants incrementally biases total pay.

for benchmarking does not appear to mediate the relation between the use of consultants and CEO pay.²⁴ Having said this, we do not discard the possibility that consultants' benchmarking practices may mediate the relation between the use of consultants and CEO pay in more subtle ways. For example, a consultant may suggest adding certain pay components to a client's CEO pay package (resulting in greater pay complexity) based on the fact that the client's peers have adopted those components (consistent with this idea, Bettis et al. (2018) find that firms are more likely to adopt certain types of performance-vesting stock and stock options when their peers have adopted them). Given the reduction in sample size in Table 4C and the insignificance of the results, we exclude these three benchmarking proxies in the remainder of our analysis, using instead the number of companies in the peer group as our primary proxy for benchmarking.

Compensation Layering upon New Equity Grants

Our result that CEO pay is positively related to composition (i.e., the percentage of non-equity and equity incentive pay) is unsurprising and plausibly reflects a compensating differential for risky pay. The relation between CEO pay and complexity (i.e., the number of pay components or performance measures) is not obviously related to risk, but may reflect that new pay components are layered on top of existing pay. We explore this issue by examining changes in CEO total pay when firms introduce a new component of equity compensation (restricted stock, stock options, or performance shares) after not making grants in that component for at least the three prior years.

Table 5 reports coefficients from the following change regressions:

$$\begin{aligned}\Delta(\text{Total Pay}) = & \beta_0 + \beta_1 (\text{New Equity Grant}) \\ & + \beta_2 (\text{Firm used consultant}) \\ & + \beta_3 (\text{New Equity Grant}) \times (\text{Firm used consultant}) \\ & + \beta_4 \Delta(\text{Control Variables}) + \varepsilon\end{aligned}\tag{8}$$

²⁴ Indeed, while CEO pay is clearly influenced by peer comparisons, there is little evidence that peer groups are chosen systematically and opportunistically to inflate CEO pay independent of the use of consultants (see Cadman and Carter (2014) for a literature review and analysis of the evidence).

where “New Equity Grant” represents the dollar amount of a grant of restricted stock, stock options, or performance shares following a 3+ year absence of grants using that equity instrument.

Absent risk considerations, we might expect $\beta_1 = 0$: granting an additional dollar in one of these equity plans would leave total compensation unchanged (since other forms of compensation would be reduced by one dollar), controlling for other factors affecting year-over-year pay changes. With risk considerations, we would expect a modest increase in compensation (i.e., $0 < \beta_1 < 1$), and would predict that the estimated β_1 coefficient for new restricted stock grants (the least risky equity instrument) would be smaller than the corresponding coefficient for stock options or performance shares.

In fact, in Table 5 we find that total pay increases by a dollar (or more) for each dollar in any new equity grant, and the increase is higher for grants of restricted stock than for grants of options or performance shares (and is particularly higher for firms simultaneously making new restricted stock grants and using consultants²⁵). These results suggest that companies introducing new CEO incentive plans layer the new plans over existing ones, thereby increasing the levels of CEO pay for other reasons beyond risk.

Robustness Tests

We subjected our results in Tables 2, 4A, and 4B to a variety of robustness tests. We incorporated the key mediation variables analyzed in Table 4A (*Bonus/Total Pay*; *Equity/Total Pay* and *Ln(# Pay Components)*) into our propensity-score matching analysis. Appendix C (online) shows that differences in CEO pay between firms using consultants and matched firms not using consultants are reduced after the matching procedure incorporates the three mediation variables.

²⁵ Specifically, pay increases associated with a new restricted stock grant were larger for firms using consultants than firms not using consultant, when the restricted stock grants were larger than US\$1,058.74 (calculated as $739/0.698$). This was the case in 277 of the 618 cases analyzed.

We then tested the robustness of our results by examining alternative samples and variables. As noted above, instead of excluding all observations for any CEO earning \$12/year or less, we excluded outliers using several alternative techniques (for details see Appendix B). We also re-estimated our results using (1) alternative measures of firm size (in particular, $\ln(\text{Assets})$ and $\ln(\text{Market Value})$ instead of $\ln(\text{Revenues})$); (2) replacing the CEO's percentage ownership with the CEO's "delta" (i.e., the CEO's effective ownership including restricted shares and the delta-weighted value of option holdings) and the (log) value of the CEO's equity holdings (including the year-end value of restricted shares and outstanding options based on Black-Scholes estimates); and (3) including separate board-level controls (% independent directors over age 70, average # of public boards, and % Independent Directors appointed after CEO took office) for compensation committee and non-compensation committee members. Our primary inferences were unchanged in all these analyses: the coefficient on consultant use was positive and significant in all regressions with and without firm fixed effects but became insignificant in fixed-effects regressions after including our mediating variables. In addition, our finding of a positive and significant coefficient on conflicted consultants was robust across all specifications for total compensation.

Companies often retain consultants in association with new CEO appointments. To address the concern that our results were driven by these new appointments and not by the retention of consultants, we conducted robustness tests (1) excluding firm-year observations for the first year of a new CEO; (2) excluding *all* observations for firms where a consultant was retained in association with the appointment of a new CEO; and (3) including CEO-firm fixed effects rather than firm fixed effects. Our primary inferences (regarding the coefficients on the use of unconflicted and conflicted consultants with and without the mediating variables) were unchanged with the following exceptions: (1) the use of conflicted consultants became insignificant when

using CEO-firm (rather than firm) fixed effects; and (2) the coefficient on consultant use was only partially (instead of fully) mitigated by our proxies for composition and complexity after excluding firms where a consultant was retained in association with the appointment of a new CEO.²⁶

Finally, since our results with firm-fixed effects are identified by the subsample of firms that start using or stop using consultants at least once during our sample period, we further investigated this subsample of “switchers.” As discussed at the end of Section 2, we established that our subsample of switchers consists primarily of “occasional users” of consultants, rather than firms switching once from not using to using a consultant, or firms switching once from using to not using a consultant. In untabulated results, we find that these occasional users are more likely to make changes to pay levels, the number of pay components used, and the composition of its peer group in years when they use consultants than in years when they do not use consultants. These results are consistent with both (a) occasional users hire consultants and those consultants provide advice leading to higher and more complex pay; and (b) occasional users hire consultants because they perceive their current pay levels and components are no longer competitive.

IV. POTENTIAL REVERSE CAUSALITY

While our analyses suggest that the use of consultants leads to higher CEO pay, and higher reliance on equity incentives and complex plans (consistent with the direction of the arrows A and B in Figure 2), it is possible that the causal effects we inferred or that the benchmarking effects that we examined in section 3.2 were reversed. We examine this possibility by modeling the decision to use consultants as a function of the level of CEO pay, pay composition, pay complexity, and peer availability for benchmarking, in the previous year. Table 6 presents logistic regressions

²⁶ In particular, while the coefficient on Consultant Use in our Ln(CEO Pay) regression fell from 0.0926 ($t=3.99$) without mediation to 0.0272 ($t=1.71$) with mediation, the coefficient nonetheless remained significant at the 10% level after including our mediation variables.

examining the determinants of the decision to use a compensation consultant.

The dependent variable in Table 6 is a dummy variable equal to one if the firm retained a consultant in the following year ($t+1$). The sample includes firms not using consultants over the prior three years (t , $t-1$ and $t-2$) or not using consultants in 2006 or in the first year when they appeared in our data (if after 2006).²⁷

The independent variables in column (1) of Table 6 include $\ln(\text{Total Pay})$, our main measures for pay composition (Bonuses/Total Pay and Equity/Total Pay) and pay complexity ($\ln(\# \text{Pay Components})$), the number of peers available for benchmarking (measured as the natural logarithm of the # of peers in the same 3-digit SIC industry code), and all of the independent variables in Table 2, column (4) (including industry and year controls) except for the “*Firm used consultant*” and the “*Firm used consultant that provided other services*” dummy variables.

The coefficients on $\ln(\text{Total Pay})$ and $\ln(\# \text{Pay Components})$ in column (1) are positive and statistically significant, while the coefficient on $\text{Bonuses-to-Total Pay}$ is negative and statistically significant. To gauge the economic significance of these result, we examine the effect of increasing each of these variables one standard deviation around the mean on the firm’s probability of employing a consultant in year $t+1$. Holding all control variables at mean levels, we find that (a) a one standard-deviation increase in $\ln(\text{Total Pay})$ around the mean leads to a 3.1 percentage points increase in the probability of employing a consultant on the following year (from 16.9% half a standard deviation below the average $\ln(\text{Total Pay})$, to 20.0% half a standard deviation above the average $\ln(\text{Total Pay})$); (b) a one standard-deviation increase in the $\ln(\# \text{Pay Components})$

²⁷ Our inclusion criteria for 2006 may retain some observations where consultants were used in 2005 or 2004 (i.e., before mandatory disclosure of consultants). However, we excluded from our Table 5 sample 2006 data in cases where the text of the proxy indicated that consultants were used prior to 2006. Similarly, we excluded from our Table 5 sample first-year observations for firms joining our data when the proxy statements indicated prior consultant retention.

variable around the mean results in an increase of 12.8 percentage points in the probability of using a consultant the next year (from 12.9% half a standard deviation below the average $\ln(\# \text{ Pay Components})$, to 25.7% half a standard deviation above the average $\ln(\# \text{ Pay Components})$); and (c) a one standard-deviation increase in the bonuses-to-total pay ratio around the mean is associated with a decrease of 14.2 percentage points in the probability of using consultants (from 26.6% half a standard deviation below the average bonuses-to-total pay ratio, to 12.4% half a standard deviation above this average). These results suggest that high levels of pay and complexity of pay precedes the use of consultants after controlling for industry, firm, and governance characteristics. It also suggests that firms that rely more heavily on bonuses are less likely to start using consultants. Additionally, the likelihood of using consultants in the following year is negatively related to the percentage of common shares owned by the CEO and to the percentage of independent directors 70 years old or older, and positively related to the number of directors on the compensation committee and the percentage of independent directors.

Column (2) of Table 6 breaks down complexity of pay into its components and reveals that the types of components most likely to predict the use of consultants are incentive plans including performance shares and formula-based bonuses. This is consistent with the notion that complexity drives the use of consultants, since such components require the selection of measures, targets, and payout formulas or structures. Compensation committees routinely retain consultants and other advisors to help design these plans and navigate the complex (and continually changing) accounting, tax, and disclosure rules associated with them. Our results reinforce our prediction that more complex types of incentives (requiring decisions on measures and targets) drive the use of consultants. Notice, however, that including controls for different pay components does not lead to as big a decrease in the coefficient on $\ln(\text{Total Pay})$ in column (2) as it does controlling for the

number of pay components in column (1), suggesting the diversity of pay components is correlated with both the level of pay and the use of consultants more strongly than the use of any specific type of pay. Column (3) of Table 6 examines the effects of the # of performance measures (i.e., our alternative measure of complex pay) and the number of peers used for benchmarking on the likelihood of using consultants for the first time in three years. Within this more limited sample, none of the mediator measures analyzed predicts the use of consultants.

In summary, Table 6 suggests that higher pay, lower bonuses-to-total pay ratios and, especially, higher pay complexity (measured as the $\ln(\# \text{ Pay Components})$) precede the use of consultants in companies not employing consultants in prior years. These results suggest that the causal relations between the use of consultants, complexity, and pay levels are nuanced and may go in both directions. Furthermore, our analyses cannot provide conclusive evidence that increases in pay composition, pay complexity, and pay levels, can be attributed solely to the advice provided by executive pay consultants. Even in cases where the use of such consultants precedes increases in pay composition, pay complexity, and pay levels, the decisions leading to such increases may have been initiated by the firm prior to hiring a consultant to help implement those changes.

Overall, the results of Sections 3 and 4 suggest that the association between the use of compensation consultants and CEO pay is not only explained by conflicts of interest, but also by the composition and complexity of pay implemented around the time those consultants are hired. We find evidence suggesting that:

- a) the effect of the use of consultants on CEO pay is mediated by the pay packages' reliance on equity incentive pay and complex pay components;
- b) the complexity of CEO pay may not only mediate the effect of the use of consultants on CEO pay, but also precede the use of consultants (becoming a relevant variable that should be controlled for when analyzing the relation between the use of consultants and CEO pay);

- c) firms paying more to their CEOs are more likely to hire consultants.
- d) firms layer new equity incentive plans over existing ones, increasing both the effects of the composition and complexity of pay on the total level of CEO compensation, well beyond the premium CEOs should expect for bearing additional risks.

V. COMPENSATION CONSULTANTS AND SAY-ON-PAY VOTES

In sections 3 and 4 we show that CEO pay is higher in firms that use consultants, and that the CEO pay premium associated with consultants is largely explained by the greater use of equity pay and the number of pay components. We also show that firms are more likely to hire consultants if they already paid more (and more in the form of equity pay) to the CEO before using consultants.

These results, however, do not speak to whether consultants influence pay in ways that are perceived positively by shareholders. On one hand, our results may suggest that firms hire consultants for justifiable economic reasons (i.e., to design complex incentive pay packages to improve the alignment between the CEO's and the shareholders' interests, or to help compensation committees understand and navigate regulatory consequences). Alternatively, our results may suggest that consultants are hired to legitimize excessive levels of pay, and that they use complex incentive packages to camouflage rent extraction (Bebchuk and Fried 2003).

Under Section 951 of the Dodd-Frank Wall Street Reform and Consumer Protection Act ("Dodd-Frank Act") passed in July 2010, shareholders are asked to advise on the company's executive compensation practices in a non-binding "Say on Pay" vote occurring at least every three years (with an additional vote the first year and every six years thereafter to determine whether the votes will occur every one, two, or three years). These votes allow us to assess whether the use of consultants, and relatedly, pay composition, pay complexity, and benchmarking, are perceived favorably by shareholders (suggesting improved alignment in CEO-shareholder interests) or unfavorably (suggesting perceptions of potential rent extraction).

Table 7 examines the incremental effect of using consultants, as well as the effects of pay composition, pay complexity, benchmarking, and pay levels, on shareholders' Say-on-Pay votes (i.e., the relations depicted by the dotted lines in Figure 2). We use Execucomp data in Table 7, columns (1) and (2), and Incentive Lab data in Table 7, column (3). Our model specification is:

$$\begin{aligned} \% \text{ Votes For} = & \beta_0 + \beta_1 (\text{Firm used consultant}) \\ & + \beta_2 (\text{Firm used consultant that provided other services}) \\ & + \beta_3 (\text{Proxies for Composition}) \\ & + \beta_4 (\text{Proxies for Complexity}) \\ & + \beta_5 (\text{Proxies for Benchmarking}) \\ & + \beta_6 (\text{Ln(Total Pay)}) \\ & + \beta_7 (\text{Controls}) + \beta_8 (\text{Firm fixed effects}) \\ & + \beta_9 (\text{Year effects}) + \varepsilon \end{aligned} \tag{9}$$

Our dependent variable is the percentage of common shares voting for management in advisory Say-on-Pay votes.²⁸ *Complexity* is measured as $\text{Ln}(\# \text{ Pay Components})$ in column (1), a breakdown of the pay components used to construct our main complexity measure in column (2), and $\text{Ln}(1 + \# \text{ Perf Measures})$ in column (3), and our benchmarking measure ($\text{Ln}(1 + \# \text{ of Peers Used})$) is included only in column (3), when we use the Incentive Lab sample. Following Ertimur, Ferri, and Oesch (2013), our controls are the logarithm of CEO total pay, 3-year abnormal return, return on assets, percentage of shares held by institutions, percentage of shares held by top management, the logarithm of the market value of equity, an indicator variable equal to one if there was a pay-related shareholder proposal in the past year, and an indicator variable equal to one if the firm received a negative recommendation from Institutional Shareholder Services.

Column 1 of Table 7 reports coefficients of OLS regressions of (9). The coefficient on "Firm used consultant" is positive and significant while the coefficient on "Firm used consultant to provide other services" is negative, significant, and roughly equal in absolute value to the

²⁸ In particular, the dependent variable is equal to the number of shares voted against management divided by the sum of shares voted for and against management, ignoring broker non-votes and abstentions.

coefficient on “Firm used consultant”. Taken together, these results suggest that shareholders are more likely to vote in favor of management when firms used non-conflicted consultants, but not when they use conflicted consultants. In addition, the positive and significant coefficient on our proxy for complexity suggests that shareholders are more likely to vote in favor of management when there are more components of pay in the pay package.

Column 2 of Table 7 reports coefficients of OLS regressions of (9) where complexity is broken down to its components. We find positive and significant coefficients for performance shares. Finally, column (3) of Table 7 reports results from our more limited sample using data from Incentive Lab. While the coefficients on the use of non-conflicted and conflicted consultants and most of the controls are similar to those in columns (1) and (2), the coefficients on the proxies for composition, complexity (based on the number of performance measures) and benchmarking (based on the number of peers used) are insignificant.

Overall, we show that the percentage of favorable “Say-on-Pay” votes is positively related to the use of non-conflicted consultants (but unrelated to the use of conflicted consultants), the complexity (measured as the number of components) in the pay package, and grants of performance shares. This suggests that shareholders view positively the advice given by compensation consultants, but only when those consultants do not provide other services that might bias their advice on pay, and that they also view positively pay complexity.

VI. CONCLUSION

This study examines the relationship between the use of consultants and the level and structure of CEO pay using a panel dataset that includes nine years of data for a sample of 2,347 publicly traded firms in the U.S. Our data are based on mandated disclosures of consultants in company proxy statements implemented in 2006 and expanded in 2009 and 2012 (following Dodd

Frank), which in turn were motivated by concerns in Congress and the SEC that compensation consultants were somehow complicit in perceived excesses in CEO pay. The increased scrutiny on consultants—and especially the emphasis on independence—has fundamentally transformed the consulting industry. Top consultants from the largest integrated human resource firms have left to start their own independent consulting firms, taking clients and market share from their former parents. In turn, client companies increasingly avoid retaining consultants for both pay advice and other services, similar to what occurred in the auditing industry following the Sarbanes-Oxley Act and the mandatory disclosure of fees charged for auditing and non-auditing services.

The restructuring of the consulting industry has been unquestionably disruptive, leading to the natural question if the benefits of the disruption have been worth the cost. Our findings offer a more-nuanced view of the observed relation between the use of consultants and the level of CEO pay. While we continue to find evidence that CEO pay is, indeed, higher in companies where the consultants provide other services in addition to advice on executive compensation, we find that conflicts of interest explain only a small fraction of the CEO Pay Premium associated with the use of consultants. The remaining premium is largely explained by the composition (measured as the fraction of total pay conveyed through bonuses and equity) and complexity (measured as the number of pay components) of the CEO pay package, mediating variables that are associated with both the use of consultants and higher CEO pay. Our findings therefore suggest that Congressional attempts to reduce CEO pay through further regulatory actions aimed at consultants are unlikely to reduce pay unless those actions are designed to reduce the use of incentive compensation or the complexity pay. We offer no evidence that such reductions would benefit shareholders. In fact, our Say-on-Pay analysis suggests that shareholders express support for executive compensation policies in companies using consultants and that offer more pay components.

REFERENCES

- Albuquerque, A. M., M. E. Carter, and L. J. Lynch. 2018. Complexity of CEO Compensation Packages. Working paper.
- Albuquerque, A. M., G. De Franco, and R. S. Verdi. 2013. Peer choice in CEO compensation. *Journal of Financial Economics* 108 (1): 160-181.
- Armstrong, C., C. D. Ittner, and D. F. Larcker. 2012. Economic Characteristics, Corporate Governance, and the Influence of Compensation Consultants on Executive Pay Levels. *Review of Accounting Studies* 17 (2): 322-351.
- Baron, R. M., and D. A. Kenny. 1986. The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations. *Journal of Personality and Social Psychology* 51 (6): 1173-1182.
- Bebchuk, L. A., and J. M. Fried. 2003. Executive Compensation as an Agency Problem. *Journal of Economic Perspectives* 17 (3): 71-92.
- Bettis, J. C., J. Bizjak, J. L. Coles, and S. Kalpathy. 2018. Performance-vesting provisions in executive compensation. *Journal of Accounting and Economics* 66 (1): 194-221.
- Bizjak, J., M. Lemmon, and T. Nguyen. 2011. Are all CEOs above average? An empirical analysis of compensation peer groups and pay design. *Journal of Financial Economics* 100 (3): 538-555.
- Cadman, B., and M. E. Carter. 2014. Compensation Peer Groups and Their Relation with CEO Pay. *Journal of Management Accounting Research* 26 (1): 57-82.
- Cadman, B., M. E. Carter, and S. Hillegeist. 2010. The incentives of compensation consultants on CEO pay. *Journal of Accounting and Economics* 49 (3): 263-280.
- Chhaochharia, V., and Y. Grinstein. 2009. CEO Compensation and Board Structure. *Journal of Finance* 64 (1): 231-261.
- Chu, J., J. Faasse, and P. R. Rau. 2018. Do Compensation Consultants Enable Higher CEO Pay? A Disclosure Rule Change as a Separating Device. *Management Science* 64 (10): 4915-4935.
- Canyon, M. C., S. I. Peck, and G. V. Sadler. 2009. Compensation Consultants and Executive Pay: Evidence from the United States and the United Kingdom. *Academy of Management Perspectives* 23 (1): 43-55.
- Ertimur, Y., F. Ferri, and D. Oesch. 2013. Shareholder Votes and Proxy Advisors: Evidence from Say on Pay. *Journal of Accounting Research* 51 (5): 951-996.
- Goh, L., and A. Gupta. 2010. Executive Compensation, Compensation Consultants, and Shopping for Opinion: Evidence from the United Kingdom. *Journal of Accounting, Auditing and Finance* 25 (4): 607-643.
- Gong, J. J., V. Mande, and M. Son. 2017. Compensation Consultants and Shareholders' Say on Pay Votes. Working paper, California State University at Fullerton.
- Guthrie, K., J. Sokolowsky, and K. M. Wan. 2012. CEO Compensation and Board Structure Revisited. *Journal of Finance* 67 (3): 1149-1168.

Hall, B. J., and K. J. Murphy. 2003. The Trouble with Stock Options. *Journal of Economic Perspectives* 17 (3): 49-70.

Kenny, D. A., D. A. Kashy, and N. Bolger. 1998. Data Analysis in Social Psychology. In *Handbook of Social Psychology*, edited by D. Gilbert, S. T. Fiske, and G. Lindzey, 233-265. New York, NY: McGraw-Hill.

Murphy, K. J. 1985. Corporate Performance and Managerial Remuneration. An Empirical Analysis. *Journal of Accounting and Economics* 7 (1-3): 11-42.

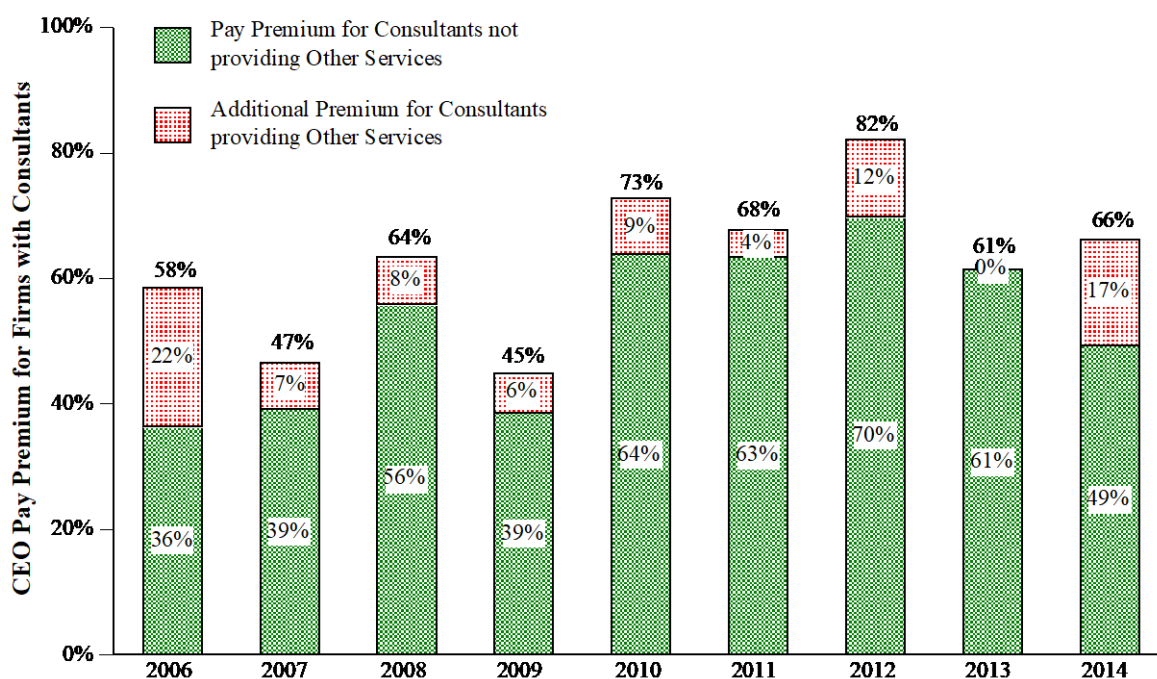
Murphy, K. J. 1999. Executive Compensation. In *Handbook of Labor Economics* 3B, edited by O. Ashenfelter, and D. Card, 2485-2563. Amsterdam, Netherlands: Elsevier Science B.V.

Murphy, K. J., and T. Sandino. 2010. Executive pay and “independent” compensation consultants. *Journal of Accounting and Economics* 49 (3): 247-262.

Rosen, S. 1982. Authority, Control, and the Distribution of Earnings. *The Bell Journal of Economics* 13 (2): 311-323.

Smith Jr, C. W., and R. L. Watts. 1992. The investment opportunity set and corporate financing, dividend, and compensation policies. *Journal of Financial Economics* 32 (3): 263-292.

Figure 1
Pay Premium for CEOs in Firms Retaining Consultants, 2006-2014



Note: The vertical bars show the average percentage difference in expected total compensation for CEO in firms retaining consultants compared to that in firms not retaining consultants, controlling for firm, CEO, and governance characteristics and based on untabulated regression coefficients from annual regressions analogous to those in column (3) of Table 2. The data include 14,355 firm years and are based on all ExecuComp firms with fiscal closings after December 15, 2006 (when the rules requiring disclosure of compensation consultants were effective), excluding firm-years from 16 CEOs earning less than \$12/year in any year during our sample period (see Section 3 and Appendix B for a discussion of our identification and subsequent exclusion of “influential outliers”).

Figure 2

Illustration of Baron and Kenny (1986) Mediation Analysis, with CEO pay Composition, Complexity, and Benchmarking “Mediating” the Relation Between the Use of Consultants and both CEO Pay and Say on Pay

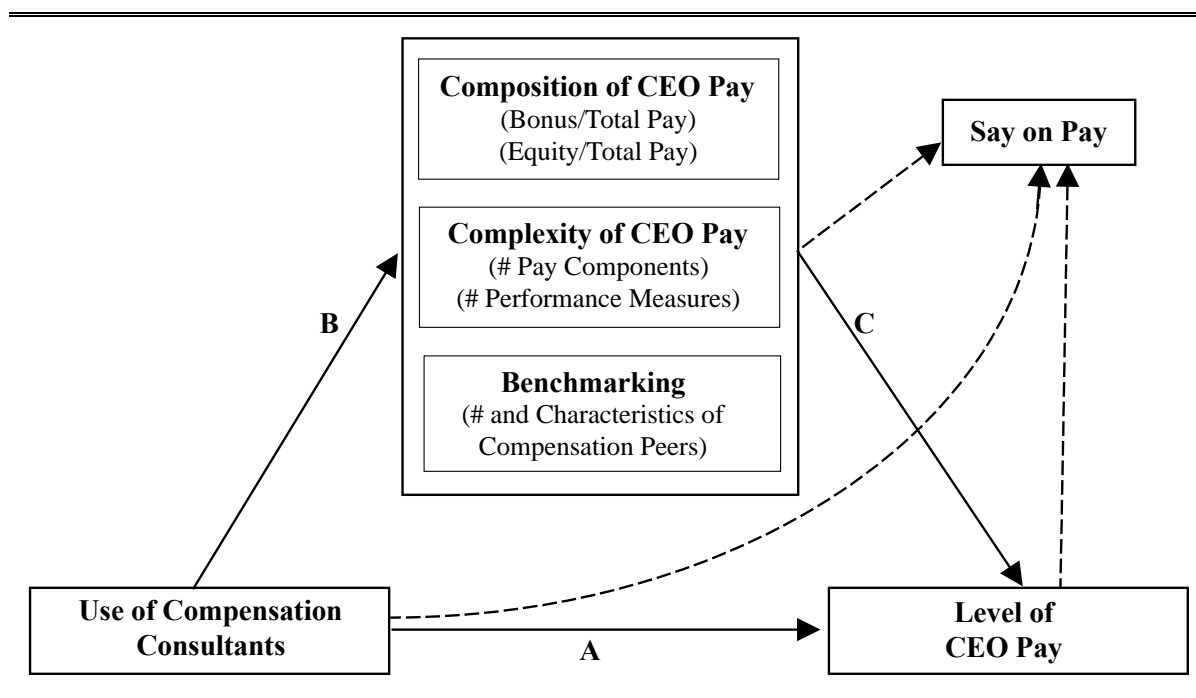
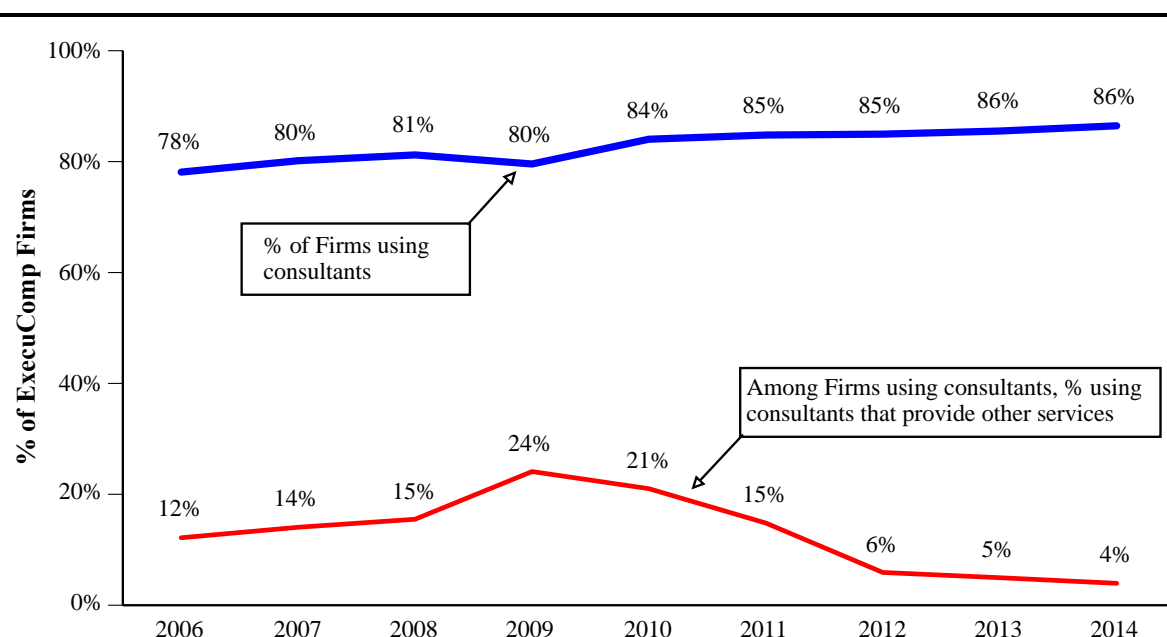


Figure 3
Percentage of Sample Firms using Consultants, and using Consultants that provide other services, 2006-2014



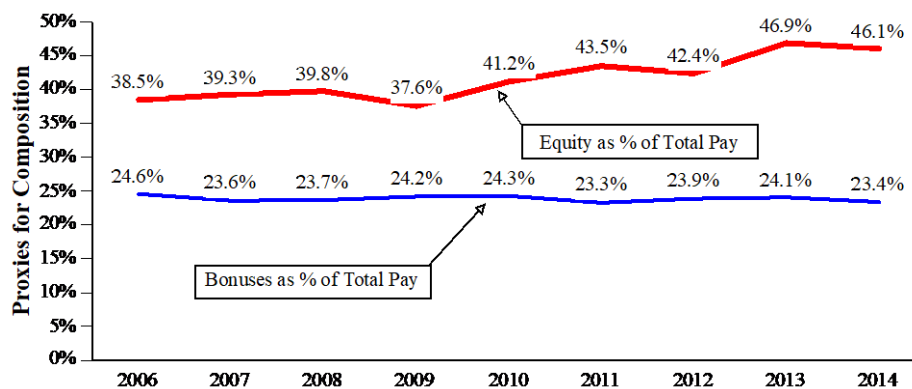
Note: The top (blue) line depicts the percentage of sample firms in each year that reported retaining one or more compensation consultants. The bottom (red) line depicts the percentage of sample firms, conditional on using consultants, that retained consultants for other services). As described in Section 2, consultants providing other services are identified or inferred from various sources, including the descriptions in the Compensation Discussion and Analysis (CD&A) section of the proxy statement; disclosure of company actuaries in Schedule B of IRS/DoL Form 5500 (for companies with defined-benefit plans); disclosure of fees paid for other services (which is definitive for firms with a single consultant); and the particular consultants used (e.g., whether those consultants, in fact, provide other services).

The data for firms using consultants include 16,815 firm years and are based on all ExecuComp firms with fiscal closings after December 15, 2006 (when the rules requiring disclosure of compensation consultants were first effective). Data on the percentage of firms using consultants that provide other services exclude observations where we could not determine whether the consultant, indeed, provided such services.

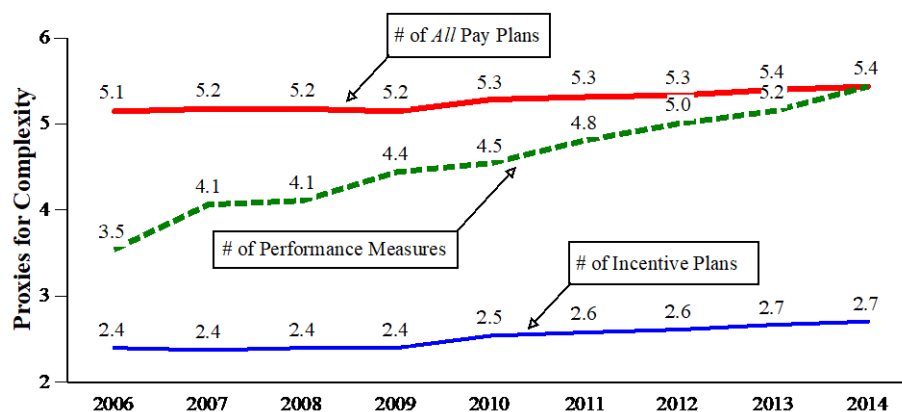
Figure 4

Time Trends in the Average Number of Pay Plans and Performance Measures, 2006-2014

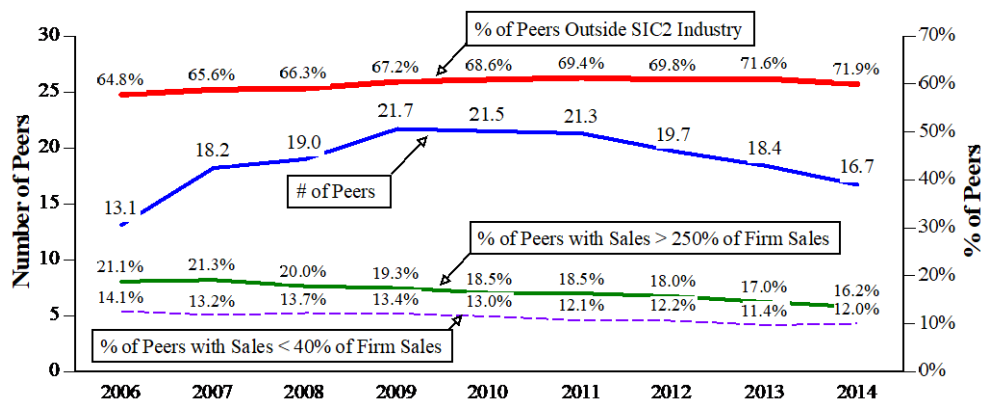
PANEL A. PROXIES FOR COMPOSITION



PANEL B. PROXIES FOR COMPLEXITY



PANEL A. PROXIES FOR BENCHMARKING



Note: Variables defined in Appendix A.

Table 1 Summary Statistics for Selected Variables, by Consultant Use

| Variable | Firms Never Using Consultant 129 Firms 743 Firm-Years | Firms Sometimes Using Consultant 624 Firms 4,467 Firm-Years | Firms Always Using Consultant 1,320 Firms 9,145 Firm-Years |
|--|--|--|---|
| Expected Total CEO Pay (\$000s) (MEDIAN) | \$1,415.1 | \$2,448.3 | \$5,228.7 |
| Bonuses / Total Pay | 24.7% ^b | 25.5% ^a | 22.8% |
| Equity / Total Pay | 24.1% | 35.7% | 46.7% |
| # of Pay Components | 3.8 | 4.9 | 6.0 |
| CEO has Discretionary Bonus (0,1) | 34.3% | 25.0% | 17.8% |
| CEO has Target Bonus (0,1) | 51.3% | 77.1% | 89.3% |
| CEO has Restricted Stock (0,1) | 26.8% | 46.0% | 57.5% |
| CEO has Stock Options (0,1) | 32.3% | 41.6% | 58.6% |
| CEO has Performance Shares (0,1) | 7.7% | 30.3% | 50.1% |
| CEO has Deferred Pay (0,1) | 25.2% | 38.6% | 61.6% |
| CEO has Pension Plan (0,1) | 7.7% | 24.1% | 47.3% |
| New CEO (0,1) | 7.1% ^{b,c} | 8.2% ^{a,c} | 8.8% ^{a,b} |
| CEO is Chairman (0,1) | 45.4% | 39.6% | 50.7% |
| CEO is founder (0,1) | 34.2% | 24.1% | 14.1% |
| % shares owned by CEO | 7.2% | 2.5% | 1.1% |
| Net Sales (\$mil) (MEDIAN) | \$581.9 | \$767.7 | \$2,230.1 |
| Ratio of Book-to-Market Assets | 63.2% | 70.8% ^c | 70.4% ^b |
| 3-Year Shareholder Return | 6.8% ^{b,c} | 7.7% ^{a,c} | 8.3% ^{a,b} |
| Return on Assets | 3.9% ^b | 3.8% ^{a,c} | 4.6% ^{a,b} |
| # Directors on Board | 8.5 | 9.3 | 10.8 |
| # Directors on Compensation Committee | 3.4 | 3.8 | 4.2 |
| % Independent Directors | 67.5% | 76.5% | 81.5% |
| % Independent Directors Age 70 or older | 50.1% | 43.8% | 42.7% |
| Avg # Public Boards for Ind. Directors | 1.4 | 1.6 | 1.9 |
| % Ind. Directors appointed after CEO took office | 57.0% | 50.2% | 45.9% |
| % Top Executives Ownership | 9.6% | 4.1% | 2.0% |
| % Institutional Ownership | 71.9% | 75.2% | 79.4% |
| % Negative Votes on Say on Pay | 6.8% | 8.7% | 9.5% |
| ISS Recommends to Vote Against Say-on-Pay | 10.1% ^{b,c} | 11.7% ^{a,c} | 11.6% ^{a,b} |
| # of Performance Measures | 2.8 | 3.9 | 4.9 |
| # of Peers Used | 6.0 | 16.2 | 20.6 |
| % of Similar-Size Peers | 59.8% | 72.7% ^c | 72.7% ^b |
| % of Peers in same 2-Digit SIC Industry | 70.7% | 56.5% ^c | 54.5% ^b |

Note: Variables defined in Appendix A. All pairwise comparisons are statistically different at the 5% level or less with the following noted exceptions: (a) not significantly different from “Never Using”; (b) not significantly different from “Sometimes Using”; (c) not significantly different from “Always Using.”

Table 2 Coefficients of Regressions Showing the Effect of the Use of Compensation Consultants on the Level of CEO Pay

| | Dependent Variable: Ln(Total Pay) _t | | |
|---|--|-----------------------|-----------------------|
| | Industry Fixed Effects | | Firm Fixed Effects |
| | (1) | (2) | (3) |
| Firm used consultant | 0.5224*** (13.38) | 0.4146*** (11.04) | 0.0840*** (3.79) |
| Firm used consultant that provided other services | 0.0695*** (2.94) | 0.0599*** (2.68) | 0.0373** (2.19) |
| Ln(Revenues) _{t-1} | 0.3892*** (38.40) | 0.3463*** (26.15) | 0.2284*** (9.62) |
| Ratio of Book-to-Market Assets _{t-1} | -0.4062*** (-8.97) | -0.3781*** (-8.03) | -0.2678*** (-6.51) |
| 3-Year Shareholder Return _t | 0.1258*** (4.82) | 0.1088*** (3.80) | 0.0700*** (2.93) |
| Return on Assets _t | 0.0249 (0.77) | 0.0317 (1.29) | 0.1684** (2.13) |
| New CEO (0,1) | -0.0916*** (-2.57) | 0.0278 (0.75) | 0.0549** (2.19) |
| CEO is Chairman (0,1) | — | 0.1224*** (5.31) | 0.0639*** (3.09) |
| CEO is founder (0,1) | — | -0.0179 (-0.40) | -0.1868*** (-3.25) |
| % shares owned by CEO | — | -1.6081*** (-4.64) | -0.6612** (-2.46) |
| # Directors on Board | — | 0.0137** (2.49) | 0.0027 (0.56) |
| # Directors on Compensation Committee | — | -0.0153* (-1.69) | 0.0071 (0.93) |
| % Independent Directors | — | 0.2381** (2.29) | 0.1050 (1.25) |
| % Independent Directors Age 70 or older | — | 0.1208** (2.04) | 0.1281** (1.97) |
| Average # Public Boards for Independent Directors | — | 0.1731*** (5.31) | 0.0606* (1.86) |
| % Ind. Directors appointed after CEO took office | — | 0.1890*** (4.10) | 0.2243*** (5.78) |
| Year/Industry/Firm Effects? | Yes/Yes/No | Yes/Yes/No | Yes/No/Yes |
| R ² | .516 | 0.535 | 0.813 |
| Sample Size | 15,240 | 14,298 | 14,298 |

Note: t-statistics in parentheses; *, ** and *** denote significance at a 0.10, a 0.05 and a 0.01 level. Standard errors are clustered by firm. Ln(Total Pay) is the natural logarithm of the average expected compensation of the CEO, where the CEO's total (expected) compensation is defined as the sum of salaries, discretionary bonuses, formula-based bonuses (i.e., the target value for non-equity incentives), the grant-date value of restricted stock and stock options and other compensation (including perquisites, signing bonuses, termination payments, above-market interest paid on deferred compensation). Industry controls include dummies for Consumer Products and Services; Health Care; Hi-Tech and Telecommunications; Manufacturing and Energy; and Others. Controls are based on Fama-French definitions to which we have added Financial Services (SIC 6000-6999).

Table 3 Reasons for Hiring Consultants Reported in the Proxy Statements of Firms Retaining a Consultant for the First Time in 3 or More Years

| Purpose | Detailed Description | % Firms Reporting this Reason |
|--|---|--------------------------------------|
| Benchmarking | Inform the company about pay practices employed by peers or generally employed in the labor market | 78.52% |
| Advice on Pay Composition | Provide advice on incentive pay | 60.16% |
| Advice on Pay Complexity | Provide advice on multiple components of pay (3 or more components if listed separately) ^a | 58.59% |
| Shareholder Voting and Compliance with Regulations | Provide advice on say on pay, legislation on pay practices, disclosures, and taxes | 14.45% |
| Assessment of Risks | Assess the risk of the executives' pay packages | 3.91% |
| Legitimization | Justify existing pay practices, without playing any apparent role influencing these practices. | 2.34% |

Note: See Appendix D for details. The reasons reported are based on 256 instances where firms hired a consultant for the first time in 3 or more years.

^aThe following component of pay were considered: salary, bonuses, targets in non-equity incentive plans, measures (or metrics) in incentive plans, stock options, restricted stock, performance shares, SERPs, deferred compensation, or other compensation (benefits, change in control, severance packages, perquisites).

Table 4A Mediating Effect of the Composition and Complexity (# of Pay Components) of CEO Pay on the Association Between the Use of Compensation Consultants and the Level of CEO Pay

| | Dependent Variables: | | | |
|--|------------------------|-----------------------|-------------------------|-----------------------|
| | Bonuses / Total Pay | Equity / Total Pay | Ln(# Pay Components) | Ln(Total Pay) |
| | (1) | (2) | (3) | (4) |
| Firm used consultant | -0.0075 (-1.25) | 0.0341*** (4.18) | 0.0347*** (3.96) | 0.0155 (1.01) |
| Firm used consultant that provided other services | -0.0010 (-0.26) | -0.0043 (-0.67) | 0.0032 (0.49) | 0.0424*** (3.23) |
| Bonuses / Total Pay | — | — | — | 0.5123*** (6.29) |
| Equity / Total Pay | — | — | — | 1.4988*** (23.54) |
| Ln(# Pay Components) | — | — | — | 0.6144*** (16.63) |
| Ln(Revenues) _{t-1} | -0.0072 (-1.44) | 0.0272*** (3.44) | 0.0404*** (4.64) | 0.1664*** (9.01) |
| Ratio of Book-to-Market Assets _{t-1} | 0.0575*** (5.10) | -0.1046*** (-6.61) | 0.0121 (0.68) | -0.1479*** (-4.92) |
| 3-Year Shareholder Return _t | 0.0067 (1.16) | 0.0147* (1.73) | 0.0204*** (2.66) | 0.0319** (2.20) |
| Return on Assets _t | 0.1278*** (6.01) | -0.0235 (-0.82) | 0.0969*** (3.23) | 0.0787 (1.47) |
| New CEO (0,1) | -0.0183*** (-3.26) | 0.0645*** (7.07) | 0.0154* (1.67) | -0.0419** (-2.39) |
| CEO is Chairman (0,1) | 0.0031 (0.63) | 0.0128* (1.72) | 0.0120 (1.55) | 0.0357** (2.18) |
| CEO is founder (0,1) | -0.0125 (-0.99) | -0.0105 (-0.60) | -0.0428** (-1.96) | -0.1384*** (-3.06) |
| % shares owned by CEO | 0.0929 (1.22) | -0.2390** (-2.54) | -0.2423** (-2.42) | -0.2016 (-0.98) |
| # Directors on Board | -0.0003 (-0.26) | -0.0027 (-1.59) | -0.0010 (-0.57) | 0.0076* (1.93) |
| # Directors on Compensation Committee | -0.0007 (-0.36) | 0.0024 (0.90) | 0.0017 (0.56) | 0.0028 (0.50) |
| % Independent Directors | -0.0044 (-0.21) | 0.0583* (1.84) | 0.0382 (1.16) | -0.0036 (-0.06) |
| % Independent Directors Age 70 or older | 0.0398** (2.23) | -0.0614** (-2.44) | 0.0300 (1.16) | 0.1813*** (3.43) |
| Average # Public Boards for Independent Directors | -0.0165** (-2.54) | 0.0158 (1.60) | -0.0082 (-0.75) | 0.0505** (2.11) |
| % Independent Directors appointed after CEO took office | 0.0101 (1.08) | -0.0662*** (-4.85) | -0.0051 (-0.36) | 0.3215*** (10.13) |
| R ² | 0.512 | 0.572 | 0.738 | 0.900 |

Note: Sample size is 14,298 for all regressions, which include both firm and year fixed effects. Robust t-statistics in parentheses: *, ** and *** denote significance at a 0.10, a 0.05 and a 0.01 level. Standard errors are clustered by firm. Ln(Total Pay) is defined in Table 2; all other variables defined in Appendix A.

Table 4B Mediating Effect of the Composition and Complexity (# of Performance Measures) and Benchmarking (# of Peers) of CEO Pay on the Association Between the Use of Compensation Consultants and the Level of CEO Pay

| | Dependent Variables: | | | |
|---|-----------------------|----------------------------|-------------------------|-----------------------|
| | Ln(Total Pay) | Ln(1 + # of Perf Measures) | Ln(1 + # of Peers Used) | Ln(Total Pay) |
| | (1) | (2) | (3) | (4) |
| Firm used consultant | 0.0961** (2.54) | 0.0497** (2.17) | 0.4891*** (5.92) | 0.0221 (0.79) |
| Firm used consultant that provided other services | 0.0284 (1.40) | -0.0262* (-1.80) | 0.0801** (1.98) | 0.0318* (1.86) |
| Bonuses / Total Pay | — | — | — | 0.3160** (2.41) |
| Equity / Total Pay | — | — | — | 1.5572*** (19.01) |
| Ln(1 + # of Performance Measures) | — | — | — | 0.0543*** (2.98) |
| Ln(1 + # of Peers Used) | — | — | — | 0.0084 (1.16) |
| Ln(Revenues) _{t-1} | 0.2455*** (8.33) | -0.0072 (-0.36) | 0.0541 (1.30) | 0.2046*** (7.97) |
| Ratio of Book-to-Market Assets _{t-1} | -0.2881*** (-4.76) | 0.1838*** (3.69) | 0.0511 (0.50) | -0.1357*** (-2.82) |
| 3-Year Shareholder Return _t | 0.0553* (1.85) | 0.0140 (1.18) | 0.0153 (0.29) | 0.0320 (1.55) |
| Return on Assets _t | 0.2594** (2.14) | 0.2152*** (2.73) | 0.1321 (0.82) | 0.2390*** (2.72) |
| New CEO (0,1) | 0.0637** (2.15) | -0.0190 (-0.92) | -0.0511 (-1.08) | -0.0365 (-1.59) |
| CEO is Chairman (0,1) | 0.0839*** (3.18) | 0.0200 (1.08) | -0.0731 (-1.54) | 0.0506** (2.23) |
| CEO is founder (0,1) | -0.1904** (-2.54) | -0.0245 (-0.54) | -0.0289 (-0.32) | -0.1967*** (-3.32) |
| % shares owned by CEO | -0.6790 (-1.56) | 0.0126 (0.05) | 0.0110 (0.01) | -0.4667 (-1.20) |
| # Directors on Board | 0.0063 (1.15) | 0.0013 (0.31) | -0.0076 (-0.82) | 0.0094* (1.82) |
| # Directors on Compensation Committee | 0.0082 (0.88) | 0.0027 (0.37) | 0.0105 (0.73) | 0.0045 (0.59) |
| % Independent Directors | 0.0567 (0.51) | 0.1557* (1.78) | 0.2287 (1.10) | -0.0920 (-1.11) |
| % Independent Directors Age 70 or older | 0.1102 (1.28) | -0.0578 (-0.83) | 0.2432 (1.48) | 0.2253*** (3.16) |
| Average # Public Boards for Independent Directors | 0.0611* (1.82) | -0.0345 (-1.43) | -0.0635 (-1.10) | 0.0298 (1.14) |
| % Independent Directors appointed after CEO took office | 0.2658*** (5.84) | -0.0409 (-1.20) | 0.0633 (0.83) | 0.3597*** (8.72) |
| R ² | 0.771 | 0.651 | 0.668 | 0.852 |

Note: Sample size is 7,876 for all regressions, which include both firm and year fixed effects. Robust t-statistics in parentheses: *, ** and *** denote significance at a 0.10, a 0.05 and a 0.01 level. Standard errors are clustered by firm. Ln(Total Pay) is defined in Table 2; all other variables defined in Appendix A.

Table 4C Mediating Effect of the Composition and Complexity (# of Performance Measures) and Benchmarking (Peer characteristics) of CEO Pay on the Association Between the Use of Compensation Consultants and the Level of CEO Pay

| | Dependent Variables: | | | |
|---|--------------------------------------|-------------------------------------|-------------------------|----------------------|
| | % of Peers with Sales > 250% of Firm | % of Peers with Sales < 40% of Firm | % of Peers Outside SIC3 | Ln(Total Pay) |
| | (1) | (2) | (3) | (4) |
| Firm used consultant | -0.0145 (-1.31) | 0.0077 (1.00) | 0.0035 (0.33) | 0.0079 (0.24) |
| Firm used consultant that provided other services | -0.0033 (-0.65) | -0.0032 (-0.67) | 0.0108 (1.64) | 0.0252 (1.42) |
| Bonuses / Total Pay | — | — | — | 0.2341 (1.56) |
| Equity / Total Pay | — | — | — | 1.5163*** (16.92) |
| Ln(1 + # of Performance Measures) | — | — | — | 0.0585*** (3.06) |
| % of Peers with Sales > 250% of Firm | — | — | — | 0.1299** (2.04) |
| % of Peers with Sales < 40% of Firm | — | — | — | 0.0568 (0.85) |
| % of Peers outside firm's 3-digit SIC | — | — | — | -0.0042 (-0.07) |
| Ln(Revenues) _{t-1} | -0.0427*** (-3.45) | 0.0223*** (3.00) | 0.0453*** (4.75) | 0.1851*** (6.23) |
| Ratio of Book-to-Market Assets _{t-1} | 0.0160 (0.73) | -0.0250** (-2.03) | 0.0023 (0.14) | -0.1112** (-2.25) |
| 3-Year Shareholder Return _t | -0.0136** (-2.51) | 0.0035 (0.92) | 0.0176 (1.63) | 0.0285 (1.43) |
| Return on Assets _t | -0.1070*** (-3.12) | 0.0184 (0.86) | -0.0086 (-0.34) | 0.2308*** (2.63) |
| New CEO (0,1) | -0.0006 (-0.08) | -0.0031 (-0.59) | 0.0078 (1.07) | -0.0234 (-0.94) |
| CEO is Chairman (0,1) | 0.0039 (0.53) | -0.0119** (-2.28) | 0.0018 (0.26) | 0.0687*** (3.03) |
| CEO is founder (0,1) | -0.0213 (-1.26) | -0.0206 (-1.61) | 0.0179 (1.03) | -0.1421** (-2.51) |
| % shares owned by CEO | 0.2029* (1.72) | 0.0538 (0.61) | -0.2298** (-2.32) | -0.4922 (-1.14) |
| # Directors on Board | -0.0000 (-0.02) | 0.0017 (1.46) | -0.0008 (-0.48) | 0.0054 (1.06) |
| # Directors on Compensation Committee | 0.0074*** (2.76) | 0.0010 (0.51) | 0.0053** (2.14) | 0.0028 (0.35) |
| % Independent Directors | 0.0258 (0.74) | -0.0235 (-0.91) | 0.0106 (0.32) | -0.0884 (-1.01) |
| % Independent Directors Age 70 or older | 0.0052 (0.18) | -0.0055 (-0.26) | 0.0217 (0.73) | 0.2468*** (3.39) |
| Average # Public Boards for Independent Directors | -0.0127 (-1.47) | -0.0022 (-0.31) | -0.0052 (-0.47) | 0.0344 (1.31) |
| % Independent Directors appointed after CEO took office | 0.0043 (0.30) | -0.0002 (-0.02) | 0.0082 (0.55) | 0.3395*** (8.18) |
| R ² | 0.694 | 0.736 | 0.935 | 0.852 |

Note: Sample size is 6,608 for all regressions, which include both firm and year fixed effects. Robust t-statistics in parentheses: *, ** and *** denote significance at a 0.10, a 0.05 and a 0.01 level. Standard errors are clustered by firm. Ln(Total Pay) is defined in Table 2; all other variables defined in Appendix A.

Table 5 Effect of Using Compensation Consultants on the Layering of Pay Components

| | Dependent Variable: Δ (Total Pay) | | | | | |
|---|---|-----------------------|-------------------------|-------------------------|------------------------------------|-----------------------|
| | Sample includes firms making a New Equity Grant for the first time in 3 years, where New Equity Grant is defined as: | | | | | |
| | New Restricted Stock Grant | | New Option Grant | | New Grant of Performance Shares | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Value of New Equity Grant | 1.476*** (10.32) | 0.814*** (5.47) | 0.965*** (4.11) | 1.110*** (13.59) | 1.056*** (5.96) | 1.527*** (3.89) |
| Value of New Equity Grant × Consultant | — | 0.698*** (3.46) | — | -0.423 (-0.60) | — | -0.531 (-1.22) |
| Firm used consultant | — | -739.0** (-2.18) | — | 706.7 (0.67) | — | 754.4 (1.09) |
| Revenue Growth _{t-1} | -689.9 (-1.32) | -630.4 (-1.27) | 1,315.3 (1.02) | 1,567.1 (1.42) | -1,580.4 (-1.50) | -1,613.6 (-1.56) |
| Δ Ratio of Book-to-Market Assets _{t-1} | -222.6 (-0.26) | -281.2 (-0.33) | -1,089.2 (-0.54) | -1,845.0 (-0.62) | -701.7 (-0.51) | -732.9 (-0.53) |
| Shareholder Return _{t-1} | -3.315*** (-4.30) | -3.216*** (-4.24) | 21.087 (0.42) | 2.249 (0.03) | 1.819** (2.17) | 1.725** (2.01) |
| Δ Return on Assets | 913.0 (0.66) | 901.5 (0.71) | 5,697.9* (1.76) | 5,971.1 (1.61) | 636.8 (0.37) | 664.5 (0.38) |
| Δ CEO is Chairman (Dummy) | -1,076.4** (-2.23) | -1,077.3** (-2.20) | -618.1 (-0.56) | -530.6 (-0.44) | 651.5 (0.91) | 672.9 (0.93) |
| Δ % shares owned by CEO | 16,371.2*** (2.59) | 14,994.9** (2.30) | 17,532.7 (1.10) | 19,181.8 (1.28) | 2,402.5 (0.65) | 3,336.8 (0.90) |
| Δ # Directors on Board | 29.84 (0.33) | 17.81 (0.20) | 298.7 (1.22) | 430.9 (1.52) | -30.20 (-0.17) | -29.10 (-0.17) |
| Δ # Directors on Compensation Committee | 88.357 (0.56) | 89.225 (0.56) | 228.180 (0.49) | 141.893 (0.37) | -195.852 (-0.51) | -189.401 (-0.48) |
| Δ % Independent Directors | -730.3 (-0.33) | -917.2 (-0.41) | 2,551.1 (0.40) | 2,553.1 (0.39) | -1,828.3 (-0.86) | -1,608.3 (-0.78) |
| Δ % Independent Directors Age 70 or older | 1,936.2 (1.31) | 2,161.2 (1.47) | -12,035.4 (-1.01) | -11,918.0 (-1.04) | 1,652.7 (0.63) | 1,917.5 (0.71) |
| Δ Average # Public Boards for Independent Directors | -1,532.3** (-2.02) | -1,419.1* (-1.90) | -1,110.1 (-0.48) | -1,034.9 (-0.46) | -378.906 (-0.41) | -366.3 (-0.39) |
| Δ % Indep Directors appointed after CEO took office | 1,191.5 (-689.892) | 1,269.3 (-630.372) | -2,443.1 (1,315.290) | -3,406.9 (1,567.104) | -121.6 (-1,580.379) | -16.6 (-1,613.631) |
| Sample Size | 618 | 618 | 267 | 267 | 927 | 927 |
| R ² | 0.647 | 0.654 | 0.285 | 0.292 | 0.218 | 0.224 |

Note Regressions include year fixed effects. t-statistics in parentheses; *, ** and *** denote significance at a 0.10, a 0.05 and a 0.01 level. Standard errors are clustered by firm. All variables are defined in the Appendix A.

Table 6 Coefficients of Logistic Regressions Showing the Effect of CEO Pay, Pay Composition, Pay Complexity, and Benchmarking Peers on the Firms' Decision to Use Compensation Consultants the Following Year

| | Dependent Variable: Firm Will Use a Consultant in t+1 | | |
|---|---|-----------------------|-----------------------|
| | (1) | (2) | (3) |
| Ln(Total Pay) | 0.2077* (1.87) | 0.2274** (2.07) | 0.1354 (0.75) |
| Bonuses / Total Pay | -0.9525* (-1.95) | -1.0382* (-1.95) | 0.0281 (0.03) |
| Equity / Total Pay | -0.3225 (-0.79) | -0.3650 (-0.78) | 0.2566 (0.35) |
| Ln(# Pay Components) | 0.8494*** (3.04) | — | — |
| Ln(1 + # of Performance Measures) | — | — | 0.3926 (1.35) |
| Ln(1 + # of Peers Available) | 0.0316 (0.41) | 0.0286 (0.37) | — |
| Ln(1 + # of Peers Used) | — | — | 0.0621 (0.64) |
| CEO has Discretionary Bonus (0,1) | — | 0.2124 (1.14) | — |
| CEO has Target Bonus (0,1) | — | 0.3868* (1.82) | — |
| CEO has Restricted Stock (0,1) | — | 0.0582 (0.31) | — |
| CEO has Stock Options (0,1) | — | 0.2471 (1.36) | — |
| CEO has Performance Shares (0,1) | — | 0.4152* (1.96) | — |
| CEO has Deferred Pay (0,1) | — | 0.1560 (0.92) | — |
| CEO has Pension Plan (0,1) | — | 0.0569 (0.29) | — |
| Ln(Revenues) | -0.1080* (-1.72) | -0.1107* (-1.77) | -0.1875* (-1.69) |
| Ratio of Book-to-Market Assets | 0.2927 (1.00) | 0.3540 (1.19) | 0.7082 (1.41) |
| 3-Year Shareholder Return | 0.2488 (0.80) | 0.2959 (0.93) | 0.5059 (0.99) |
| New CEO (0,1) | 0.3735 (0.61) | 0.3420 (0.56) | 0.7232 (0.52) |
| CEO is Chairman (0,1) | 0.3438 (1.17) | 0.3452 (1.17) | -0.9302 (-1.45) |
| CEO is founder (0,1) | 0.0330 (0.19) | 0.0517 (0.30) | 0.1623 (0.63) |
| % shares owned by CEO | 0.0628 (0.32) | 0.0664 (0.33) | 0.5800* (1.68) |
| # Directors on Board | -4.1651*** (-2.82) | -4.3061*** (-2.93) | -7.1003*** (-2.19) |
| # Directors on Compensation Committee | 0.0033 (0.10) | 0.0044 (0.14) | 0.0396 (0.66) |
| % Independent Directors | 0.1284* (1.77) | 0.1291* (1.74) | 0.1511 (1.11) |
| % Independent Directors Age 70 or older | 2.5848*** (4.52) | 2.5545*** (4.48) | 3.3728*** (3.69) |
| Average # Public Boards for Independent Directors | -0.9232*** (-2.97) | -0.8837*** (-2.86) | -0.9910* (-1.84) |
| % Independent Directors appointed after CEO took office | 0.1716 (1.10) | 0.1595 (1.00) | 0.1732 (0.78) |
| Sample Size | 1,462 | 1,462 | 509 |
| Pseudo R ² | 0.138 | 0.140 | 0.196 |

Note: The sample includes firms not using consultants over the prior three years (t, t-1 and t-2) or on the first year when they appeared in the sample. All regressions include industry and year fixed effects. Z-statistics in parentheses; *, ** and *** denote significance at a 0.10, a 0.05 and a 0.01 level. Standard errors are clustered by firm. Ln(Total Pay) and controls are defined in Appendix A.

Table 7 Coefficients Showing the Effect of Composition and Complexity of CEO Pay on Shareholder Say-on-Pay Voting Outcomes

| | Dependent Variable: $\left(\frac{\text{Votes For}}{\text{Votes For} + \text{Votes Against}} \right)$ | | |
|---|---|------------------------|------------------------|
| | (1) | (2) | (3) |
| Firm used consultant | 0.0111** (2.07) | 0.0110** (2.04) | 0.0178* (1.86) |
| Firm used consultant that provided other services | -0.0128** (-2.38) | -0.0130** (-2.43) | -0.0182*** (-2.75) |
| Bonuses / Total Pay | 0.0155 (1.08) | 0.0309* (1.93) | 0.0309 (1.26) |
| Equity / Total Pay | -0.0110 (-0.92) | -0.0125 (-1.02) | 0.0150 (0.93) |
| Ln(# Pay Components) | 0.0234** (2.37) | — | — |
| Ln(1 + # of Performance Measures) | — | — | 0.0034 (0.77) |
| Ln(1 + # of Peers Available) | -0.0006 (-0.10) | -0.0004 (-0.08) | — |
| Ln(1 + # of Peers Used) | — | — | 0.0031 (1.11) |
| CEO has Discretionary Bonus (0,1) | — | -0.0029 (-0.64) | — |
| CEO has Target Bonus (0,1) | — | -0.0015 (-0.21) | — |
| CEO has Restricted Stock (0,1) | — | -0.0006 (-0.14) | — |
| CEO has Stock Options (0,1) | — | 0.0037 (0.92) | — |
| CEO has Performance Shares (0,1) | — | 0.0209*** (4.53) | — |
| CEO has Deferred Pay (0,1) | — | 0.0026 (0.47) | — |
| CEO has Pension Plan (0,1) | — | 0.0072 (0.83) | — |
| Ln(Total Pay) | -0.0334*** (-7.17) | -0.0322*** (-7.09) | -0.0365*** (-6.03) |
| 3-Year Abnormal Stock Return | 0.0040 (1.15) | 0.0039 (1.12) | 0.0042 (0.89) |
| Return on Assets | 0.0489* (1.75) | 0.0444 (1.61) | 0.0989*** (2.60) |
| % Institutional Ownership | -0.0154 (-0.81) | -0.0156 (-0.82) | -0.0015 (-0.06) |
| % Top Executives Ownership | 0.0529* (1.93) | 0.0563** (1.98) | 0.3097** (2.30) |
| Ln(Market Value of Equity) | 0.0167*** (3.44) | 0.0174*** (3.59) | 0.0136** (2.00) |
| Past Compensation Activism (0,1) | -0.0110 (-1.63) | -0.0106 (-1.57) | -0.0095 (-1.37) |
| CEO Pay Growth | 0.0004 (0.38) | 0.0006 (0.53) | 0.0000 (0.02) |
| ISS Recommends to Vote Against Say-on-Pay | -0.2775*** (-43.21) | -0.2767*** (-43.09) | -0.2687*** (-34.31) |
| Sample size | 6,259 | 6,259 | 3,583 |
| R ² | 0.799 | 0.800 | 0.804 |

Note: Regressions include both firm and year fixed effects. Robust t-statistics in parentheses: *, ** and *** denote significance at a 0.10, a 0.05 and a 0.01 level. Standard errors are clustered by firm. Ln(Total Pay) is defined in Table 2; all other variables defined in Appendix A.

APPENDIX A
Variable definitions

| Variable | Data Source | Description |
|---|----------------------|---|
| Expected Total CEO Pay (\$000s) | ExecuComp | Expected total CEO pay, where pay is measured in \$1,000s |
| Bonuses / Total Pay | ExecuComp | CEO bonuses divided by total CEO pay |
| Equity / Total Pay | ExecuComp | CEO equity divided by total CEO pay |
| # of Pay Components | ExecuComp | Count of all compensation components |
| CEO has Discretionary Bonus (0, 1) | ExecuComp | A dummy variable equal to 1 if a CEO has discretionary bonus |
| CEO has Target Bonus (0, 1) | ExecuComp | A dummy variable equal to 1 if a CEO has target bonus |
| CEO has Restricted Stock (0, 1) | ExecuComp | A dummy variable equal to 1 if a CEO has restricted stock |
| CEO has Stock Options (0, 1) | ExecuComp | A dummy variable equal to 1 if a CEO has stock options |
| CEO has Performance Shares (0, 1) | ExecuComp | A dummy variable equal to 1 if a CEO has performance-based shares |
| CEO has Deferred Pay (0, 1) | ExecuComp | A dummy variable equal to 1 if a CEO has deferred compensation |
| CEO has Pension Plan (0, 1) | ExecuComp | A dummy variable equal to 1 if a CEO has pension plan |
| New CEO (0, 1) | ExecuComp | A dummy variable equal to 1 if a new CEO took office in that year |
| CEO is Chairman (0, 1) | ExecuComp | A dummy variable equal to 1 if the CEO is also the Chairman |
| CEO is founder (0, 1) | ExecuComp | A dummy variable indicating whether the CEO is the founder of the firm |
| % shares owned by CEO | ExecuComp | The percentage of common shares owned by the CEO |
| Net Sales (\$mil) | ExecuComp | The Net Annual Sales as reported by the company |
| Ratio of Book-to-Market Assets | ExecuComp | Assets divided by (assets + market value of equity - book value of equity) |
| 3-Year Shareholder Return | ExecuComp | The 3 year total return to shareholders, including the monthly reinvestment of dividends |
| # Directors on Compensation Committee | Equilar | The number of directors on compensation committee |
| # Directors on Board | Equilar | The number of directors on board |
| % Independent Directors | Equilar | The percentage of independent directors |
| % Independent Directors Age 70 or older | Equilar | The percentage of "old" directors (defined as those who are 70 years or older) |
| Average # Public Boards for Independent Directors | Equilar | The average number of public company boards in which non-employee directors served |
| % Independent Directors appointed after CEO took office | Equilar | The percentage of independent directors hired after the CEO took office |
| % Top Executives Ownership | ExecuComp | The percentage of shares owned by the top executives |
| % Institutional Ownership | Thompson-Reuters | Institutional investors shares owned |
| % Favorable Votes on Say-on-Pay | ISS Voting Analytics | The percentage of "votes for" Say-on-Pay estimated as Votes For divided by the sum of Votes For and Votes Against |
| ISS Recommends to Vote For Say-on-Pay (0, 1) | ISS Voting Analytics | A dummy variable indicating that the Institutional Shareholder Services (ISS) provided a "vote for" Say-on-Pay recommendation |
| # of Performance Measures | Incentive Lab | Count of performance measures in non-equity and equity incentive plans |
| # of Peers Used | Incentive Lab | Number of disclosed compensation peers |

APPENDIX B

Sensitivity of Results to \$1/Year CEOs

Virtually every empirical analysis of executive compensation—and empirical analyses of earnings in labor economics more broadly—use logarithmic transformations for earnings. Such logarithmic transformations are the traditional approach to diminish the influence of outliers with high earnings. In the case of executive compensation, logarithmic transformations are also useful because of the empirically salient near-linear relation between $\text{Ln}(\text{CEO Pay})$ and $\text{Ln}(\text{Company Size})$, where size is measured by revenues, assets, market value, etc.

While logarithmic transformations diminish the impact of highly compensated outliers, the transformations potentially create outliers at very low levels of earnings. As discussed in Section 3.1, our analysis therefore excludes all observations from 16 CEOs with total pay less than one dollar per month at some point during our sample period, based on the premise that such pay is objectively symbolic and not the outcome of a competitive managerial labor market. In this appendix, we discuss the issues and implications of this exclusion, and results from alternative methodologies addressing such outlier observations (and whether, indeed, they are outliers).

Table B1 replicates Table 2 after including 57 firm-year observations from the 16 CEOs with annual pay less than \$12 in at least year in our sample period. For the regressions with industry fixed effects (columns (1) and (2)), including these observations results in a slight increase in the coefficient on “uses consultant” and a more substantial decrease in the coefficient on using a consultant that provides other services. More striking, however, is the decrease in the explanatory power of the regression when all observations are included: adding

Table B1 Coefficients of Regressions Showing the Effect of the Use of Compensation Consultants on the Level of CEO Pay, including observations for CEOs earning less than \$1/month

| | Dependent Variable: Ln(Total Pay) _t | | |
|---|--|-----------------------|-----------------------|
| | Industry Fixed Effects | | Firm Fixed Effects |
| | (1) | (2) | (3) |
| Firm used consultant | 0.5409*** (12.35) | 0.4197*** (9.53) | 0.0437 (1.00) |
| Firm used consultant that provided other services | 0.0922*** (3.04) | 0.0812*** (2.83) | 0.0376* (1.95) |
| Ln(Revenues) _{t-1} | 0.3748*** (24.79) | 0.3244*** (14.11) | 0.2663*** (5.62) |
| Ratio of Book-to-Market Assets _{t-1} | -0.3198*** (-5.01) | -0.2913*** (-4.65) | -0.2415*** (-4.89) |
| 3-Year Shareholder Return _t | 0.1213*** (3.63) | 0.1009*** (2.60) | 0.0681*** (2.67) |
| Return on Assets _t | 0.0346 (1.20) | 0.0441* (1.69) | 0.2591** (2.37) |
| New CEO (0,1) | -0.1112*** (-2.74) | 0.0131 (0.29) | 0.0459 (1.64) |
| CEO is Chairman (0,1) | — | 0.1632*** (4.53) | 0.0846*** (2.72) |
| CEO is founder (0,1) | — | -0.0856 (-1.10) | -0.2981** (-2.20) |
| % shares owned by CEO | — | -2.1536*** (-4.51) | -0.8385** (-2.40) |
| # Directors on Board | — | 0.0125* (1.70) | 0.0009 (0.16) |
| # Directors on Compensation Committee | — | -0.0093 (-0.95) | 0.0088 (0.67) |
| % Independent Directors | — | 0.1698 (1.43) | -0.0029 (-0.03) |
| % Independent Directors Age 70 or older | — | 0.1617** (2.43) | 0.2070** (2.29) |
| Average # Public Boards for Independent Directors | — | 0.1792*** (5.21) | 0.0228 (0.48) |
| % Ind. Directors appointed after CEO took office | — | 0.2165*** (3.48) | 0.2281*** (3.97) |
| Year/Industry/Firm Effects? | Yes/Yes/No | Yes/Yes/No | Yes/No/Yes |
| R ² | .373 | 0.383 | 0.742 |
| Sample Size | 15,297 | 14,355 | 14,355 |

Note: t-statistics in parentheses; *, ** and *** denote significance at a 0.10, a 0.05 and a 0.01 level. Standard errors are clustered by firm. Ln(Total Pay) is the natural logarithm of the average expected compensation of the CEO, where the CEO's total (expected) compensation is defined as the sum of salaries, discretionary bonuses, formula-based bonuses (i.e., the target value for non-equity incentives), the grant-date value of restricted stock and stock options and other compensation (including perquisites, signing bonuses, termination payments, above-market interest paid on deferred compensation). Industry controls include dummies for Consumer Products and Services; Health Care; Hi-Tech and Telecommunications; Manufacturing and Energy; and Others. Controls are based on Fama-French definitions to which we have added Financial Services (SIC 6000-6999).

these 57 observations (approximately 0.4% of the sample) decreased the R-squares in column (1) from .516 in Table 2 to .373 in Table B1, and similarly decreased the R-squares in column (2) from .535 in Table 2 to .383 in Table B1. For the regressions with firm-fixed effects (column (3), including these 57 observations decreases the coefficient on “uses consultant” from a highly significant 0.0840 in Table 2 to an insignificant 0.0437 in Table B1 (the coefficient on using a consultant for other services is essentially unchanged, though the significance is higher in Table 2).

Figure B1 shows the histogram for Ln(CEO Pay) for the 14,355 firm-year observations in columns (2) and (3) of Table B1. Since logarithmic transformations require positive values for CEO Pay, the figure excludes 14 firm-years from 6 firms paying their CEOs \$0/year. While 99.7% of the Ln(CEO Pay) data are between 2.0 and 12.0 (roughly corresponding to pay levels between \$8,000 and \$150 million, where CEO Pay is measured in \$000s), 41 firm-years (0.3% of the sample of 14,369 firm years, including zeros) have Ln(CEO Pay) less than 2.0.

In addition to the 14 firm-years from 6 firms paying their CEOs \$0/year excluded from the histogram, the data with Ln(CEO Pay) less than 2.0 include 20 firm-years for 9 CEOs earning a symbolic \$1/year in compensation, one firm-year for a CEO earning \$10/year, and 6 firm years for 3 CEOs earning between \$10 and \$8000 per year. In fact, the 3 CEOs earning between \$10 and \$8000 per year earned \$0 or \$1 in other years during our sample period. Therefore, the 41 observations with Ln(CEO Pay) less than 2.0 are from 16 CEOs from 16 firms.

Our robustness tests demonstrated that our results were highly sensitive to the inclusion of firm-year observations for the CEOs earning less than \$1/month (i.e., less than \$12/year); our results were not sensitive to using higher thresholds (such as \$1,000/year or \$10,000/year).

Figure B1
Histogram for Ln(CEO Pay) for 14,355 Firm-Years in Table 2, columns (1) and (2)

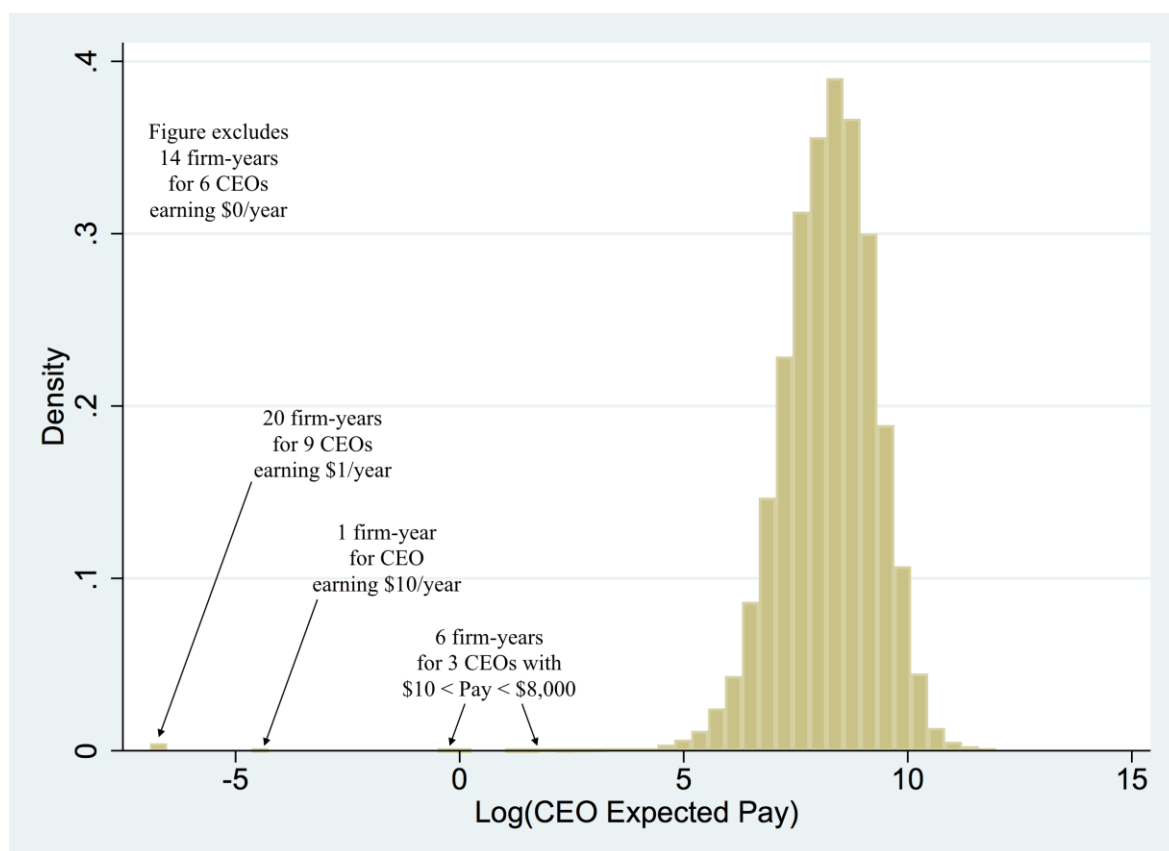


Table B2 lists the 16 CEOs earning less than \$12/year during any year in our sample period. Most are well-known entrepreneurs and corporate founders, such as Steve Jobs (Apple), Larry Page (Google), Jeffrey Katzenberg (DreamWorks), Marc Benioff (Salesforce), or Richard Kinder (Kinder Morgan). Vikram Pandit accepted zero pay at Citibank when it was receiving special attention from the U.S. Treasury after accepting TARP funds during the financial crisis.

In our main tables, we exclude all 71 observations for these CEOs (which, incidentally, excludes all observations with $\text{Ln}(\text{CEO Pay}) < 2.0$). Our results are robust to excluding *only* the firm-years in which the CEOs earned less than \$12, and are also robust to excluding all observations for any of the 16 firms in Table B2, regardless of the identity of the CEO.

Table B2 Sample CEOs with Annual Compensation \$12 or Less

| Company | CEO | Years in Sample with Complete Data | Years in Sample with Pay < \$12 |
|-------------------------------|----------------------|--|------------------------------------|
| Alphabet (Google) | Page, Lawrence | 1 | 1 |
| Altaba (Yahoo) | Yang, Chih-Yuan | 2 | 2 |
| Apple Inc | Jobs, Steven P | 6 | 6 |
| Biolase Inc | Pignatelli, Federico | 6 | 2 |
| Citigroup Inc | Pandit, Vikram S | 5 | 1 |
| Dreamworks Animation | Katzenberg, Jeffrey | 5 | 1 |
| Fossil Group Inc | Kartsotis, Kosta | 8 | 2 |
| Handy & Harman LTD | Kassan, Glen M | 6 | 6 |
| Kinder Morgan Inc | Kinder, Richard D | 2 | 2 |
| National Instruments | Truchard, James J | 9 | 4 |
| Nautilus Inc | Bramson, Edward | 1 | 1 |
| Salesforce.Com Inc | Benioff, Marc R | 8 | 1 |
| Take-Two Interactive Software | Feder, Ben | 4 | 1 |
| Thor Industries | Thompson, Wade | 4 | 4 |
| Univision Communications Inc | Perenchio, Andrew | 1 | 1 |
| USANA Health Sciences Inc | Wentz, Myron W. | 3 | 3 |

Note: We include in this list CEOs who received less than one dollar per month in total compensation for the year. These firm-year outliers had a significant effect on the results reported in Tables 2 and 3 of this paper. Accordingly, they were excluded from all of our regression analyses.

Our identification and subsequent exclusion of “influential outliers” is reminiscent of a recent debate in the *Journal of Finance* involving Chhaochharia and Grinstein (2009) and Guthrie, Sokolowsky, and Wan (2012). Chhaochharia and Grinstein (2009) looked at changes in CEO pay surrounding a new NYSE/NASDAQ rule requiring independence for a majority of boards and found that CEO pay decreased by 17% more in firms that had not been compliant with the NYSE/NASDAQ rule compared to CEO pay in firms that had already been compliant. Guthrie et al. (2012) showed that 74% of the magnitude of this 17% was attributable to two outliers out of 865 sample firms: Apple and Fossil (both, not coincidentally, included in our Table B2). In

response, Chhaochharia and Grinstein (2009) argued that the reduction in Steve Job's compensation at Apple to \$1 was not an outlier but rather a prime example that the governance controls worked as Apple moved to a majority independent Board.²⁹

While our identification and subsequent exclusion of outliers is reminiscent of the debate between Chhaochharia-Grinstein (2009) and Guthrie-Sokolowsky-Wan (2012), there are important differences. In particular, while Chhaochharia and Grinstein (2009) argued the reduction in Steve Job's pay to \$1 was the result of "good governance," the underlying premise in our pay regressions is that pay is determined in a relatively competitive marketplace based on a variety of controls (including time invariant firm fixed effects), and that consultants can potentially influence the equilibrium pay through pay design, performance measures, and peer selection. While there might be a variety of reasons why CEOs might accept a symbolic reduction in their annual compensation to \$1 or \$0, compensation at these levels cannot be the outcome of a competitive or benchmarking analysis.

More broadly, our identification of the \$1/year CEOs as outliers should serve as a cautionary warning to researchers following the tradition of using $\text{Ln}(\text{CEO Pay})$ as a primary dependent variable. While outliers are often dropped or modified (e.g., through winzORIZATION) to mitigate possible data errors, the CEO pay reflected in Table B2 are not based on data errors but rather conscious decisions by the CEOs (often founders or large stockholders) to work "for free." The influence of the \$1/year outliers would be eliminated by defining pay in levels without the logarithmic transformation, but using absolute levels creates scaling problems that make comparisons across firms difficult and unreliable.

²⁹ Incidentally, Apple achieved the independent-majority status not by changing its Board but rather when Apple director (and GAP CEO) Millard Drexler retired from GAP, and Steve Jobs resigned as a director of GAP, thus eliminating the interlocking directorship that prevented Mr. Drexler from qualifying as an independent director.