

Are Consultants to Blame for High CEO Pay?*

Kevin J. Murphy
Marshall School of Business
University of Southern California
Los Angeles, CA 90089-0804
E-mail: kjmurphy@usc.edu
Phone: (213) 740-6553

Tatiana Sandino
Harvard Business School
Harvard University
Boston, MA 02163
E-mail: tsandino@hbs.edu
Phone: (617) 495-0625

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Abstract

In this paper we use panel data on the use of consultants for 1,544 firms over six years to provide insights on the role that compensation consultants play on determining the level and composition of CEO pay. Year-by-year and pooled regressions show positive associations between the use of consultants and both the level of pay and the use of equity-based pay. However, these associations do not explain whether consultants are the cause for the higher levels of pay and equity-based pay, or whether higher payers and users of equity-based pay are more likely to retain compensation consultants. Our study shows that firms that start to use consultants pay more to their CEOs than firms that do not retain consultants *before* the hiring of the consultants takes place, and do not increase pay levels more than do other firms not changing the use of consultants.

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1. Introduction

Large corporations routinely retain compensation consultants to advise on the level and structure of compensation for their directors and top executives. Conceptually, these consultants can mitigate agency problems by recommending plans that better align the incentives of shareholders and CEOs, and by providing survey data useful in ensuring that the CEO is paid his/her competitive market wage. However, critics of high executive pay such as Crystal (1991) and Bebchuk and Fried (2003) argue that consultants – seeking repeat business and eager to sell other services – have exacerbated rather than mitigated agency problems. Under this “managerial power” view, CEOs use consultants to justify and legitimize excessive pay practices, and will shop for consultants who provide favorable opinions. More ominously, consultants will compete for business by purposely designing plans that provide excessive payouts.

Concerns that consultants are (partly) to blame for perceived excesses in executive pay led the Securities and Exchange Commission (SEC) in 2006 to require companies to identify any consultants who provided advice on executive compensation. The SEC’s disclosure requirements were followed by Congressional hearings on consultants’ conflicts of interest in December 2007, expanded SEC disclosure rules in 2009, and provisions in the 2010 Dodd-Frank Act (implemented in June 2012) requiring boards to consider independence factors in selecting consultants and disclosing any potential consultant conflicts of interest.

Comparisons of CEO pay in firms retaining and not retaining compensation consultants appear to support the concerns of the critics. Figure 1 shows the average percentage difference in expected total compensation for CEOs in firms retaining consultants compared to pay in firms not retaining consultants from 2006 to 2011, and also shows the percentage of our sample firms retaining one or more compensation consultants. The “CEO Pay Premiums” are based on

regression results discussed below in Section 3, and control for firm size and a variety of other firm, industry, and governance characteristics. As shown in the figure, CEOs in the 78% of sample firms using consultants in 2006 received, on average, 22% higher total compensation than the 22% of sample firms not using consultants.¹ By 2011, the percentage of firms retaining consultants had grown to 85.8%, and the CEO Pay Premium had increased to 77%. However, while suggestive of the managerial-power view, the correlation between CEO pay and the use of consultants is not conclusive because the choice of whether to retain consultants is endogenous: do consultants lead to higher pay, or do firms with higher pay use consultants? Alternatively, perhaps the patterns in Figure 1 are driven by omitted (and possibly unobservable) firm or CEO characteristics that are positively related to both pay levels and the use of consultants.

The purpose of this paper is to analyze whether consultants, indeed, lead to higher pay. More broadly, we seek to understand which firms hire consultants and what effect the use of consultants has on the levels and composition of CEO pay. We explore the role of consultants on CEO pay using time series data from 1,544 ExecuComp firms reporting the use (or non-use) of consultants annually from the introduction of the 2006 disclosure rules through the end of fiscal 2011.² We begin by documenting the results in Figure 1: firms retaining consultants pay their CEOs significantly more than firms not retaining consultants, and (with the exception of 2009) the pay premium from using consultants has increased monotonically since 2006. We also show that the use of equity-based compensation is significantly higher in firms retaining consultants,

¹ Prior academic studies documenting higher 2006 CEO pay in companies using consultants include Cadman, Carter, and Hillegeist (2010), Armstrong, Ittner, and Larcker (2012), and (early versions of) Murphy and Sandino (2010). In addition, an October 2007 report issued by the Corporate Library (Higgins, 2007) concluded that companies using consultants offer significantly higher 2006 pay than companies not using consultants.

² The 2006 disclosure rules applied to companies with fiscal closings after December 15, 2006. We follow Compustat conventions in defining the 2006 fiscal year to fiscal closings between June 1, 2006 and May 31, 2007. Therefore, our “balanced” sample of 1,544 firms with continuous reporting has only 1,268 firms in 2006 (reflecting 276 firms with June through November fiscal closings).

suggesting that the observed premium may reflect a compensating differential for risky pay. In addition, we show that the increase in the pay premium associated with consultants does not appear to be driven by “conflicted consultants” who may recommend high CEO pay in hopes that management will retain the consulting firm for more-lucrative other services.³ In particular, we show that the relation between CEO pay and conflicted consultants documented by Murphy and Sandino (2010) is economically small compared to the consultant pay premium.

Next, we use the time series to identify the causal effect of using consultants. Once we include CEO fixed effects to control for time-invariant factors affecting the level and structure of pay, the association between the use of consultants and pay becomes statistically and economically insignificant, while the association between the use of consultants and equity-based pay remains (marginally) significant. We explore in more detail changes in pay around the retention (and discharge) of consultants. Our findings indicate that changes in CEO pay and pay composition *after* a firm starts or stops using consultants are no different from changes in companies that do not use or continue using consultants. Overall, despite the high cross-sectional correlation between CEO pay and the use of consultants, we find no evidence that starting or stopping the use of consultants affects changes in CEO pay.

Our conclusion that the use of consultants does not lead to higher pay suggests that the difference in pay between firms that use and firms that do not use consultants in Figure 1 must be explained by other factors. One possible explanation is that the advice provided by consultants may be used over several years. Consequently, CEO pay and pay composition may not change immediately after firms stop using consultants. This could prevent us from finding results on (a)

³ See Waxman (2007), Murphy and Sandino (2010), Cadman, Carter, and Stephen Hillegeist (2010).

the subsample of firms that stopped using consultants and (b) the subsample of firms that started using consultants, but that had used a consultant in prior years whose advice continued to affect the level and composition of CEO pay during our sample period. To address these concerns, we analyze the effect of the use of consultants on CEO pay focusing on firms that did not have a consultant at the beginning of our sample period. We employ a propensity-score matching technique to match the set of firms that started (and once started, did not stop) using a consultant (our treatment sample) with a set of firms that did not employ a consultant over the entire sample period (our control sample). A difference-in-differences analysis shows no significant differences in the level of CEO pay between the firms that started using a consultant and those that never hired a consultant during the sample period. The analysis also suggests that firms that started to use a compensation consultant provided a greater proportion of CEO equity incentive pay after hiring the consultant than their matched counterparts.

Another possibility for the lack of results in our firm fixed-effects and changes regressions is that firms with higher and more complex CEO pay (in particular, more equity-based pay) are more likely to use consultants. Indeed, firms with moderately low levels of CEO compensation or equity pay might reasonably avoid expensive compensation consultants. To address this, we model the determinants of the use of consultants to examine whether firms that started using consultants were already paying more to their CEOs before hiring the consultants than firms that never hired a consultant. Our results support this explanation. We show that among companies not using consultants, those with high-paid CEOs and more equity-based CEO compensation in a given year are more likely to use consultants the following year than those with low-paid CEOs and less CEO equity-based compensation. Furthermore, we show that it is high deviations rather than high levels in CEO pay that are associated with using consultants on the following year.

Our study contributes to an emerging literature exploring the role of compensation consultants on executive pay. Murphy and Sandino (2010) find mixed evidence and Cadman, Carter and Hillegeist (2010) find no evidence for the prediction that CEO pay is higher in firms employing consultants with potential conflicts-of-interest (e.g., those providing non-executive pay services to the firm or not working exclusively for the board). Conyon, Peck and Sadler (2009), Cadman, Carter and Hillegeist (2010), and Armstrong, Ittner and Larcker (2012) examine the relationship between CEO pay and the use of compensation consultants, using 2006 data from the United States and, in the case of Conyon, Peck and Sadler (2009), additional 2003 data from the United Kingdom. Goh and Gupta (2010) analyze 350 firms in the United Kingdom from 2002-2008. Similar to our results in Section 3 below, these studies document a positive association between the use of consultants and CEO pay. However, Armstrong, Ittner and Larcker (2012) find no evidence of differences in pay between a sample of firms using consultants and a matched sample of firms not using consultants once they consider governance characteristics among their matching criteria. In addition, Cadman, Carter and Hillegeist (2010) present suggestive time-series results using changes in 2006-2007 compensation, concluding that changes in the use of consultants have limited effects on changes in CEO pay. Using their longer time-series of U.K. firms, Goh and Gupta (2010) conclude that firms that switch their main consultants receive higher increases in salaries and bonuses and less equity pay than do firms retaining their consultants.

We extend Armstrong-Ittner-Larcker's single-year analysis by considering multiple years, extend Cadman, Carter and Hillegeist (2010) by analyzing a larger number of firms over a longer time series, and extend Goh and Gupta by analyzing U.S. rather than U.K. data. Our study is the first to show that, contrary to what many critics suggest, the cross-sectional association between

the use of consultants and CEO pay is driven by high-paying firms hiring consultants rather than consultants driving increases in pay.

To our knowledge, our study is the first to explore the extent to which the levels and composition of pay affect a firm's decision to hire or stop using pay consultants, and the first to use a long time series of U.S. data to examine the effects of changes in the use of consultants on changes in the level and structure of executive pay.

The rest of the paper is organized as follows. Section 2 presents our data sources and describes information about the use of executive compensation consultants in the United States. Section 3 examines the relationship between the use of conflicted and non-conflicted consultants and the level and structure of CEO pay. Section 4 examines the types of firms that hire or stop using compensation consultants. Section 5 concludes.

2. The Use of Executive Compensation Consultants in U.S. Corporations

2.1. Evolving Disclosure Rules on Executive Compensation Consultants

In 2006, the U.S. Securities and Exchange Commission (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 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 compensation 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 2009 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 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.⁴ 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.

2.2. *Consultant Data*

Taking advantage of the SEC disclosure rules described above, we extracted compensation consultant information in the years 2006 through 2011 from the proxy statements of 2,158 firms (11,072 firm years). Our sample is comprised of all firms included in the Standard and Poor's ExecuComp dataset that filed proxy statements after the SEC disclosure rules requiring the

⁴ In particular, compensation committees must consider: (1) whether the entity employing the compensation adviser provides other services to the issuer; (2) the amount of fees received from the issuer by the entity employing the compensation adviser as a percentage of its total revenues; (3) the policies and procedures of the entity employing the compensation adviser designed to prevent conflicts of interest; (4) any business or personal relationship between the compensation adviser and a member of the compensation committee; (5) whether the compensation adviser owns any stock in the issuer; and (6) any business or personal relationship between the compensation adviser or the employing entity and the issuer's executive officers.

identification of compensation consultants took effect in 2006. We coded information about every compensation consultant identified in each of our sample years. To conduct our multivariate analyses we matched our hand-collected data with compensation data from Standard & Poors' ExecuComp database, firm and industry data from Compustat, and governance data from Risk Metrics.

The ExecuComp universe of firms is not static: firms that merge or delist are removed while firms joining the S&P 500, S&P MidCap 400, and S&P SmallCap 600 are added.⁵ To ensure that our results are not driven by the (changing) composition of our sample, we restrict our analysis to 1,544 firms covered continuously by ExecuComp from the introduction of the 2006 disclosure rules through the end of fiscal 2011. We follow Compustat conventions in defining the 2006 fiscal year to fiscal closings between June 1, 2006 and May 31, 2007. Therefore, our "balanced" sample of 1,544 firms with continuous reporting has only 1,268 firms in 2006 (reflecting 276 firms with June through November fiscal closings, which did not have to report the use of consultants in fiscal year 2006).

Table 1 summarizes information about the use of compensation consultants by our sample firms from 2006 to 2011. The percentage of firms using compensation consultants rose from 78.0% in 2006 to 85.8% in 2011. The number of firms that started and/or stopped using consultants varied from year to year. Between 3.2% and 7.1% of the firms started using consultants each year, while between 2.7% and 5.2% stopped using consultants. Among those firms retaining consultants, the percentage of firms retaining more than one consultant increased from 17.9% in 2006 to 27.3% in 2010, plausibly reflecting an increasing prevalence of

⁵ While ExecuComp is ostensibly comprised of companies in the S&P 500, S&P MidCap 400, and S&P SmallCap 600 (along with additional firms covered by Standards & Poors'), it keeps tracking firms after they leave these indices, and retroactively "pads" data for firms joining these indices.

compensation committees that hired their own consultants in addition to consultants working with management.⁶ However, the percentage of firms employing multiple consultants decreased to 18.7% in 2011.

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 row of Table 1 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 (all years); (b) fee disclosures for other services as mandated by the 2009 SEC rules (2009-2011); and (c) information from Schedule B of Form 5500 identifying the company’s actuary (available for firms with defined-benefit pension plans for all years except 2008).⁷ As shown in Table 1, among companies retaining consultants, the percentage of companies reporting that they used consultants that provided other services grew from 12.4% to 25.3% from 2006 to 2009, but decreased back to 14.9% in 2011.

⁶ Indeed, we find that Frederic W. Cook & Co and Pearl Meyer & Partners – the two largest firms providing only executive and director pay consulting services – experienced the largest gains in market share between 2006 and 2011. In addition, we can often not distinguish between firms simultaneously using two consultants and those that used different consultants during different parts of the year. For example, several firms reported using consultants from both Towers Watson and its independent spin-off (Pay Governance) during the spin-off year. In reality, many of these firms used only a single consultant who was associated with Towers Watson for part of the year and with Pay Governance the remainder of the year.

⁷ See Murphy and Sandino (2010) for details on the Form 5500 used in our analysis; Schedule B (which included actuarial information) was unavailable for Form 5500s filed in 2008.

3. Do Firms Using Consultants Offer Higher Pay to their CEOs?

3.1. *Consultants and the Level of CEO Pay: Cross-Sectional Results*

One of the most striking results emerging from the 2007 proxy season (i.e., the first year when firms were required to disclose the identity of their compensation consultants) was the cross-sectional relation between CEO pay and the use of compensation consultants: compensation is significantly higher in firms using consultants than in firms not using consultants. We begin by replicating and documenting time trends in this finding, based on the following cross-sectional regression for each year:

$$\begin{aligned} \ln(\text{Total Pay}) = & \alpha + \beta_1 (\text{Consultant}) + \beta_2 (\text{Firm characteristics}) \\ & + \beta_3 (\text{Industry dummies}) + \varepsilon \end{aligned} \quad (1)$$

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 and stock options, and other compensation (including perquisites, signing bonuses, termination payments, above-market interest paid on deferred compensation). Our explanatory variable of interest ("Consultant") is an indicator variable identifying whether the firm used one or more consultants that year.

We control for other key determinants of CEO pay described in prior literature. We include *size* (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 *book-to-market assets ratio* (assets divided by, assets plus market value of equity minus book value of equity) since executives receive lower pay and equity pay in firms with lower growth options (e.g., Smith and Watts 1992). We include the firm's *shareholder return* over the previous year in our regressions to account for the positive

association between CEO pay and firm performance (Murphy 1985). 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.⁸

In addition to the firm and industry characteristics, our multivariate regressions include a variety of governance variables employed by Armstrong, Ittner, and Larcker (2012) to explain the effect of executive compensation consultants on CEO pay: a dummy variable indicating whether the CEO also holds the position of Chairman; the percentage of common shares owned by the CEO; the number of directors; the percentage of independent directors; the percentage of “old” directors (defined as those who are 70 years or older); the percentage of “busy” directors (defined as those non-employee directors serving on one or more other major public company boards); the percentage of directors hired after the CEO took office; and indicator variables for whether the firm has dual-class shares or classified (“staggered”) boards. We obtain data on CEO ownership and title from ExecuComp; our remaining governance variables are obtained from Risk Metrics. Because Risk Metrics data are not available for 16.6% of our 8,598 firm-year observations, we use a dummy variable equal to one and set all governance variables equal to zero for observations without Risk Metrics data.

Columns (1) through (6) of Table 2 report coefficients from estimating equation (1) using ordinary least-squares regressions with robust standard errors. Consistent with the results from

⁸ Specifically, we employ the 5 Industry Portfolios Fama/French classification (described at: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library/changes_ind.html) plus an additional dummy variable for the financial services sector (SIC codes 6000 to 6999).

prior studies from the 2007 proxy season, we find a positive and statistically significant association between the use of consultants and CEO pay levels for each year from 2006 to 2011. As depicted in Figure 1, our results suggest that CEOs of firms using consultants were paid about 22% more in 2006 (calculated as $e^{0.1988} - 1$) than CEOs in firms not retaining consultants. Similarly, estimated “consultant pay premium” increased every year (except in 2009) to 31% in 2007, 46% in 2008, 36% in 2009, 57% in 2010, and 77% in 2011. As expected, the coefficients on company size are positive and significant, while the coefficients of book-to-market assets ratio are negative and significant. CEO pay is generally higher when the CEO is also the chairman, lower when the CEO holds a greater percentage of the firm’s shares, and higher when the board members sit on multiple boards.

To consider potential misspecifications in the regressions in Table 2 we (a) exclude firms whose CEO was paid at the bottom percentile distribution of CEO pay; and (b) substitute the Ln(Beginning of year sales) variable for alternative measures of size: Ln(Beginning of year assets); Ln (Beginning of year market value of equity); and a sales polynomial (beginning of year sales, beginning of year sales squared, and beginning of year sales cubed). The results using these alternative specifications are equivalent to those presented in Table 2.

3.2. Consultants and the Level and Structure of CEO Pay: CEO Fixed Effects

While the results in Table 2 are consistent with the hypothesis that consultants lead to higher pay, they are also consistent with the result that firms with higher pay are more likely to use consultants. More broadly, the results are consistent with the existence of omitted factors that are related to both the level of pay and the firm’s decision to retain a consultant. To the extent that these omitted factors are specific to the CEO and invariant over time, we can control for them using CEO fixed effects in a pooled cross-sectional time-series dataset.

Table 3 presents results from estimating the following fixed-effects regressions:

$$\begin{aligned} CEO \text{ Pay} = & \beta_1 (\text{Consultant}) + \beta_2 (\text{Firm characteristics}) \\ & + \beta_3 (\text{CEO Fixed Effects}) + \beta_4 (\text{Year Effects}) + \varepsilon_i \end{aligned} \quad (2)$$

In order to assess the effect of consultants on the *structure* as well as the *level* of CEO compensation, we use two different dependent variables. First, as in Table 2 and equation (2), we use $\ln(\text{Total Pay})$ (i.e., the natural logarithm of the CEO's expected pay). Our second dependent variable, *Equity-to-total pay*, is calculated by dividing the grant-date value of restricted stock and stock options received by the CEO by total pay.

For comparative purposes, the first two columns of Panel A Table 3 report estimated coefficients from the pooled cross-sectional time-series regressions of equation (2) *without* CEO fixed effects (but with industry controls and year fixed effects). Consistent with the results in Table 2, column (1), Table 3, Panel A shows that CEO pay is positively and significantly related to the use of consultants: CEOs in firms retaining consultants receive approximately 43% more than CEOs in firms not using consultants (computed as $e^{0.3556} - 1$). Nevertheless, column (3) shows that the relationship between the use of consultants and CEO pay is insignificant after controlling for CEO fixed effects.

The dependent variable in columns (2) and (4) of Table 3 is *Equity-to-total pay*, measuring the importance of stock options, restricted stock, and performance shares in the compensation package. We find in column (2) (without CEO fixed effects) that options and stock represent a larger fraction of total compensation in companies that use consultants. Column (4) indicates that the effect of using consultants remains (marginally) significant once we control for CEO fixed effects.

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,

because the decisions to engage the consulting firm in these more-lucrative corporate-wide consulting areas are often made or influenced by the CEO who is benefited or harmed by the consultant's pay recommendations.⁹ In order to assess the effect of “conflicted consultants” (i.e., those that provide other services) on CEO compensation, we estimate the following regression for each of our dependent variables (Ln(Total Pay) and the ratio of equity compensation to total compensation):

$$\begin{aligned} \text{CEO Pay} = & \beta_1 (\text{Consultant}) + \beta_2 (\text{Consultant Provides Other Services}) \\ & + \beta_3 (\text{Firm characteristics}) + \beta_4 (\text{CEO Fixed Effects}) + \beta_5 (\text{Year Effects}) + \varepsilon_i \end{aligned} \quad (3)$$

where “Consultant Provides Other Services” is an indicator variable identifying whether the firm used one or more consultants that provided services beyond executive or director pay advice. The regression results are presented in Panel B of Table 3, subsuming the coefficients for the firm and governance characteristics. As in Panel A, columns (1) and (2) report estimated coefficients from the pooled cross-sectional time-series regressions of equation (3) *without* CEO fixed effects (but with industry controls), while columns (3) and (4) report the fixed-effects regressions.

As shown in column (1) of Table 3 Panel B, the CEO Pay Premium for using consultants that do not provide other services is 41.8% ($e^{.3493} - 1$), while the premium for using conflicted consultants is 49.5% ($e^{.3493+.0527} - 1$); the difference in pay premiums is statistically significant at the 10% level ($t=1.63$). The fact that the difference in premiums for conflicted consultants is small relative to the premium for nonconflicted consultants suggests that the observed relation

⁹ For example, the December 2007 report from the US House of Representatives Committee on Oversight and Government Reform, “Executive Pay: Conflicts of Interest Among Compensation Consultants” (the “Waxman Report”), warned about conflicts of interest arising when the “consultants who are advising on executive pay are simultaneously receiving millions of dollars from the corporate executives whose companies they are supposed to assess.”

between pay and the use of consultants reflects more than conflicts of interest related to the provision of other services. Moreover, there is no evidence in the fixed-effects regression in column (3) that CEO pay is higher in firms with consultants that provide other services.

The results in Table 3, Panels A and B, are generally robust to alternative specifications where we (a) exclude firms whose CEO was paid at the bottom percentile distribution of CEO pay; and (b) substitute the $\text{Ln}(\text{Beginning of year sales})$ variable for alternative measures of size using assets; market value of equity; and a sales polynomial (as we did to test the robustness of the results in Table 2). These alternative specifications yield the same results from those reported in Table 3 in a few exceptional cases: (a) When we exclude the bottom quartile CEO pay outliers, the effect of the use of consultants on CEO pay becomes significant at a 10% level after controlling for firm fixed effects; (b) When we employ any of the alternative size measures, the effect of the use of consultants on Equity-to-total pay after controlling for firm fixed effects becomes insignificant; and (c) When we define size based on a sales polynomial, the association between using consultant and CEO pay is significantly larger if the consultant is conflicted, before controlling for firm fixed effects.

In summary, the results in Table 3 show that the association between the use of consultants (and conflicted consultants) and the level and structure of CEO pay observed throughout our sample period is largely explained by time-invariant firm characteristics. Our data however, enables us to explore more precisely whether the event where a company starts or stops using a consultant is immediately followed by changes in CEO pay or pay composition. Our following section examines whether changes in the use of consultants affect changes in CEO pay.

3.3. *Changes in CEO Pay Following Changes in the Use of Consultants*

Table 4 analyzes the association between changes in the use of consultants at times t and $t-1$ and changes in the level and structure of CEO pay at time t using OLS regressions with standard errors clustered by firm. We measure changes in the use of consultants using four dummy variables which identify cases where the firm started using consultants (an indicator that a firm with no consultants at time $t-1$ started using one or more consultants at time t , and an indicator that a firm with no consultants at time $t-2$ started using one or more consultants at time $t-1$) and cases where the firm stopped using consultants (an indicator that a firm using consultants at time $t-1$ did not use consultants at time t , and an indicator that a firm using consultants at time $t-2$ stopped using all of its consultants at time t). Our baseline is comprised of firms that did not change their status regarding the use of consultants. We examine the effects of these four dummy variables on two dependent variables capturing changes in the level and structure of pay, measured as the changes in the variables $\ln(\text{Total Pay})$ and $\text{Equity-to-total pay}$, already defined in Section 3. We control for changes in the key determinants of CEO pay identified and defined in Section 3: changes in size, changes in the book-to-market asset ratio, shareholder return, changes in CEO Chairman, changes in the percentage of common shares held by the CEO, independent, old, busy, directors appointed after the CEO, and changes in whether the firm has dual-class shares or staggered boards. Additionally, we include dummy variables for the years 2008 through 2011.

Table 4 shows that firms that start using compensation consultants report changes in the level and structure of executive pay that are insignificantly different from the changes reported by firms that did not change the use of consultants. This finding, combined with the finding that

higher levels of pay are associated with a greater likelihood of using consultants does not provide support for the prediction that firms start using consultants to increase pay.

A potential concern in Table 4 is that the baseline group of firms in our sample is heterogeneous as it includes firms that retain their status quo with respect to the use of consultants, either by not using or consistently using consultants. We rerun our analyses in Table 4 twice: first controlling for firms that continued to use consultants from time $t-2$ to time $t-1$, and from time $t-1$ to time t , and then controlling for firms that continued to not use consultants (or conflicted consultants for columns 4-6) from time $t-2$ to time $t-1$, and from time $t-1$ to time t . These robustness tests yield the same qualitative results as those reported.

In summary, our analyses in Table 4 show that firms that start using consultants (or stop using consultants) do not report changes in the level of pay significantly different from the changes reported by firms that do not change their use of consultants. Overall, our results suggest that consultants play a limited role in affecting the average level and structure of CEO pay.

3.4. Propensity-Score Difference-in-Difference Analysis

In addition to the OLS results employing CEO fixed effects and year-over-year changes, we also explore whether consultants lead to higher pay using a propensity-score differences-in-differences analysis on a cleaner sample of treatment and control firms. We conducted this analysis following four steps:

1. We identified as treatment firms those that started using (and did not stop using) consultants during the sample period.
2. We read carefully the proxy statements of our treatment firms and excluded all the cases where there was any reason to believe that a consultant was hired prior to 2006 (e.g.,

firms that indicated using a consultant from time to time, or that mentioned in any of their proxies that they had used a consultant sometime in the past).

3. We employed propensity scores to match each treatment firm with a comparable control firm (that did not use consultants during the sample period), based on an adjusted version of the logistic regression in Column 1 of Table 6 (described in detail in the following section).¹⁰ The matching was done based on the predicted scores of the logistic regression on the year before the treatment firm started using one or more consultants.¹¹ We defined the period starting on the year when the treatment firm started using one or more consultants, as the “event period” for both the treatment and its corresponding matched firm. A covariate balance analysis comparing the treatment and control firms’ average values of all the explanatory variables in the logistic regression, suggests no significant differences among the variables except that the percentage of independent directors is higher in the treatment than in the control sample group (t-value=3.2, p-value=0.002). We control for this and other control variables in our subsequent analyses.
4. Finally, we conducted a differences-in-differences analysis to examine whether the treatment firms paid more to their CEOs during the event period than the matched control firms.

Table 5 reports the results from the differences-in-differences analysis. The key variable of interest is the interaction term, “Treatment Firm Indicator \times Event Period Indicator,” which

¹⁰ The adjustment consisted of excluding from the sample, any firms that employed a consultant prior to 2006 (identified in step 2).

¹¹ The matching of the treatment firms was done year by year, starting with the years that had a greater number of treatment firms. Within each year, the matching of the treatment firms was done in random order. To ensure the comparability of the treatment and control variables, we imposed the constraint that the matching firm selected be within a distance of 0.01 (i.e., a “caliper”) of the treatment firm’s predicted score. Our SAS code is based on a code described by Marcelo Coca-Perraillon. “Matching with Propensity Scores to Reduce Bias in Observational Studies,” available at <http://www.nesug.org/proceedings/nesug06/an/da13.pdf>.

indicates whether compensation decisions differ in the treatment firms (i.e., firms that started using consultants during the Event Period) and the matched control firms over the same Event Period. Consistent with our earlier results in Table 3, the interaction coefficient for the Ln(Total Pay) regression in column (1) is positive but insignificant, indicating (again) that the use of consultants does not lead to higher CEO pay. Interestingly, the interaction coefficient for the Equity-to-Total Pay regression in column (2) is positive and marginally significant, suggesting that firms that retain consultants subsequently increase the use of equity-based compensation relative to firms not retaining consultants.

4. Does Higher CEO Pay Precede the Use of Consultants?

The correlation between CEO pay and the use of consultants suggests that (a) consultants lead to higher pay; (b) higher pay leads to consultants; or (c) there are firm or CEO characteristics that are positively related to both pay levels and the use of consultants. Our CEO fixed effects (Table 3) and changes (Table 4) regressions and propensity-score analysis (Table 5) are inconsistent with the (a) claim that consultants lead to high levels of CEO pay. In this section we examine the remaining two hypotheses.

4.1. CEO pay and pay composition preceding the use of Consultants

One potential reason for not observing increases (decreases) in pay at the time when firms start (stop) using consultants is that consultants do not lead to higher levels of pay but instead high-paying firms are more likely to employ consultants. We examine the validity of this explanation by modeling the decision to use consultants as a function of the level and structure of pay in the previous year. Table 6 presents logistic regressions examining the determinants of the decision to use one or more compensation consultants.

The dependent variable in Table 6 is a dummy variable equal to one if the firm will retain a consultant in the following year. The sample includes all firms not using consultants in the current year and all prior years in the sample. Thus, the sample predicts the use of consultants in the following year conditional on not using consultants in prior years. The sample includes 259 firms in 2006 (all firms not using consultants in 2006), 210 firms in 2007 (firms not using consultants in 2006 or 2007), 173 firms in 2008 (firms not using consultants in 2006-2008), 151 firms in 2009 (firms not using consultants in 2006-2009), and 124 firms in 2010 (firms not using consultants in 2006-2010).

The independent variables in column (1) of Table 6 include the logarithm of total compensation and all of the independent variables in Table 3 (including industry and year controls) except for the “uses consultant” dummy variable. The coefficient on $\text{Ln}(\text{Total Pay})$ is positive and statistically significant, suggesting that, among firms that have never (since 2005) used consultants, firms with higher pay in year t are more likely to use consultants in year $t+1$. The likelihood of using consultants in the following year is negatively related to the percentage of common shares owned by the CEO, positively related to the percentage of independent directors, and negatively related to the percentage of independent directors age 70 or older. The likelihood of using consultants is higher in firms with staggered (classified) boards.

In column (2) of Table 6, the $\text{Ln}(\text{Total Pay})$ regressor is replaced by Predicted $\text{Ln}(\text{Total Pay})$ and Residual $\text{Ln}(\text{Total Pay})$, estimated each year using the specification in Table 2 (with the exclusion of the “uses consultant” dummy variable). The coefficient on Residual $\text{Ln}(\text{Total Pay})$ is positive and significant, while the coefficient on Predicted $\text{Ln}(\text{Total Pay})$ is statistically insignificant. These results suggest that it is not high levels of pay, per se, that precedes the use

of consultants, but rather high deviations from predicted pay after controlling for industry, firm, and governance characteristics.

Columns (3) and (4) of Table 6 include three additional explanatory variables: a dummy variable indicating whether the company makes grants of time-lapse 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), and stock options to any of its top five executives. These variables are meant to proxy for the existence of restricted stock, performance share, and stock option *plans* for top executives (current grants serving as sufficient but not necessary evidence of such plans), which in turn reflects the complexity of compensation arrangements that may benefit from consultant expertise. The coefficients on the equity-plan variables are positive and significant in both columns (3) and (4), and the magnitude of the coefficients increase from restricted stock to performance share to stock options plans. Moreover, including equity-plan variables renders insignificant the coefficient on $\text{Ln}(\text{Total Pay})$ in columns (3) and on Residual $\text{Ln}(\text{Total Pay})$ in column (4).

Overall, the results in Table 6 suggest that higher pay *precedes* the use of consultants in companies who had not (yet) employed consultants. These results are consistent with both the hypothesis that higher pay leads to consultants; and that there are firm or CEO characteristics that are positively related to both pay levels and the use of consultants.

4.2. *Differences Between Firms Using or Not Using Consultants*

Table 6 suggests that firms using and not using consultants are significantly different, affecting the quality of our model specifications in Tables 3 and 4. These differences are highlighted in Table 7 which reports sample medians (or, when appropriate, sometimes means as indicated by *) for firm-years grouped by consultant usage: (a) firms never using consultants

(113 firms and 656 firm-years), (b) firms using consultants in year $t+1$ but not in year t (348 firms and 388 firm-years), (c) firms using consultants in year t but not in year $t+1$ (243 firms and 276 firm-years), and (d) firms always using consultants (1,033 firms and 6,005 firm-years). As shown in Table 7, firms using consultants over the entire 2006-2011 period are significantly different from firms operating without consultants over the period. Firms using consultants have significantly higher CEO pay (measured in both dollars and in pay-percentiles estimated in a regression controlling for company size and industry), higher ratios of bonus-to-total cash and equity-to-total compensation than do firms not using consultants. But firms using consultants are significantly larger (as measured by sales) and have CEOs with higher stock ownership and a higher percentage of independent directors and “busy” directors serving on other boards of publicly traded companies. The sample medians for the “switchers” (that is, firms that either start or stop using consultants) are typically between the medians for firms never or always using consultants. For example, CEO pay (in dollars or percentiles) in firms without consultants that will use a consultant in the following year is significantly higher than CEO pay in firms that never use consultants, while CEO pay in firms using consultants that will stop using consultants in the following year is significantly lower than CEO pay in firms that always use consultants. Similarly, bonus-to-total cash pay and equity-to-total pay ratios are higher in firms that will start using consultants than in firms never using consultants, and lower in firms that will stop using consultants than in firms always using consultants.

5. Conclusions

Concerns that compensation consultants would recommend unreasonably high levels of CEO pay to their clients, with the objective to please the same executives that may later on retain their services, led the SEC to implement disclosure rules requiring firms to describe their use of

compensation consultants and to identify potential conflicts of interest raising from the consultants' engagements. Despite initial studies documented a positive association between the use of compensation consultants and CEO pay, these studies did not provide conclusive evidence on whether the use of consultants leads to excessive levels of executive pay or whether high paying firms are more likely to retain consultants.

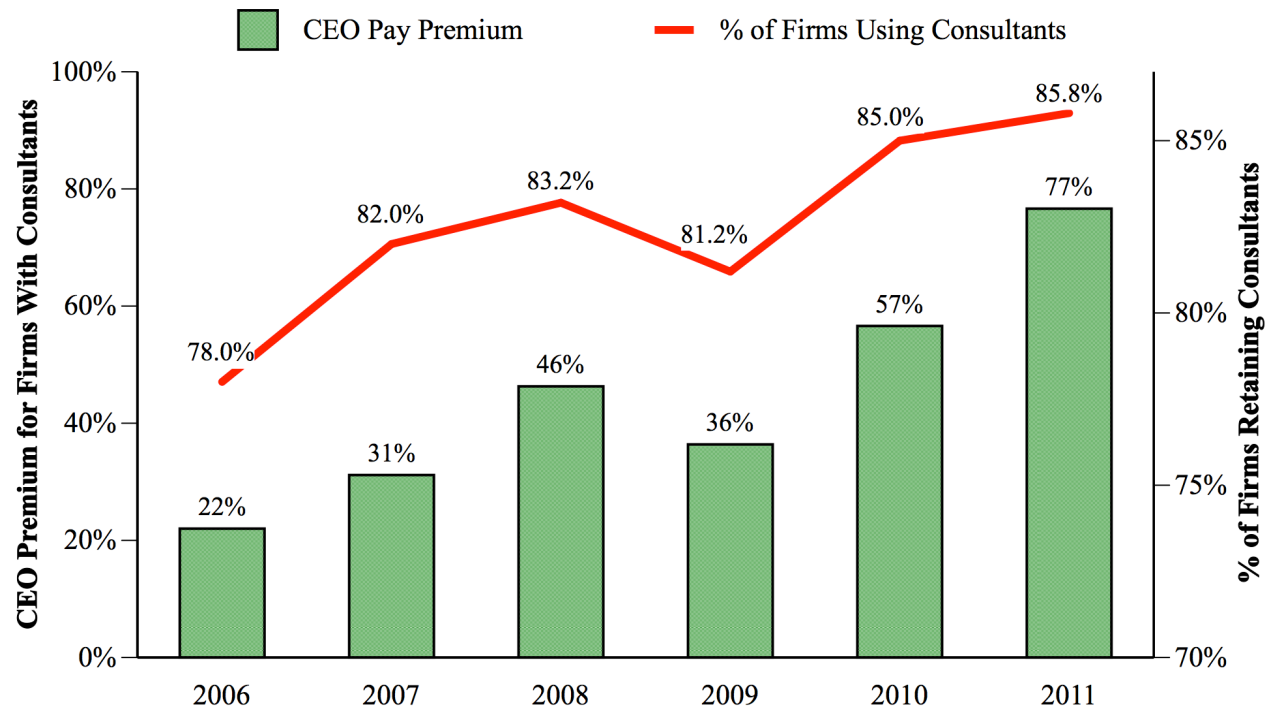
This study examines the relationship between the use of consultants and the levels and structure of executive pay using a panel dataset that includes six years of data for a sample of 1,544 publicly traded firms in the U.S. Our analysis shows that the use of compensation consultants is associated with higher levels of pay and use of equity-based pay, yet the result on pay levels disappears once we control for CEO fixed effects. We also find that firms are more likely to start using consultants when they already report higher levels of pay and equity pay than other firms not using consultants *prior* to the consultant engagement, and that firms that start using compensation consultants report changes in executive pay and pay composition *after* hiring the consultant that are no different from the changes reported by companies that do not use consultants.

Our study helps clarify the role that compensation consultants play in determining the levels and structure of pay. Overall, we find limited support for the managerial power view that consultants are used by firms to increase the levels of executive pay. Nevertheless, our results should be interpreted with caution, since our analyses are based on a period where the increased concern (and disclosure) about conflicts of interest between compensation consultants and their client firms, may have shaped the nature of the advice provided by these consultants as well as the firms' approach to managing compensation consultant engagements.

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Figure 1
Pay Premium for CEOs in Firms Retaining Consultants, 2006-2011



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 regression coefficients reported in Panel A of Table 2. The line above the vertical bars depicts the percentage of sample firms in each year that reported retaining one or more compensation consultants. The sample includes all S&P 1500 firms reporting consultant use in each year from 2006-2011 (data for firms with fiscal closings between June and November begin in fiscal 2007).

Table 1 Use of Compensation Consultants in Fiscal Years 2006 through 2011

	Fiscal Years					
	2006	2007	2008	2009	2010	2011
Number of firms in sample	1268	1544	1544	1544	1544	1544
Percentage of firms that:						
Did not use executive pay consultants ^a	22.0%	18.0%	16.8%	18.8%	15.0%	14.2%
Retained executive pay consultants	78.0%	82.0%	83.2%	81.2%	85.0%	85.8%
Changes in use of consultants per firm:						
Started using consultants	-	7.1%	4.2%	3.2%	6.5%	4.1%
Stopped using consultants	-	3.6%	3.0%	5.2%	2.7%	3.4%
Continued using consultants	-	60.5%	79.0%	78.0%	78.5%	81.7%
Continued to not use consultants	-	10.9%	13.8%	13.6%	12.3%	10.8%
Among firms retaining consultants, % that:						
Used only one consultant	82.1%	78.3%	81.9%	78.7%	72.7%	81.3%
Used two consultants	15.1%	18.2%	15.3%	18.2%	23.3%	16.5%
Used three or more consultants	2.8%	3.6%	2.8%	3.1%	4.0%	2.1%
Used a consultant that provided additional services	12.4%	15.4%	16.2%	25.3%	21.6%	14.9%

Notes: Sample includes all ExecuComp firms reporting with complete data on the use of consultants from the introduction of the 2006 disclosure rules through year-end fiscal 2011.

^aIncludes companies using commercially available compensation surveys or hiring consultants only for advice on non-executive director pay

Table 2 Coefficients of OLS regressions Showing the Effect of the Use of Compensation Consultants on the Level of CEO Pay, 2006-2011

	Dependent Variable: Ln(Total Pay)					
	2006	2007	2008	2009	2010	2011
	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	4.855*** (18.5)	5.061*** (18.4)	4.822*** (15.0)	5.366*** (19.9)	5.231*** (17.9)	5.172*** (20.2)
Firm used a consultant in year t	.1988** (2.42)	.2712*** (3.75)	.3804*** (4.97)	.3103*** (4.88)	.4485*** (6.64)	.5689*** (5.20)
Ln(Revenues) _{t-1}	.3463*** (15.9)	.3082*** (8.82)	.3180*** (10.9)	.2925*** (9.62)	.2896*** (7.65)	.3114*** (8.44)
Ratio of Book-to-Market Assets _{t-1}	-.5779*** (-3.91)	-.2478 (-1.46)	-.3758*** (-3.26)	-.2743*** (-3.15)	-.3654*** (-3.44)	-.3319*** (-2.56)
Shareholder Return _{t-1}	-.0534 (-0.85)	-.0110 (-0.69)	-.0016*** (-4.92)	-.0029 (-0.31)	.0356*** (2.76)	-.0000 (-0.33)
New CEO (Dummy)	-.0802 (-0.98)	-.1770 (-1.61)	-.0055 (-0.07)	-.0324 (-0.41)	-.1903*** (-2.62)	-.2715** (-2.27)
CEO is Chairman (Dummy)	.2210*** (3.18)	.2043*** (3.39)	.1804*** (2.82)	.1866*** (3.30)	.2173*** (2.95)	.1513** (2.26)
Percentage shares owned by CEO	-4.210*** (-2.67)	-1.721*** (-2.74)	-1.374** (-2.42)	-2.573*** (-2.90)	-1.690** (-2.51)	-3.083** (-2.31)
Risk Metrics Governance Data Not Available Indicator	.7435*** (2.59)	.5247** (1.97)	.6374*** (2.56)	.2756 (1.25)	.5204** (2.43)	.4019* (1.78)
Number of Directors on Board	.0208 (1.60)	-.0193 (1.28)	.0056 (0.37)	.0148 (0.96)	.0152 (0.96)	-.0010 (-0.08)
% Independent Directors	.3073 (1.14)	-.0055 (-0.02)	.3236 (1.36)	-.0882 (-0.37)	.3065 (1.29)	.1113 (0.48)
% Independent Directors Age 70 or older	.0633 (0.34)	-.2000 (-1.38)	.0572 (0.38)	-.0578 (-0.39)	.1920 (1.42)	.2873** (2.04)
Average # Public Boards for Independent Directors	.1929*** (3.473)	.2481*** (4.34)	.1620** (2.44)	.1461*** (3.64)	.1114* (1.95)	.1354*** (3.07)
% Independent Directors appointed after CEO hired	.1478* (1.74)	-.0500 (-0.52)	-.0108 (-0.12)	.0739 (0.88)	-.1000 (-1.00)	.0729 (0.76)
Dual class stock indicator	.0315 (0.30)	.0624 (0.47)	-.0637 (-0.31)	.0847 (0.76)	.2416 (2.17)	.0353 (0.16)
Classified board indicator	-.1088* (-2.20)	-.0296 (-0.53)	.0327 (0.57)	.0289 (0.70)	.0373 (0.85)	-.0281 (-0.60)
Industry Controls?	Yes	Yes	Yes	Yes	Yes	Yes
R ²	.4264	.3020	.2921	.3608	.3037	.3303
Sample size	1172	1462	1482	1488	1492	1497

Notes: t-statistics based on robust standard errors in parentheses. *, ** and *** denote significance at a 0.10, a 0.05 and a 0.01 level, respectively. Ln (CEO 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, 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 Coefficients of OLS regressions Showing the Effect of the Use of Compensation Consultants on the Level and Structure of CEO Pay

<i>Panel A: Effect of Using Consultants on CEO pay</i>	OLS Regressions without Fixed Effects		OLS Regressions with CEO Fixed Effects	
	Ln(Total Pay)	Equity-to-Total Pay	Ln(Total Pay)	Equity-to-Total Pay
Dependent Variables:	(1)	(2)	(3)	(4)
Intercept	5.041*** (27.8)	.0058 (0.14)	—	—
Firm used a consultant in year t	.3556*** (6.78)	.1063*** (8.91)	-.00451 (-0.14)	.0171* (1.77)
Ln(Revenues) _{t-1}	.3102*** (12.25)	.0296*** (8.34)	.1814*** (6.07)	.0136 (1.50)
Ratio of Book-to-Market Assets _{t-1}	-.3229*** (-3.88)	-.1442* (-8.97)	-.3091*** (-5.39)	-.0746*** (-4.29)
Shareholder Return _{t-1}	.0000 (0.09)	-.0000 (-0.05)	-.008 (-0.46)	-.0010 (-1.95)
New CEO (Dummy)	-.1339*** (-3.60)	.0186* (2.03)	-.0106 (-0.40)	.0184** (2.30)
CEO is Chairman (Dummy)	.1834*** (4.07)	.01223 (1.45)	.0201 (0.64)	.0033 (0.34)
Percentage shares owned by CEO	-2.284*** (-3.95)	-.5668*** (-6.33)	-1.104*** (-3.63)	-.1043 (-1.13)
Risk Metrics Governance Data Not Available Indicator	.5314*** (3.63)	.1311*** (3.09)	-.1078 (-0.69)	.0427 (0.90)
Number of Directors on Board	.0118 (1.05)	-.0033 (-1.46)	.0014 (0.16)	.0008 (0.32)
% Independent Directors	.1590 (0.96)	.1624*** (3.81)	-.1403 (-0.94)	.0269 (0.59)
% Independent Directors Age 70 or older	.0671 (0.70)	-.0454* (-1.87)	.1649* (2.11)	.0463* (1.95)
Average # Public Boards for Independent Directors	.1743*** (5.14)	.0536*** (5.83)	.0526 (1.55)	.0174* (1.68)
% Independent Directors appointed after CEO hired	.0194 (0.3)	-.0227 (-1.54)	-.0518 (-0.69)	-.0113 (-0.50)
Dual class stock indicator	.0663 (0.65)	.0043 (0.20)	.2266** (2.36)	.0188 (0.64)
Classified board indicator	-.0006 (-0.02)	.0144* (1.65)	.0294 (0.77)	.0102 (0.88)
Year/Industry/CEO Effects?	Yes/Yes/No	Yes/Yes/No	Yes/No/Yes	Yes/No/Yes
R ²	.3256	.2108	.8190	.6681
Sample size	8593	8593	8593	8593

Table 3 (continued)

<i>Panel B: Effect of Using Conflicted Consultants on CEO pay</i>	OLS Regressions without Fixed Effects		OLS Regressions with CEO Fixed Effects	
	Ln(CEO Pay)	Equity-to- Total Pay	Ln(CEO Pay)	Equity-to- Total Pay
Dependent Variables:	(1)	(2)	(3)	(4)
Firm used a consultant in year t	.3493*** (6.66)	.1056*** (8.83)	-.0050 (-0.16)	.0162* (1.68)
Firm used a consultant in year t that provided other services	.0527* (1.63)	.0056 (0.63)	.0069 (0.25)	.0130 (1.55)
Control Variables (common to all Panel A regressions)	Yes	Yes	Yes	Yes
Year/Industry/CEO Effects?	Yes/Yes/No	Yes/Yes/No	Yes/No/Yes	Yes/No/Yes
R ²	.3258	.2108	.8190	.6683
Sample size	8593	8593	8593	8593

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 in columns 1 and 2. Ln(Total Pay) and industry firm effects are defined in Table 2. Equity-to-total pay, is the CEO's grant date value of restricted stock and stock options, divided by total pay.

Table 4 Coefficients of OLS regressions Showing the Effect of Changes in the Use of Compensation Consultants on Changes in the Level and Structure of CEO Pay in the 2008-2011 Period

Dependent Variables:	$\Delta \text{Ln}(\text{CEO Pay})$	$\Delta \text{Equity-to-Total Pay}$
	(1)	(2)
Intercept	.0525*** (3.74)	.0213*** (4.60)
Use of consultant indicators		
Firm started using consultants	-.0125 (-0.22)	.00478 (0.33)
Firm started using consultants in the prior year	.0330 (0.63)	.0159 (0.93)
Firm stopped using consultants	-.0321 (-0.66)	-.0066 (-0.34)
Firm stopped using consultants in the prior year	-.0024 (-0.05)	-.0190 (-1.03)
$\Delta \text{Ln}(\text{Revenues})_{t-1}$	.0572 (1.34)	.0000 (0.00)
$\Delta \text{Ratio of Book-to-Market Assets}_{t-1}$	-.2902*** (-4.51)	-.0719*** (-3.26)
$\Delta \text{Shareholder Return}_{t-1}$	-.00011 (-0.08)	-.00078* (-2.15)
$\Delta \text{New CEO (Dummy)}$	-.0092 (-0.32)	.0570*** (5.78)
$\Delta \text{CEO is Chairman (Dummy)}$	.0840 (1.69)	.0170 (1.45)
$\Delta \text{Percentage shares owned by CEO}$	-1.473** (-2.19)	-.1860 (-1.18)
Risk Metrics Governance Data Not Available Indicator	-.0312 (-1.44)	-.0030 (-0.56)
$\Delta \text{Number of Directors on Board}$	.0046 (0.33)	.0008 (0.24)
$\Delta \text{\% Independent Directors}$	-.0752 (-0.45)	.0463 (0.79)
$\Delta \text{\% Independent Directors Age 70 or older}$	.0232 (0.25)	-.00070 (-0.24)
$\Delta \text{Average \# Public Boards for Independent Directors}$	-.0207 (-0.26)	.0227 (1.58)
$\Delta \text{\% Independent Directors appointed after CEO hired}$	-.0413 (-0.57)	-.0579 (-2.62)
$\Delta \text{Dual class stock indicator}$	.0898 (0.87)	.0423 (1.91)
$\Delta \text{Classified board indicator}$	.0317 (0.72)	.0015 (0.09)

Year Effects?	Yes	Yes
R ²	.0134	.0272
Sample size	7052	7052

Note: t-statistics in parentheses (based on standard errors clustered by firm); *, ** and *** denote significance at a 0.10, a 0.05 and a 0.01 level. Pay variables are defined in Tables 2 and 3.

Table 5 Differences-in-Differences Analysis of the Effect of Using Consultants on the Levels and Structure of CEO Pay in the 2007-2011 Period

<i>Tests:</i>	Effect of Consultants on CEO pay	
<i>Propensity-Score Matched Samples :</i>	<ul style="list-style-type: none"> • <u>Treatment Firms</u>: Firms without a consultant in 2006 that started (and did not stop) using consultants during the 2007- 2011 period • <u>Matched Firms</u>: Firms without a consultant in the 2006-2011 period. These are matched to treatment firms using propensity scores from the logit in Table 5, Column 4 on the year before the event period (defined below). • <u>Event Period</u>: Period starting on the year when a treatment firm started using consultants 	
Dependent Variables:	Ln(CEO Pay)	Equity-to-Total Pay
	(1)	(2)
Intercept	5.435*** (7.63)	0.267 (0.95)
Treatment Firm Indicator	-0.092 (-0.50)	-0.064 (-1.04)
Event Period Indicator	-0.043 (-0.27)	-0.058 (-0.83)
Treatment Firm Indicator × Event Period Indicator	0.135 (0.56)	0.132* (1.73)
Ln(Beginning of year sales)	0.297*** (5.07)	0.046*** (2.52)
Beginning of year book-to-market assets ratio	0.281 (0.79)	0.142 (1.19)
Shareholder return (over previous 3 years)	-0.028 (-0.24)	-0.071 (-1.33)
Monthly return volatility (over previous 48 months)	0.032 (0.05)	-0.267 (-1.54)
New CEO	-0.203 (-0.83)	0.024 (0.30)
CEO is chairman	0.447** (1.95)	0.038 (0.60)
Percentage shares owned by the CEO	-1.325 (-0.83)	-0.160 (-0.48)
Number of directors	-0.032 (-0.90)	-0.047*** (-2.86)
Percentage of independent directors	1.092* (1.75)	0.133 (0.59)
Percentage of directors 70 years or older	-0.411 (-0.91)	-0.265** (-2.07)
Percentage of busy directors	-0.031 (-0.12)	0.191** (1.99)
Percentage of directors hired after the CEO took office	-0.097 (-0.25)	-0.015 (-0.14)

Dual class stock indicator	-0.492 (-1.37)	-0.202** (-2.18)
Classified board indicator	-0.075 (-0.39)	0.021 (0.39)
Year Effects?	Yes	Yes
Industry Effects?	Yes	Yes
R ²	0.285	-
N	379	379

Note: t-statistics in parentheses are estimated using robust standard errors. The standard errors are clustered by firm. *, ** and *** denote significance at a 0.10, a 0.05 and a 0.01 level. Column (1) shows results of OLS regressions, while Column 2 shows results of Tobit regressions bounded at 0 and 1. Pay variables and industry controls are defined in Tables 2 and 3.

Table 6 Coefficients of Logistic Regressions Showing the Effect of the Level and Structure of CEO Pay in Previous Years on the Firm's Decision to Use Compensation Consultants (2006-2011)

	<i>Dependent Variable: Firm will use a consultant in year t+1</i>			
	<i>Sample: Firms not using consultants from 2006 through year t</i>			
	(1)	(2)	(3)	(4)
Intercept	-4.261*** (-3.95)	-.5014* (-1.65)	-3.887*** (-3.50)	-4.672 (-1.53)
Ln(Total Pay) _t	.2095** (2.06)	–	.1325 (1.27)	–
Predicted Ln(Total Pay) _t	–	.3624 (0.62)	–	.2919 (0.50)
Residual Ln(Total Pay) _t	–	.2071** (2.03)	–	.1297 (1.24)
Restricted Stock Grants to Top 5	–	–	.3421* (1.84)	.3446* (1.85)
Performance Share Grants to Top 5	–	–	.4526* (1.90)	.4498* (1.89)
Stock Option Grants to Top 5	–	–	.6679*** (3.45)	.6676*** (3.45)
Ln(Revenues) _t	-.0480 (-0.69)	-.0983 (-0.49)	-.0827 (-1.16)	-.1349 (-0.67)
Ratio of Book-to-Market Assets _t	.5564 (1.59)	.5917 (1.59)	.6104* (1.71)	.6486* (1.70)
Shareholder Return _t	-.1503 (-0.83)	-.1382 (-0.75)	-.1215 (-0.64)	-.1080 (-0.56)
New CEO (Dummy) _t	.0068 (0.03)	.0224 (0.08)	.0020 (0.01)	.0178 (0.07)
CEO is Chairman (Dummy) _t	.1323 (0.64)	.1019 (0.43)	.1492 (0.72)	.1174 (0.49)
Percentage shares owned by CEO _t	-5.542*** (-3.00)	-5.094** (-2.04)	-5.325*** (-2.87)	-4.860** (-1.94)
Risk Metrics Governance Data Not Available Indicator _t	1.647* (1.82)	1.550 (1.59)	1.400 (1.51)	1.297 (1.30)
Number of Directors on Board _t	.0268 (0.50)	.0237 (0.43)	.0240 (0.43)	.0207 (0.36)
Number of Directors on Compensation Committee _t	.1681 (1.50)	.1681 (1.50)	.1586 (1.39)	.1585 (1.39)
% Independent Directors _t	1.891* (1.98)	1.856* (1.93)	1.620* (1.67)	1.583 (1.62)
% Independent Directors Age 70 or older _t	-1.255* (2.45)	-1.240** (2.41)	-1.295** (-2.49)	-1.279** (-2.45)
Average # Public Boards for Independent Directors _t	.1486 (0.77)	.1166 (0.51)	.1398 (0.72)	.1061 (0.46)

% Independent Directors appointed after CEO hired _t	-.2357 (-0.73)	-.2397 (-0.75)	-.2005 (-0.62)	-.2047 (-0.63)
Dual class stock indicator _t	-.0881 (-0.26)	-.0955 (-0.28)	-.1273 (-0.37)	-.1360 (-0.40)
Classified board indicator _t	.3622* (1.75)	.3661* (1.76)	.3954* (1.89)	.3995* (1.90)
Year Controls	Yes	Yes	Yes	Yes
Industry Controls	Yes	Yes	Yes	Yes
Sample size	914	914	914	914

Note: Asymptotic t-statistics in parentheses; *, ** and *** denote significance at a 0.10, a 0.05 and a 0.01 level. Pay variables and industry controls are defined in Tables 2 and 3. Predicted and Residual values of Ln(Total Pay) are estimated using year-by-year OLS regressions of Ln(Total Pay) on all the control variables presented in Table 2 (i.e., lag sales, lag book-to-market assets ratio, prior-year shareholder return, presence of a new CEO, CEO is chairman indicator, percentage of shares owned by the CEO, number of directors, percentage of independent directors, percentage of directors 70 years or older, percentage of busy directors, percentage of directors hired after the CEO, dual class stock indicator, classified board indicator and industry dummies).

Table 7 Sample Medians (or Means*) for Selected Variables, by Consultant Usage

	Firms Never Using Consultants	Firms using consultant in t+1 but not in t	Firms using consultant in t but not in t+1	Firms Always Using Consultants
	(1)	(2)	(3)	(4)
Number of Firms	113	348	243	1,033
Number of Firm-Years	656	388	276	6,005
Compensation Variables				
Total Pay (\$mil)	\$1.28	\$2.19	\$1.91	\$4.62
Regression-based size-and-industry adjusted Pay Percentiles	38 th	46 th	41 st	54 th
Ratio of Equity-Pay-to-Total Pay	11.2%	34.8%	33.9%	52.5%
CEO Stock (excl. options) over common	1.67%	0.57%	0.60%	0.25%
CEO is Chairman*	45.1%	41.0%	42.9%	52.8%
Restricted Stock Grants to Top 5*	40.1%	54.6%	58.0%	70.4%
Performance Share Grant to Top 5*	13.9%	28.6%	34.1%	51.4%
Option Grant to Top 5*	42.1%	58.5%	60.1%	70.0%
Governance Variables				
RiskMetrics Data Not Available	28.4%	24.0%	30.4%	14.7%
Number of Directors	7.0	7.0	7.0	9.0
Number on Compensation Committee	3.0	3.0	3.0	4.0
% Independent Directors	60.0%	71.4%	66.7%	80.0%
% Independent Directors > Age 69	20.0%	12.5%	0%	12.5%
Avg. Public Boards per I-Director	1.2	1.5	1.4	1.8
% I-Directors appointed after CEO	40.0%	28.6%	20.0%	33.3%
Dual-Class Stock*	10.4%	7.2%	6.2%	4.3%
Classified Boards*	28.7%	42.0%	38.3%	41.6%
Economic Variables				
Sales (\$mil)	\$638.9	\$775.2	\$692.4	\$2,306.6
Book-to-market assets ratio	64.5%	67.3%	72.2%	73.1%
One-year Shareholder Return	3.1%	6.3%	-1.8%	6.5%

Summary of Wilcoxon tests for differences in median values between consultant usage subsamples (columns): (to come)