

# Inside the Black Box: The Role and Composition of Compensation Peer Groups<sup>\*</sup>

Michael Faulkender<sup>†</sup>  
Visiting Assistant Professor of Finance  
Kellogg School of Management, Northwestern University

Jun Yang<sup>‡</sup>  
Assistant Professor of Finance  
Kelley School of Business, Indiana University

## Abstract

This paper documents the features of compensation peer groups and demonstrates that they play a significant role in understanding variation in CEO compensation. We hand-collect a sample of 83 (373) of the S&P 500 firms that provided explicit lists of compensation peer firms in their proxy statements in fiscal year 2005 (2006). Results show that inclusion of the group's median compensation more than doubles the portion of the variation in CEO salary that can be explained, dominating measures such as size and firm performance. Univariate analysis suggests that firms forego lower paid potential peers in their same industry in favor of higher paid peers outside of their industry when constructing the peer groups. In multivariate regression analysis, this result carries through as we find that even after controlling for industry and size, peer group composition is significantly affected by the level of compensation of the potential peers. Firms appear to select highly paid peers to justify greater CEO compensation and this effect is strongest in firms where the CEO is the chairman of the Board, when the firm is larger, has greater market share, is more complex, has poorer governance, and when Towers Perrin is the firm's compensation consultant.

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<sup>†</sup> Corresponding author. Address: Kellogg School of Management, Finance Department, 2001 Sheridan Road, Evanston, IL 60208. Telephone: (847)491-5861. Email: m-faulkender@kellogg.northwestern.edu

<sup>‡</sup> Address: 1309 E 10<sup>th</sup> Street, Bloomington, IN 47405. Telephone: (812)855-3395. Email: jy4@indiana.edu

## 1. Introduction

Recent growth in CEO compensation, especially the dramatic increases for top paid CEOs, have led many to question whether CEOs have too much influence over their own compensation. The pay package of \$187 million for former New York Stock Exchange Chairman Richard Grasso, and the \$210 million golden parachute for the ousted, and arguably mediocre performing, former Home Depot CEO Robert Nardelli generated notable press coverage and have led researchers to examine who sets CEO pay. The academic literature on this issue is exploding, but has not reached a consensus. Many view the pay increases as a sign of CEOs' abuse of power,<sup>4</sup> but others argue that the compensation simply reflects market equilibrium where the board optimally structures CEO pay.<sup>5</sup>

Theoretically, the pay setting process is quite transparent in the US. For a publicly traded company, the initial pay recommendations typically come from the company's human resources department, often working in conjunction with outside compensation consultants. If accepted by the compensation committee, the recommendations are then passed to the full board of directors (BOD) for approval. This process seems at least to provide the firm's management with opportunities to influence CEO pay.<sup>6</sup> To address this potential influence, the NYSE instituted a new rule that took effect in 2004 stating that "the compensation committee should be composed entirely of independent directors" and "if a compensation consultant is to assist in the evaluation of director, CEO or executive officer compensation, the compensation committee charter should give that committee sole authority to retain and terminate the consulting firm, including sole authority to approve the firm's fees and other retention terms."<sup>7</sup> However, even with this new rule in place and independent directors who "approach their jobs with diligence, intelligence, and integrity", we are still likely to observe board actions that tend to favor the CEO given a range of market data on competitive pay levels (see Murphy 1999).

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<sup>4</sup>See, for example, Bebchuk and Fried (2003) and Bertrand and Mullanaithan (2001).

<sup>5</sup> See, for example, Murphy and Zbojnik (2004), Oyer (2004), Baranchuk, MacDonald and Yang (2006), Gabaix and Landier (2008), and Kaplan and Rauh (2006).

<sup>6</sup> The empirical evidence on whether CEOs influence their pay setting is somewhat mixed. Focusing on the role of compensation committees, O'Reilly, Main, and Crystal (1988), Main, O'Reilly, and Wade (1995), and Newman and Mozes (1999) suggest the existence of the influence; while Anderson and Bizjak (2003) suggest the opposite.

<sup>7</sup> NYSE Regulation/Listed company manual/Section 303A: Corporate Governance Standards (Nov. 2004).

To further enable compensation transparency, the SEC has issued a new disclosure requirement that came into effect for fiscal years ending on or after December 15, 2006 in which firms must state:

“whether the registrant engaged in any benchmarking of total compensation, or any material element of compensation, identifying the benchmark and, if applicable, its components (**including component companies**).”

August 29, 2006, SEC final rules 33-8732a, **Item 402(b)(2)(xiv)**

In this study, we seek to further our understanding of executive compensation by examining the role and composition of these compensation peer groups.<sup>8</sup> Using hand-collected data from proxy statements of the list of these peer groups for S&P 500 firms in 2005 and 2006, our first objective is to document the extent to which the level of compensation of the peer group members explains observed compensation amounts.<sup>9</sup> We are interested in not only the statistical significance of peer group compensation, but also an estimate of how much incremental explanatory power is generated when peer group compensation is added to our traditional determinants of executive compensation.

We find that the median and 75<sup>th</sup> percentile of compensation for the peer groups generate significant incremental explanatory power in understanding cross-sectional variation in observed CEO pay. The inclusion of this measure in our regressions of salary, total cash compensation, and total compensation respectively greatly reduces and sometimes eliminates the statistical significance of the estimated coefficient on our measure of firm size and the adjusted R-squared more than doubles in some of the specifications after adding these variables. We confront these results with numerous alternative measures of benchmark compensation, such as industry median pay and lagged CEO pay, and find that the median compensation of the peer group retains its statistical and economic influence on the level of CEO compensation.

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<sup>8</sup>Lewellen, Park and Ro (1996) find self-dealing behavior of firms' selection of performance peer groups. In particular, they document that the industry and peer-company stock return benchmarks, and broader market indices, chosen by management for those comparisons are downward biased, thereby overstating relative reporting-firm performance.

<sup>9</sup> Some firms began voluntarily disclosing their compensation peer groups as early as 2004 but not until 2005 were there a sufficient number of them reporting such that an empirical examination of these groups can be conducted.

In light of this economically significant role that these peer groups play, the second goal is to document the characteristics of the peer groups. We would expect that firms in the same industry and of similar size would be obvious peer group members and this paper examines whether this is indeed the case. Additionally though, are there factors aside from relative size and industrial focus that explain peer group membership, and that therefore influence overall managerial compensation?

Examining the composition of these peer groups, we see that firms in the same industry and similar in size are more likely to be included in the compensation peer group. However, we also find that even after controlling for industry and size, the level of compensation of the potential peer is also statistically significant in determining the likelihood of being chosen as a compensation peer, suggesting that factors seemingly unrelated to the CEO's reservation wage appear to also affect peer group composition.<sup>10</sup> In other words, compensation committees seem to be endorsing compensation peer groups that include unrelated firms, possibly because such firms would potentially ratchet up the level of pay for the CEOs. The effect is stronger for S&P Mid-Cap 400 peers than for S&P 500 peers, suggesting that S&P 500 peers may be more similar to the firm on other dimensions but that when an S&P Mid-Cap 400 firm is chosen as a peer, it is more likely due to its high CEO compensation. Our results complement those of Bizjak, Lemmon and Naveen (2007) that CEOs whose pay is below the median pay level of their counterparts in firms of similar size and industry receive raises that are larger in both percentage and dollar terms.

One interpretation of these findings is that when firms are more complex, a well-functioning labor market would likely generate the result that the CEO would receive higher compensation. Boards justify this higher compensation by selecting higher paid peers. An alternative hypothesis is that entrenched CEOs are more likely to have more power in the firm to influence their own compensation. We therefore extend our results by estimating which firm characteristics appear to significantly affect this sensitivity of compensation peer group membership to potential peer pay, examining the roles of the firm's operational complexity, corporate governance, shareholder proposals, and the

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<sup>10</sup> Possibly to justify selection of such firms as members of the compensation peer group, firms often state that they choose firms with which they "compete for managerial talents."

choice of the compensation consultant. By relating this selection sensitivity (to peer pay) to such characteristics, we hope to provide evidence that will further inform the literature's debate on the extent to which rising CEO compensation is resulting from CEO power versus the efficient outcome of the CEO labor market.

We find evidence that is arguably consistent with both perspectives. Firms at which the CEO is also chairman of the Board of Directors are firms at which the sensitivity to potential peer pay is significantly higher, as well as when the firm is larger, has more business segments, has higher market share in its industry, and when its industry is more concentrated. Many of these findings could be argued as consistent with the firm being more complicated to manage, employing more talented CEOs, therefore granting higher CEO compensation. However, we also find that poorer corporate governance in general increases the estimated sensitivity of membership in compensation peer group to peer pay, consistent with the power hypothesis.

Additionally, we document that the sensitivity to peer pay is greater for S&P 500 peers, but lower for S&P Mid-Cap 400 peers, where there have been more shareholder proposals demanding limitations on CEO compensation, particularly where those resolutions have received significant shareholder support. The differences in the sensitivities across the two indices suggests that perhaps firms are responding to these proposals by replacing highly compensated small firms (the S&P 400 Mid-Cap firms) on the peer group with highly paid large firms (the S&P 500 firms). We also separately estimate the incremental sensitivity of compensation peer group choice to potential peer pay for the top five compensation consultants and find this effect to only be significantly higher when Towers Perrin is the compensation consultant, even though the firms they serve do not appear to be significantly different from the other firms in our sample.

The rest of the paper is organized as follows. Section 2 details the empirical strategy that we will follow in exploring the role of compensation peer groups. The data that we use is outlined in Section 3. The role of compensation peer groups in explaining observed CEO pay is covered in Section 4. Section 5 discusses the factors determining the composition of these peer groups as well as analysis of cross-sectional variation in these factors. Section 6 concludes and Appendix includes definition of variables and a list of 83 disclosing firms in fiscal year 2005.

## 2. Empirical Strategy

We proceed in two steps. The first step is to examine the incremental power generated from including peer compensation in a regression of CEO compensation on firm characteristics previously documented in the literature as explaining observed compensation. We begin by running a baseline specification on the 426 CEO-year's compensation for which we have the names of the compensation peer group. Specifically, we run the following regression:

$$\begin{aligned} \text{CEO Compensation}_{i,t} = & \alpha + \beta_1 * \log(\text{Market Assets}_{i,t}) + \beta_2 * \text{ROA}_{i,t} + \beta_3 * \text{ROA}_{i,t-1} \\ & + \beta_4 * \text{StockRet}_{i,t} + \beta_5 * \text{StockRet}_{i,t-1} + \beta_6 * \text{Volatility}_{i,t} \\ & + \beta_7 * (\text{Market Leverage}_{i,t}) + \beta_8 * D_t(\text{Year is 2006}) + \varepsilon_{i,t} \end{aligned}$$

where our measures of compensation will separately be salary, total cash compensation, and total compensation (TDC1). As a measure of the size of the firm, we take the natural log of the firm's market value of its assets by taking the book assets (ExecuComp item ASSETS) and subtracting the value of the firm's common equity (COMMEQ) and adding the firm's equity market capitalization (MKTVAL) in the corresponding fiscal year.<sup>11</sup> We also include measures of the firm's profitability (ROA), the performance of the firm's stock over the current and previous fiscal year (TRS1YR), and the volatility of the firm's stock over the previous 60 months (BS\_VOLAT). We also include the market leverage ratio of the firm during the corresponding fiscal year, computed using total debt values from COMPUSTAT and also include a time dummy variable denoting if the observation is for the 2006 fiscal year.<sup>12</sup>

Once we have the initial values estimated, we then add a variable containing either the median or 75<sup>th</sup> percentile of peer compensation into the specification. Our understanding of practice is that firms, and their compensation consultants, use the most recent information on peer compensation when constructing compensation peer groups. Therefore, we match time periods as follows: when the firm's fiscal year end is the same or after that of the peer, we use the peer compensation for the same fiscal year, otherwise

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<sup>11</sup> We have alternatively used sales and equity market capitalization as our measure of size. The results are not significantly different when one of those is instead used.

<sup>12</sup> We have also ran all of our regressions separately for 2005 and 2006 and our results remain to hold in both years.

we use the peer compensation from the previous fiscal year.<sup>13</sup> Our interest in the results extends beyond merely interpreting the coefficient, but also to looking at the increase in R-squared that results from inclusion of these measures, as well as the impact it has on the other coefficients in the regression.

To ensure that our results are coming from the role of the compensation peer group and not merely capturing dynamics of the CEO labor market that our baseline set of controls may be omitting, we run a number of robustness checks including measures of median CEO compensation in the firm's 3-digit SIC code, the median compensation of firms within 25% to 400% of the size of the corresponding firm and in the same 3-digit SIC code (similar to the grouping in Bizjak, Lemmon and Naveen (2007) where they separate into two size groups within each industry), lagged CEO compensation at the corresponding firm, and an industry fixed effects specification.

Given the large impact the peer compensation will be shown to have, and therefore recognizing that the important economic question is the composition of the compensation peer group, our focus then turns to an examination of the determinants of membership in that group. What are the factors that determine whether or not a firm is included in the compensation peer group? To conduct such an examination, one has to not only have the list of firms selected for peer group membership but also those not chosen. While there are more than 5000 firms listed on COMPUSTAT in 2005 and 2006 respectively that are arguably potential peers, we limit the set of unselected potential peers to the firms in the S&P 500 plus the S&P Mid-Cap 400 during the corresponding year since they are of similar size and visibility, as well as the fact that we have compensation data for this subset of potential peer group members. Therefore, for our specifications estimating the characteristics driving selection of the peer group, the potential peers consist of the other 899 firms in these two indices. Chosen peers outside of the S&P 500 or the S&P Mid-Cap 400 are omitted from the choice analysis so that we

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<sup>13</sup> For robustness, we also analyzed specifications in which only lagged peer compensation was used to ensure that the necessary information was always available at the time of peer selection. The results were not significantly different.

do not induce a bias from including only those firms outside these two indices that get chosen.<sup>14</sup>

Empirically, we estimate a probit regression of whether the potential peer is included in the corresponding firm's compensation peer group on a baseline set of controls that have been previously documented to explain cross-sectional variation in compensation. An observation is a pair of firms corresponding to the firm for which we have compensation peer group membership and a potential peer member. Specifically, we estimate the following discrete choice model:

$$\begin{aligned} \text{Chosen As Peer}_{ijt} = \Phi[ & \alpha + \beta_1 * D(\text{Same Industry}_{ijt}) + \beta_2 * \text{Positive Asset Difference}_{ijt} \\ & + \beta_3 * \text{Negative Asset Difference}_{ijt} + \beta_4 * D(\text{Peer is Larger}_{ijt}) \\ & + \beta_5 * D(\text{Peer is Dow 30}_{jt}) + \beta_6 * D(\text{Peer is S\&P 500 firm}_{jt}) \\ & + \beta_7 * D(\text{Year 2006}_t) ] + \epsilon_{ijt} \end{aligned}$$

where the dependent variable takes the value one if the potential peer (j) is chosen to be a member of the corresponding firm's compensation peer group (i) in year t (t in {2005, 2006}). As controls, we include whether the potential peer is in the same 3-digit SIC as the firm, the relative size differences between the potential peer and the firm (without forcing the sensitivities to size for larger and smaller peers to be the same), dummy variables for whether the peer is a Dow 30 firm and an S&P 500 firm respectively, and a year dummy.<sup>15</sup> We then add two variables, one for the other S&P 500 firms and another for the S&P Mid-Cap 400 firms, measuring the potential peer firm's compensation, following the same timing algorithm used for constructing median peer group pay. If the firm wanted to raise the CEO's compensation, whether for reasons of merit or power, but still justify that the CEO is making the median of his peers, the solution is to select peers that have relatively high compensation themselves. We estimate the sensitivity to pay separately for members of the two indices because the reasons for their inclusion may differ across the two subsets of firms and we therefore do not want to force the sensitivities of selection to compensation to be the same. If the coefficients

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<sup>14</sup> In unreported results, we also limited our potential peer set to the other 499 firms in the S&P 500 as well as to the S&P 500 plus the chosen non-S&P 500 peers. The primary results using these alternative potential peer groups were not significantly different from the ones we present below.

<sup>15</sup> In estimating the standard errors, we follow Petersen (2008) and cluster them at both the firm and peer level, arguing that errors in estimating peer group inclusion are likely to be correlated for a particular firm as well as for a particular peer.

corresponding to these variables were found to be significantly positive, it would suggest that even after controlling for size and industry, some peers are chosen because they would raise the median for the group, enabling the firm to more easily justify higher pay.

Having documented that this practice is occurring, we estimate a series of specifications in which we interact these sensitivities to potential peer pay with measures of performance, complexity, governance, CEO power, shareholder proposals, and the identity of the compensation consultant. Our objective is to see whether peer group selection is more sensitive to potential peer pay in exactly the firms where the CEO may command higher pay due to differences in the required CEO skill set or alternatively because the CEO is more likely to be able to successfully extract rents for himself.

### **3. Data Description**

Our primary dataset was generated by hand-collecting the names of the compensation peer groups for the members of the S&P 500 in 2005 and 2006 off of their SEC DEF-14A filings that are available on EDGAR. For 2005, of those 498 firms (Fannie Mae does not have an available CIK number and Apollo Group Inc. does not provide a DEF-14A statement), 76 of them gave a detailed list of the firms that are in the compensation peer group. For example, Dynegy Inc. stated:

“We believe that these surveys, together with our independent compensation consultant's analysis of the proxy data for our peer companies, provide a comprehensive compensation competitiveness evaluation. Our peer group for the fiscal year ended December 31, 2005, which we refer to as the ‘2005 Peer Group,’ comprises AES Corporation; Calpine Corporation; Duke Energy Corporation; El Paso Corporation; NRG Energy, Inc.; and Reliant Energy, Inc.”

Another 7 stated that their peer group was comprised of exactly the firms that made up a particular index. For example, Quest Diagnostics, Inc. stated:

“In 2005, the Committee evaluated the competitiveness of senior management's total compensation relative to the pay of executives at a peer group comprising of the Standard & Poors’ 500 Healthcare Equipment & Services Index, the same peer group used for total

shareholder return comparison purposes in the performance graph shown on page 35.”<sup>16</sup>

In other words, 83 of the 498 S&P 500 firms in 2005 provided an explanation that enabled us to determine exactly which firms were in the peer group, and we were able to estimate median peer pay for 81 of them. In the appendix, we discuss the potential sample selection issues associated with voluntary disclosure for the 2005 subsample. For the 2006 group, disclosure was required for those firms that use explicit peer groups to set executive compensation and whose fiscal year ended after December 15, 2006 so we have 373 of the S&P 500 that disclosed sufficient information for us to construct peer group compensation. The peer groups in 2006 have more members, often due to the inclusion of peers in the general group.

We supplement this hand-collected data with measures of firm and potential peer compensation, size, industry, performance measures (listed in the previous section), and leverage provided in the ExecuComp and COMPUSTAT databases. Summary statistics of CEO compensation and firm financial characteristics are provided in Table 1 for the combined panel of observations. The median CEO earned a salary of \$1 million, with the mean being slightly higher, while total cash compensation were larger and had much greater variation with a median total cash compensation of \$2.918 million and a mean of \$4.190 million.<sup>17</sup> Total compensation was much higher at a median of \$8.536 million and a mean of \$11.543 million.<sup>18</sup> Because our analysis in this first section is only of S&P

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<sup>16</sup> The *Standard & Poors' 500 Healthcare Equipment & Services Index* contains the following 30 firms: Aetna, AmerisourceBergen Corporation, Bard (CR) Inc, Bausch & Lomb, Baxter International Inc, Becton Dickinson & Co, Biomet Inc, Boston Scientific Corporation, CIGNA Corporation, Cardinal Health Inc, Caremark Rx, Coventry Health Care, Express Scripts, Health Management Association, Hospira Inc, Humana, IMS Health Inc, Laboratory Corp of America Holding, Manor Care Inc, McKesson Corp, Medco Health Solutions, Medtronic Inc, Patterson Cos Inc, St Jude Medical, Stryker Corporation, Tenet Healthcare Corporation, United Health Group Inc, Varian Medical Systems, Wellpoint Health Networks, and Zimmer Holdings.

<sup>17</sup> Beginning in 2006, *ExecuComp* altered the definition of some compensation variables. In particular, the bonus payment for many firms is reported under non-equity incentives (*noneq\_incent*) or is split between bonus and non-equity incentives. Following numerous discussions with Standard & Poor's, we have concluded that the closest match of cash pay across 2005 and 2006 is to use *salary* plus *bonus* plus long-term incentive pay (*LTIP*) for 2005 and to use the sum of those three items plus non-equity incentives for 2006. Although under the conventional definition of total cash pay, long-term incentive pay was not included, to generate the greatest consistency across our sample period, it is included in our measure of total cash pay.

<sup>18</sup> In 2005, *TDC1* was calculated as follows: *Salary + Bonus + Other Annual + Restricted Stock Grants + LTIP Payouts + All Other + Value of Options Granted*. In 2006, *TDC1* was calculated as follows: *Salary +*

500 firms, our sample is comprised of relatively large, strong performing, and reasonably low volatility firms. Not surprisingly, the median and 75<sup>th</sup> percentile of peer compensation have summary statistics that are rather similar to the summary statistics of the corresponding compensation measures for the firms.

Looking at the structure of the compensation peer groups, as provided in Panel C of Table 1, the average (median) peer group is comprised of nearly 17 firms (15 firms) and nearly 34% (25%) of them are in the same 3-digit SIC industry as the firm itself. Most firms are smaller than their peers as seen by the negative difference corresponding to most of the statistics regarding differences in the market value of assets. Since size and industry have previously been documented to predict compensation, as well as the theoretical argument that the outside opportunity for a CEO would likely be a senior position in a firm of similar size and probably in the same industry, it is not surprising to see that these are important elements to examine when evaluating the make-up of these groups. The average firm appears to slightly underperform their peers on an accounting basis but their stock market performance shows that they outperform their peers over the last one-, three-, and five- year periods.

We use a variety of firm characteristics to explore differences in firm's construction of peer groups in the areas of firm performance, complexity, corporate governance, and shareholder proposals. Given the large number of variables that we use, explanations for how these items have been constructed are relegated to the appendix.

#### **4. Role of Peer Compensation on CEO Pay**

Our primary objective is to understand the role of compensation peer groups on the observed level of CEO pay so we begin with a baseline estimation of the determinants of the level of compensation for CEOs among the firm-years for which we have peer group information.<sup>19</sup> As shown by the results located in the first column of Table 2, CEOs have higher salaries at larger firms that have less leverage and that generate higher

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*Bonus + Non-Equity Incentive Plan Compensation + Value of Options Granted + Grant-Date Fair Value of Stock Awards + Deferred Compensation Earnings Reported as Compensation + Other Compensation,* which is more or less comparable to the value in 2005.

<sup>19</sup> To minimize the effect of outliers in the estimation, we follow the literature (e.g. Murphy (1999)) and use the natural log of one plus the corresponding compensation measure as our dependent variable and use the natural log of one plus the asset market value of assets as an independent variable capturing the effect of firm size.

accounting returns, consistent with results previously documented in the literature. Only 13.2% of the cross-sectional variation in CEO salary is explained by the baseline model. For the baseline cash compensation and total compensation estimates for the subset of firms that disclosed their compensation peer groups (results located in columns 4 and 7 respectively), greater CEO pay was associated with larger firms and higher equity returns. Among these compensation observations, 35.5% and 29.2% respectively of the variation is explained.

The results from adding the median level of compensation for the members of the peer group to the regression specification, located in column 2, show that peer salary is indeed an important consideration in understanding the level of CEO salary. The coefficient itself is highly significant, statistically at better than the one percent level, and economically it suggests that the CEO of the corresponding firm earns an extra 0.89% for each 1% increase in the median salary payment among its compensation peers, all else equal. In addition, notice that the adjusted R-squared of the regression more than doubles to 33.3% and that the estimated coefficient on size is no longer statistically significant and has fallen in magnitude by 74%. Obviously that does not mean that size is unimportant in CEO pay since it will certainly be a factor in choosing the peers. However, what the results do indicate is that size does not play a role once its effect on selecting compensation peers has been controlled for. Median peer cash compensation (column 5) and median peer total compensation (column 8) also are significant determinants of those corresponding compensation levels for firm CEOs, although not as dominant as in the regressions for CEO salary.

In column 3, we repeat the analysis using the 75<sup>th</sup> percentile of CEO salary for the peer group and find results similar to for the median. The adjusted R-squared is slightly smaller than for median salary and the coefficient suggests that for a 1% increase in the 75<sup>th</sup> percentile of peer group salary, the corresponding CEO's pay increases by 0.64%. We find similar statistical effects as we documented for the median levels when we re-examine cash compensation (column 6) as well as total compensation (column 9). Overall, these results demonstrate that the compensation of the peer groups does play an important role in understanding the observed variation in CEO compensation.

It could be argued that compensation of the peers is not itself influencing CEO compensation; rather it is instead serving as a proxy for market conditions not captured in the baseline specification. To address that issue, we re-examine the effect of peer compensation on CEO salary, adding three alternative measures of compensation in the CEO labor market to determine whether the effects we have so far documented are robust to this alternative explanation. The first is a measure of the salary of those CEOs in the same 3-digit SIC code that are within 25% and 400% of the market value of the assets of the corresponding firm. The second measure is CEO salary for all firms in the same 3-digit SIC code (that are available in ExecuComp) and the third measure is the lagged CEO salary for the corresponding firm. The results of this analysis are located in Table 3.

The addition of each of these three variables individually to our baseline specification (columns 3, 5, and 7 respectively) demonstrates that industry labor market conditions do play a role in understanding CEO salary, even after controlling for firm characteristics. All three coefficients corresponding to these added variables are statistically significant at better than five percent, two of them at better than one percent, and the adjusted R-squared rises beyond the estimate in the baseline specification (column 1). When we add median peer salary to these specifications (column 4, 6, and 8 respectively), the coefficient on median peer pay retains its statistical and economical significance that we documented in the previous table. In all three cases, the estimated adjusted R-squared increases significantly upon adding median peer pay, even after controlling for CEO labor market conditions. Notice that even after including the previous firm-year's CEO salary in the specification, an increase in median peer salary of 1% increases the corresponding CEO's salary by 0.642% (column 8). Additionally, the R-squared increases from 55.8% to 65.9%. These results indicate that peer groups are indeed influencing observed levels of CEO compensation beyond serving as controls for the industry's CEO labor market.

As a final robustness check, we estimate the regression using 2-digit industry fixed effects (column 9), which effectively allows for the existence of variation in the base salary level across different industries. The specification adding median peer group salary demonstrates that a 1% increase in peer salary increases the corresponding firm-

year's CEO salary by 0.675%. Statistically, this effect is significant at greater than one percent and the variation in salary explained by the covariates increases more than 50% following its inclusion.

While the increase in explanatory power arising from inclusion of measures of compensation peer group pay is impressive, one might question why we do not find even greater statistical significance. There are a couple of potential reasons. First, while some firms specifically state that they set compensation at the peer group median, others merely use it as a benchmark and adjust up or down based on other factors. Others state that they use alternative percentiles or percentile ranges in determining pay, an effect that will add noise to our estimation. Second, because the firms disclose the list of peers, but not of which fiscal year they are using peer pay information, we may be inducing measurement error via the time matching criteria that we are using. Third, some of the firms that are listed as peers are private firms or firms that have merged and that therefore did not publicly disclose their compensation, even though the firm through its compensation consultant may have that data. Our estimates of the medians and 75<sup>th</sup> percentiles are for the subset of peers for which we were able to identify CEO compensation.

Overall, the results indicate that variation in CEO compensation is much better understood when we include the median pay of the firm's compensation peer group. When included in regressions examining compensation, the explanatory power of the model increases dramatically beyond what is found when limiting the analysis to the other controls that have been previously documented to explain CEO pay differences. Therefore, explaining the variation in CEO compensation requires uncovering the factors that determine the selection of the compensation peer group. That is what we explore next.

## **5. Selection of Compensation Peer Groups**

Our analysis of peer group composition begins with a look at some univariate results for characteristics of firms chosen to be in the compensation peer group. We follow that with regression analysis generating numerous baseline estimates of the choice of peer group membership. We then expand on these specifications to look at how

selection varies with measures of firm performance, operational complexity, corporate governance, shareholder resolutions, and the identity of the compensation consultant.

### ***5.1 Univariate Analysis***

To get a preliminary assessment of which firms are chosen as members of the compensation peer group, we begin by breaking up the potential peers into four categories based upon two measures: whether or not a potential peer is selected for the peer compensation group and whether or not the potential peer is in the same 3-digit SIC as the firm. As demonstrated by the results in panel A of Table 4, we examine 393,797 firm-potential peer pairs. Since there are nearly 900 potential peers in the sample and the average peer group has seventeen firms, most of the potential peers will not end up being peers (98.4%). Consistent with the earlier results, a large fraction of the firms chosen, 29% ( $= 1,861/(1,861 + 4,492)$ ), are in the same industry.

Aside from the industry break-down though, there are some interesting patterns that emerge with regard to the compensation at the potential peers. The table provides mean and median salary for each of the four categories in panel A with the same statistics for cash compensation in panel B, and total compensation in panel C. If we look at the potential peers *outside* of the firm's industry that are selected as peers (upper right quadrant), these firms have the highest compensation when measured at both the mean and median values. In contrast, firms in the same industry that were *not* chosen as peers (lower left quadrant) have the lowest salary, cash compensation, and total compensation of the four categories. In other words, at least based upon univariate analysis, the selection of potential firms for the compensation peer group seems to favor higher paid firms outside of their industry over lower paid potential peers that belong to the same industry. These differences are highly significant, statistically and economically.

### ***5.2 Baseline Multivariate Analysis***

To determine whether these univariate results are robust to other controls, we proceed by conducting multivariate regression analysis, starting with a baseline specification containing just relative size, whether the firm and potential peer are in the same industry, whether the potential peer is a member of the Dow Jones Industrial Average (Dow 30) or the S&P 500, and a year dummy. As shown by the results in Table 5, firms with the same 3-digit SIC code and firms of similar size are the ones most likely

to be chosen for the peer compensation group. We also examined industry classification at the two- and four- digit levels, which were also statistically significant at better than one percent, but found that three-digit industry measurement had the strongest statistical results. Statistically, the likelihood of a potential peer being chosen as a peer that is of the same size as the firm, that is a member of the S&P 500, but that is outside the firm's industry is 4.1%. That same potential peer that is in the same industry of the firm is estimated to have a 57.1% likelihood of being selected, demonstrating the significant role that industry plays in the construction of compensation peer groups.

Note that the likelihood of being chosen as a peer is not monotone in peer size. Firms choose other firms of similar size as compensation peers, similarly rejecting firms that are much larger and much smaller than them, i.e. it is the difference in size that matters not being bigger or being smaller. Note that even though firm size does not seem to have a large effect on CEO salary once we control for the pay level of the peer group, the size of the potential peer relative to the size of the firm does play an important role in which firms are chosen for the peer group. The other interesting result for the baseline analyses is that Dow 30 firms and S&P 500 firms are more popular peers, even after controlling for the size difference, consistent with these firms being more widely known.

We now turn to an examination of another factor by which the CEOs pay could be manipulated. Because compensation is so related to the median level for the peer group, the way to increase CEO pay is to select firms for the peer group based upon the level of CEO compensation at those firms. Therefore, we add to the baseline specification two variables measuring the compensation paid in the corresponding fiscal year (similarly using the same fiscal year's pay if the fiscal year end of a potential peer is the same or before that of the firm, the lagged peer pay otherwise) to the CEO at the potential peer, one variable for the potential peers in the S&P 500 and another for those in the S&P Mid-Cap 400. Because membership in the S&P 500 makes a firm more likely to be chosen, we allow the sensitivity of potential peer compensation to vary with which of the two indices the potential peer belongs to.

The results from adding these additional variables, contained in columns 2 through 4 of Table 5, indicate that the level of CEO compensation at the potential peer company does indeed have a significantly positive effect on the likelihood of including

that firm in the peer group, regardless of which of the three compensation measures that we use. Interestingly, the results are stronger when we use the raw dollar amount of the potential peer compensation rather than its natural log (regressions unreported). Normally, the benefit of taking logs is a reduction in the outliers in the data, which often generates better fit. In this case, the firm would find it optimal to choose outliers as peers since they are the ones that would move up the peer measure of compensation the most (assuming that enough of them were chosen). Therefore, it does appear that allowing for greater skew to remain in the data actually better captures the economic outcome that being in the upper tail of the distribution increases the likelihood of being selected for the peer group.

We also find that for both salary and total cash pay, the estimated sensitivity to potential peer pay is significantly higher for S&P 400 Mid-Cap firms than it is for S&P 500 firms. An interpretation of this finding is that S&P 500 firms may be more likely to be chosen as peers by other S&P 500 firms since they are of similar size and visibility, thereby making the choice of such firms less likely to result from the pay of that potential peer. On the other hand, if a firm is going to forego another S&P 500 firm and instead choose a Mid-Cap firm, they may be more likely to do so because of the large compensation of the CEO at that potential peer.

Because of the high degree of multicollinearity between salary, total cash compensation, and total compensation, it is as yet unclear which compensation measure is driving peer selection. To address this issue, we include all three variables in a specification to see if one particular compensation measure dominates the others, the result of which is located in column 5. We see that both salary and total cash compensation retain statistical significance for both S&P 500 peers and S&P Mid-Cap 400 peers, while total pay is statistically insignificant or marginally significant with a negative coefficient. Given that peer groups play a greater role in explaining salary and cash compensation than explaining variation in total pay, it should not be surprising that it is these two measures of peer pay that are more significant determinants of the membership in the compensation peer group.

An alternative way to estimate this effect is to look at the frequency with which a firm is chosen to be a compensation peer group member as a function of CEO pay at that

firm. Because we have more peer group observations in 2006 than in 2005, we separately estimate peer membership frequency for the two years, reporting results in Table 6. For 2005, we were able to locate CEO compensation for 881 of the S&P 500 and S&P Mid-Cap 400 firms and for each of those 881 firms, we count the number of times it was a peer of the 83 S&P 500 firms for which we have compensation peer groups. For 2006, we have CEO compensation for 861 of the S&P 500 and S&P Mid-Cap 400 firms and we had 373 firms for which we were able to construct their peer compensation groups.

As the results demonstrate, higher CEO pay, regardless of how it is measured, leads to the firm being chosen as a peer significantly more often for both the 2005 and 2006 samples. For the purpose of understanding the economic magnitudes of the estimates for 2005, the average number of times selected as a peer for these 881 firms was 1.03 times and the standard deviation of the natural log of one plus peer salary (the independent variable in column 1) was 0.195. These statistics and the estimated coefficient suggest that a one standard deviation increase in peer salary increases the frequency of being chosen as a peer by 0.55 ( $= 2.798 * 0.195$ ), an increase of 53% relative to the mean.

For 2006 compensation peer groups, the average firm was selected 6.15 times as peers, with a high of 48. A one standard deviation increase in the level of CEO salary increases the average frequency of being selected as a peer by 3.24, a 53% increase (column 4). Perhaps not surprisingly, the effect of CEO compensation appears confined to those firms that are not part of the Dow 30 (column 7), whereas Dow 30 firms are generally the leaders in their industry and are often chosen as peers, regardless of the level of compensation at those firms (column 8). Overall though, the significant influence of compensation at the non-Dow 30 firms corroborates the results of Table 5, demonstrating that the level of compensation of the potential peer is a significant determinant of membership in compensation peer groups.

### ***5.3 Variation in Selection Sensitivity to Peer Pay***

Having documented the role of compensation at the potential peer firms in the construction of compensation peer groups, we turn our attention to analyzing at which firms this effect is more significant. By estimating how the pay setting mechanism

differs across firms of various characteristics, we hope to enlighten the debate on whether it is CEO power or performance driving the observed increase in the level as well as the dispersion of CEO compensation.

One explanation for peer pay sensitivity is that it is the better performing firms that choose peers with higher compensation and what we've captured is a matching effect. Thus, we add accounting returns (ROA) and stock returns (TRS1YR) of the firm, and cross the performance variables with peer compensation for both S&P 500 and S&P Mid-Cap 400 firms. As demonstrated by the results in columns 2 and 3 of Table 7, the coefficients corresponding to the interaction terms are statistically insignificant for ROA but significantly positive for equity returns. These results are consistent with stock market performance rather than contemporaneous accounting performance having an impact on the base sensitivity of peer selection to compensation at the potential peer.

We also look at a number of other firm characteristics that are related to the firm's operating complexity to again estimate the extent to which they affect the sensitivity of the membership in the compensation peer groups to CEO pay at a potential peer. As the further results in Table 7 show, firms that are larger, have more business segments, greater market share and are in concentrated industries have, on average, greater sensitivity of peer selection to the potential peer's CEO compensation, even after controlling for relative size and whether or not the potential peer is in the same industry of the firm. Interestingly, for all of these interaction results, it is only the sensitivity for S&P 500 potential peers that is affected by these measures of operational complexity. All firms' inclusion of S&P Mid-Cap 400 firms in their peer groups is still significantly impacted by the pay at the potential peer, but the estimated sensitivities to pay at S&P 400 Mid-Cap firms are not affected by these measures of operational complexity. These results are consistent with the argument that firms at which CEOs may require a more varied skill set to manage construct peer groups that justify higher pay, but only when it comes to the selection of the S&P 500 peer members.<sup>20</sup>

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<sup>20</sup> We also examined the role of some other firm and industry characteristics. Our membership sensitivity to peer pay is not driven by firms in the new economy industries, (see Murphy 2003); and it does not vary much with the industry's sales growth over 1-year and 3-year periods (see Bizjak, Lemmon, and Naveen 2008).

We also evaluate the effect of corporate governance on the extent to which compensation at the potential peer plays a role in the selection of the compensation peer group. The idea is that if CEOs can manipulate peer group membership to boost his own pay, we would expect that to most likely be the case in firms at which the CEO is most entrenched or where the CEO has the most power. We examine commonly used governance measures in the literature such as whether the CEO is also the chairman, the firm's GIM-index (Gompers, Ishii, and Metrick (2003)), its E-index value (Bebchuck et al (2004)), and the tenure of the CEO relative to other directors. As with the firm characteristics specifications, we are interested in the interaction of the governance measure with the corresponding compensation of the potential peer to determine whether these governance variables alter the sensitivity of the membership of compensation peer groups to the potential peer's pay.

Examination of the first set of results in Table 8 demonstrates that when the CEO is also chairman (column 1), the firm's selection of compensation peer group is more sensitive to the CEO compensation of the potential S&P 500 peers. In fact, we see that the interaction term is statistically significant at better than five percent and the coefficient on S&P 500 peer salary is no longer statistically different from zero (for S&P Mid-Cap 400 firms, the coefficient is still significant at greater than one percent). In other words, the sensitivity to potential peer pay among S&P 500 peers appears to be concentrated among those firms where the CEO is chairman; at the average firm where the CEO is not chairman, the potential peer pay only significantly influences the selection of S&P Mid-Cap 400 members of the compensation peer group.

Moving to measures of the G-index, the E-index, and institutional holdings, we find results quite different from the earlier variables proxying for operational complexity. For all three of these specifications, it is the sensitivity of peer group membership to pay at the S&P Mid-Cap 400 firms that is impacted by these variables. Recall that higher GIM- and E-index values correspond to poorer external governance, and it is at those firms where we see greater likelihood of including S&P Mid-Cap 400 firms in the peer groups arising from the CEO pay at those firms. Interestingly though, we also find that at the high E-index firms, peer group selection of S&P 500 members is less sensitive to peer pay. We also document sensitivity to potential peer pay increasing as institutional

holdings increase, consistent with findings such as Bizjak, Lemmon, and Naveen (2007).<sup>21</sup> For robustness, we also examine CEO tenure relative board tenure, the percentage of the BOD comprised of independent directors, and how busy the board is, but do not find significant differences in peer pay sensitivity for these measures of governance.<sup>22</sup>

Combined, these results suggest that both the power and the performance arguments explaining the high levels of CEO pay appear to have merit. Firms with higher equity performance and that are more complicated organizations appear to be more likely to choose higher paid peers as part of their compensation peer groups. However, poorly governed firms also appear to have greater sensitivity to potential peer pay, consistent with power playing a role in the documented rise of both the level and dispersion of CEO pay.

An alternative way to try to distinguish these hypotheses is to decompose peer pay into the portion that is explained by the peer's size and performance and the portion of pay orthogonal to these measures. Since compensation peers often are also used as part of the performance assessment of the firm, the performance argument would suggest that firms would choose high paid peers to be part of their peer group if that pay is resulting from their performance whereas poorly governed firms would choose highly paid, poorer performing firms to be their peers. We therefore regress the CEO compensation at a potential peer on the market value of its assets and its equity market performance to estimate the predicted component of potential peer pay and also calculate the residual component. We then include each part separately in the same empirical specification, and then separately for S&P 500 peers and S&P Mid-Cap 400 peers, to examine which component of peer compensation influences firms choice of compensation peers, the results of which are located in Table 9.

Interestingly, we find significant loadings predominately on the predicted components, but the results vary across peer membership in the two S&P indices in ways similar to that documented above. It appears that it is predominately the firms with high

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<sup>21</sup> The effect of institutional holdings is robust to using total institutional holdings as a percentage of total holdings, or to just limiting ourselves to the holdings of the top 5 institutions.

<sup>22</sup> We also examined four other corporate governance measures: average director pay, the percentage of female directors, whether the compensation committee provides other services to the firm, and pay-for-performance sensitivity. None of these generated statistically significant effects.

levels of predicted CEO compensation that are the firms chosen to be peer group members. The significance of the size and performance-related component, and the lack of statistical significance for the residual, is found for all three measures of compensation. When we separately estimate the sensitivities for the S&P 500 peers and for the S&P Mid-Cap 400 peers, the strong effect of predicted peer pay is found for both groups, although stronger for the S&P 500 peers. Our interpretation of these results is that some firms choose highly paid peers when the firm's size and performance merit that compensation, implicitly holding themselves responsible for generating a similar level of performance (as there is a significant correlation in the make-up of the compensation and performance peer groups, although not perfect correlation).

However, the residual pay term is also strongly significant for the salary and total cash compensation measures for the S&P Mid-Cap 400 peers. In other words, S&P Mid-Cap 400 firms with highly paid CEOs are chosen as peers even when the size and performance at the firm do not appear to warrant such high levels of compensation. Considering that it is at the poorly governed firms where we earlier documented the greatest sensitivity to peer compensation for the S&P Mid-Cap 400 firms, these results are consistent with poorly governed firms picking smaller, poor performing but highly paid firms to be in the peer groups as that would elevate pay without generating high performance benchmarks if this group then serves as a performance benchmark.

We also examine the role that shareholder proposals play in the construction of compensation peer groups. Specifically, we examine the variation in the sensitivity of compensation peer groups to potential peer pay as a function of various measures of compensation related shareholder proposal outcomes. Looking at those proposals for the period 2001 to 2006 from the Institutional Shareholder Services (ISS) database, we measure, over the five years up to and including the year of the corresponding compensation, the total number of compensation related proposals, the number that received 10%, 30%, and 50% of the votes of shareholders respectively, and the average vote each compensation related shareholder proposal received. We then interact those measures with potential peer pay for the two S&P groups to determine whether the firms at which shareholders have expressed concerns over CEO compensation have less

sensitivity to potential peer pay, i.e., evidence that the compensation committees and the BODs were impacted by these proposals.

As demonstrated by the findings in Table 10, we find interesting results. Using the four different measures counting the number of compensation proposals (variation coming from the portion of the votes they received), more proposals are correlated with greater sensitivity to peer pay for S&P 500 peers and less sensitivity to peer pay for the Mid-Cap 400 peers. All eight of these sensitivities are statistically significant at better than five percent. We interpret these results as greater compensation scrutiny by shareholders leading to a reduction in using smaller firms with high pay in the compensation peer group and replacing them with larger, highly paid firms. In other words, perhaps the firms where shareholders have expressed concerns about compensation are responding by reducing the number of high paid firms that don't appear as comparable (the S&P Mid-Cap 400 firms) with more comparable, but still highly paid S&P 500 firms.

Our final set of analyses looks at the influence of some of the more prominent compensation consultants. The results in Table 11 add dummy variables corresponding to the five most commonly used consultants (Cook Associates, Inc., Towers Perrin, Hewitt Associates, Mercer Human Resources Consulting, and Watson Wyatt Worldwide) as well as interactions with potential peer salary, cash compensation, and total pay respectively for the 2006 subsample, the ones for which we have identified the consultants from firms' proxy statements. Consistent with previous specifications, we then further separate the interaction terms for S&P 500 potential peers and S&P Mid-Cap 400 potential peers. The interesting result is to look at which consulting firm is consistently associated with positive incremental sensitivity to potential peer pay: Towers Perrin. Firms that used Towers Perrin demonstrate sensitivities to peer pay that are larger when we use salary or total cash compensation as the measure of pay, and the increased sensitivity appears confined to the effect on selection of S&P 500 peers. Untabulated analyses of the characteristics of the firms that use Towers Perrin relative to other compensation consultants fail to establish significant differences in firm characteristics, leading us to believe that this is a consultant effect, not the result of a missing variable.

## 6. Conclusion

Numerous firms have stated that they follow a process of basing CEO compensation on an analysis of similar companies, but only recently has this process become more transparent with greater disclosure of peer group membership. We believe our work is the first to document that the composition of the actual compensation peer groups does indeed play an important role in determining CEO compensation. Inclusion of measures of the median or 75<sup>th</sup> percentile of compensation of the peer group dominates other characteristics that have traditionally been used to explain cross-sectional variation in executive pay. Additionally, we document a number of summary statistics regarding compensation peer groups and analyze the determinants of group composition. We find that while industry and size are important in explaining the composition of these compensation peer groups, the level of compensation at the potential peer firms also plays a significant role. This effect is particularly strong for firms at which the CEO is chairman of the Board of Directors, when the firm is large, in a concentrated industry, and has poorer governance.

Despite the fact that firms are now required to provide this information in their proxy statements, the disclosures that we were able to identify may not be sufficient to completely understand the process firms are using, as demonstrated by recent Securities and Exchange Commission (SEC) action of sending “letters to nearly 300 companies across America critiquing [compensation] disclosures in this year's proxy statements and demanding more information.” (Wall Street Journal, August 31, 2007). Increased transparency should lead to greater analysis by shareholders, as well as other firm stakeholders, of how potential firms are selected as members of the compensation peer group. It will be interesting to observe whether this additional scrutiny will alter the patterns that we have documented.

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**Table 1: Summary Statistics of Disclosing Firms and Selected Peers**

Cash pay is *salary + bonus + LTIP* in 2005 and *salary + bonus + noneq\_incent + LTIP* in 2006. *peer\_pay\_50%* and *peer\_pay\_75%* are the median and 75<sup>th</sup> percentile of peer pay. <sup>1</sup> In 2005, *TDC1* was calculated as follows: *Salary + Bonus + Other Annual + Restricted Stock Grants + LTIP Payouts + All Other + Value of Options Granted*. In 2006, *TDC1* was calculated as follows: *Salary + Bonus + Non-Equity Incentive Plan Compensation + Value of Options Granted + Grant-Date Fair Value of Stock Awards + Deferred Compensation Earnings Reported as Compensation + Other Compensation*. Assets are the market value of assets (total debt + market cap); ROA, *stock\_return*, and volatility are return on assets, stock returns, and BS\_volatility from Execucomp. *Diff\_mean\_assets* (firm-peer) is firm's assets minus the average of peer assets; while *Diff\_median\_assets* (firm-peer) is firm's assets minus the median of peer assets.

|  | Mean    | Median  | Standard Deviation | Observations |
|--|---------|---------|--------------------|--------------|
| <b><u>Panel A: Descriptive Statistics of Disclosing Firms</u></b>                    |         |         |                    |              |
| Firm_salary (\$million)  | 1.062   | 1.000   | 0.460              | 445          |
| Firm_cashpay (\$million)   | 4.190   | 2.918   | 4.287              | 445          |
| Firm_totalpay ( <i>TDC1</i> , \$million)   | 11.543  | 8.536   | 11.229             | 444          |
| Firm_assets (\$billion)  | 94.691  | 31.193  | 212.880            | 445          |
| Firm_ROA (%)   | 6.505   | 5.715   | 6.401              | 445          |
| Firm_stock_return (%)  | 16.530  | 13.001  | 23.430             | 445          |
| Firm_volatility  | 0.281   | 0.253   | 0.130              | 445          |
| <b><u>Panel B: Descriptive Statistics of Selected Peers</u></b>                      |         |         |                    |              |
| Peer_salary_50%  | 1.060   | 1.005   | 0.247              | 445          |
| Peer_salary_75%  | 1.256   | 1.169   | 0.350              | 445          |
| Peer_cashpay_50%   | 3.835   | 3.157   | 2.695              | 445          |
| Peer_cashpay_75%   | 5.776   | 4.375   | 4.119              | 445          |
| Peer_totalpay_50%  | 10.688  | 9.253   | 6.107              | 445          |
| Peer_totalpay_75%  | 15.588  | 14.569  | 7.956              | 445          |
| <b><u>Panel C: Descriptive Statistics of Disclosing Firms and Selected Peers</u></b> |         |         |                    |              |
| Number_of_peers  | 16.967  | 15      | 12.449             | 456          |
| %_firm_peer_same_ind   | 0.339   | 0.250   | 0.308              | 456          |
| Diff_mean_assets (firm-peer) (\$billion)   | -17.730 | -10.650 | 99.172             | 453          |
| Diff_mean_assets ((firm-peer)/firm)  | -0.880  | -0.469  | 1.346              | 453          |
| Diff_median_assets (firm-peer) (\$billion)   | 20.101  | -0.519  | 108.971            | 453          |
| Diff_median_assets ((firm-peer)/firm)  | -0.217  | -0.027  | 0.776              | 453          |
| Diff_mean_ROA (firm-peer) (%)  | -0.161  | -0.254  | 4.960              | 455          |
| Diff_median_ROA (firm-peer) (%)  | -0.032  | -0.173  | 4.918              | 455          |
| Diff_mean_stock_ret (firm-peer) (%)  | 1.062   | -1.166  | 21.420             | 453          |
| Diff_median_stock_ret (firm-peer) (%)  | 3.213   | 0.270   | 21.115             | 453          |
| Diff_mean_stock_ret3 (firm-peer) (%)   | 1.387   | 0.669   | 13.241             | 422          |
| Diff_median_stock_ret3 (firm-peer) (%)   | 2.482   | 1.050   | 13.510             | 422          |
| Diff_mean_stock_ret5 (firm-peer) (%)   | 0.400   | -0.244  | 10.425             | 418          |
| Diff_median_stock_ret5 (firm-peer) (%)   | 1.242   | 0.661   | 10.151             | 418          |

**Table 2: Effect of Peer Compensation on Firm Compensation**

The dependent variable is Ln(1+ CEO compensation in the *ExecuComp* database): compensation is *salary* payment, cash compensation (*salary + bonus + LTIP* in 2005, and *salary + bonus + noneq\_incent + LTIP* in 2006), and total compensation (*TDC1*). *Peer\_pay\_50%* is Ln(1+ median peer pay), and the *Peer\_pay\_75%* is Ln(1+75<sup>th</sup> percentile of peer pay). Assets are Ln(1 + *mktcap + total debt*) and *leverage* is (*total debt/assets*). *ROA*, *Stock\_ret* and *Volatility* are from *Execucomp*. *D(Year2006)* is 1 when the data are in fiscal year 2006. Standard errors are in parentheses, \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

|                  | <u>Peer Salary Payment</u> |                     |                     | <u>Peer Cash Compensation</u> |                     |                      | <u>Peer Total Compensation</u> |                      |                      |
|------------------|----------------------------|---------------------|---------------------|-------------------------------|---------------------|----------------------|--------------------------------|----------------------|----------------------|
|                  | (1)                        | (2)                 | (3)                 | (4)                           | (5)                 | (6)                  | (7)                            | (8)                  | (9)                  |
| Peer_pay_50%     |                            | 0.887***<br>(0.079) |                     |                               | 0.604***<br>(0.074) |                      |                                | 0.424***<br>(0.086)  |                      |
| Peer_pay_75%     |                            |                     | 0.640***<br>(0.064) |                               |                     | 0.526***<br>(0.061)  |                                |                      | 0.450***<br>(0.084)  |
| Assets           | 0.044***<br>(0.008)        | 0.011<br>(0.008)    | 0.020***<br>(0.008) | 0.230***<br>(0.021)           | 0.113***<br>(0.024) | 0.116***<br>(0.023)  | 0.301***<br>(0.026)            | 0.188***<br>(0.034)  | 0.189***<br>(0.033)  |
| ROA              | 0.004*<br>(0.002)          | 0.002<br>(0.002)    | 0.002<br>(0.002)    | 0.009<br>(0.006)              | 0.006<br>(0.005)    | 0.007<br>(0.005)     | -0.003<br>(0.007)              | -0.003<br>(0.007)    | -0.002<br>(0.007)    |
| Lagged_ROA       | -0.004**<br>(0.002)        | -0.003<br>(0.002)   | -0.004**<br>(0.002) | -0.008<br>(0.006)             | -0.007<br>(0.005)   | -0.007<br>(0.005)    | 0.016**<br>(0.007)             | 0.014**<br>(0.007)   | 0.015**<br>(0.007)   |
| Stock_ret        | 0.000<br>(0.000)           | 0.000<br>(0.000)    | 0.000<br>(0.000)    | 0.006***<br>(0.001)           | 0.005***<br>(0.001) | 0.005***<br>(0.001)  | 0.002*<br>(0.001)              | 0.002*<br>(0.001)    | 0.002*<br>(0.001)    |
| Lagged_stock_ret | -0.001**<br>(0.000)        | -0.000<br>(0.000)   | -0.000<br>(0.000)   | 0.002**<br>(0.001)            | 0.002**<br>(0.001)  | 0.002**<br>(0.001)   | 0.001<br>(0.001)               | 0.000<br>(0.001)     | 0.000<br>(0.001)     |
| Volatility       | -0.142*<br>(0.077)         | -0.092<br>(0.067)   | -0.145**<br>(0.069) | -0.188<br>(0.200)             | 0.000<br>(0.187)    | -0.039<br>(0.185)    | 0.223<br>(0.247)               | 0.196<br>(0.240)     | 0.150<br>(0.239)     |
| Leverage         | -0.314***<br>(0.078)       | -0.148**<br>(0.070) | -0.172**<br>(0.072) | -0.082<br>(0.204)             | -0.291<br>(0.192)   | -0.133<br>(0.189)    | 0.313<br>(0.252)               | 0.346<br>(0.245)     | 0.427*<br>(0.245)    |
| D(Year2006)      | -0.014<br>(0.024)          | -0.012<br>(0.021)   | -0.017<br>(0.022)   | -0.181***<br>(0.063)          | -0.110*<br>(0.059)  | -0.083<br>(0.059)    | 0.053<br>(0.077)               | 0.054<br>(0.075)     | 0.069<br>(0.075)     |
| Intercept        | 0.355***<br>(0.100)        | 0.017<br>(0.093)    | 0.078<br>(0.094)    | -0.875***<br>(0.262)          | -0.601**<br>(0.245) | -0.719***<br>(0.242) | -1.154***<br>(0.323)           | -0.942***<br>(0.317) | -1.191***<br>(0.313) |
| Observations     | 426                        | 426                 | 426                 | 426                           | 426                 | 426                  | 425                            | 425                  | 425                  |
| R-squared        | 0.132                      | 0.333               | 0.300               | 0.355                         | 0.445               | 0.452                | 0.292                          | 0.331                | 0.338                |

**Table 3: Effect of Peer Salary Payment – Competing Measures**

The dependent variable is the Ln (1+ CEO *salary* in the *ExecuComp* database). The *Peer\_salary\_50%* is Ln(1+ median peer salary). *Ind\_size\_median\_salary* is Ln(1+median CEO salary of firms within 25% and 400% of firm assets and in the same 3-digit SIC industry). *Ind\_median\_salary* is Ln(1+ industry median of CEO salary). Industries are defined by 3-digit SIC codes. *Firm\_lagged\_salary* is Ln(1+firm CEO's salary in the previous year). The industry fixed effect is conducted at the 2-digit SIC level (with 50 clusters). Other variables are same as in Table 2 and are defined in Table A1. Standard errors are in parentheses, \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

|                        | (1)                  | (2)                 | (3)                  | (4)                 | (5)                  | (6)                  | (7)                  | (8)                  | (9)                  | (10)                |
|------------------------|----------------------|---------------------|----------------------|---------------------|----------------------|----------------------|----------------------|----------------------|----------------------|---------------------|
| Peer_salary_50%        |                      | 0.887***<br>(0.079) |                      | 0.879***<br>(0.080) |                      | 0.743***<br>(0.077)  |                      | 0.642***<br>(0.058)  |                      | 0.675***<br>(0.113) |
| Ind_size_median_salary |                      |                     | 0.075**<br>(0.036)   | 0.019<br>(0.032)    |                      |                      |                      |                      |                      |                     |
| Ind_median_salary      |                      |                     |                      |                     | 0.185***<br>(0.020)  | 0.140***<br>(0.019)  |                      |                      |                      |                     |
| Firm_lagged_salary     |                      |                     |                      |                     |                      |                      | 0.163***<br>(0.008)  | 0.146***<br>(0.007)  |                      |                     |
| Assets                 | 0.044***<br>(0.008)  | 0.011<br>(0.008)    | 0.041***<br>(0.008)  | 0.011<br>(0.008)    | 0.046***<br>(0.007)  | 0.019**<br>(0.007)   | 0.039***<br>(0.006)  | 0.016***<br>(0.005)  | 0.055***<br>(0.009)  | 0.021**<br>(0.010)  |
| ROA                    | 0.004*<br>(0.002)    | 0.002<br>(0.002)    | 0.004*<br>(0.002)    | 0.002<br>(0.002)    | 0.004**<br>(0.002)   | 0.002<br>(0.002)     | 0.003*<br>(0.002)    | 0.002<br>(0.001)     | 0.004*<br>(0.002)    | 0.002<br>(0.002)    |
| Lagged_ROA             | -0.004**<br>(0.002)  | -0.003<br>(0.002)   | -0.004*<br>(0.002)   | -0.003<br>(0.002)   | -0.004**<br>(0.002)  | -0.003*<br>(0.002)   | -0.003**<br>(0.002)  | -0.003*<br>(0.001)   | -0.007***<br>(0.002) | -0.004**<br>(0.002) |
| Stock_ret              | 0.000<br>(0.000)     | 0.000<br>(0.000)    | 0.000<br>(0.000)     | 0.000<br>(0.000)    | -0.000<br>(0.000)    | -0.000<br>(0.000)    | -0.000<br>(0.000)    | -0.000<br>(0.000)    | -0.000<br>(0.000)    | 0.000<br>(0.000)    |
| Lagged_stock_ret       | -0.001**<br>(0.000)  | -0.000<br>(0.000)   | -0.001**<br>(0.000)  | -0.000<br>(0.000)   | -0.001***<br>(0.000) | -0.000<br>(0.000)    | 0.000<br>(0.000)     | 0.000<br>(0.000)     | -0.000<br>(0.000)    | -0.000<br>(0.000)   |
| Volatility             | -0.142*<br>(0.077)   | -0.092<br>(0.067)   | -0.137*<br>(0.076)   | -0.091<br>(0.067)   | -0.004<br>(0.071)    | 0.004<br>(0.065)     | -0.013<br>(0.055)    | 0.009<br>(0.048)     | -0.159*<br>(0.088)   | -0.122<br>(0.084)   |
| Leverage               | -0.314***<br>(0.078) | -0.148**<br>(0.070) | -0.287***<br>(0.079) | -0.142**<br>(0.071) | -0.313***<br>(0.071) | -0.175***<br>(0.066) | -0.198***<br>(0.056) | -0.090*<br>(0.050)   | -0.245***<br>(0.094) | -0.200**<br>(0.090) |
| D(Year2006)            | -0.014<br>(0.024)    | -0.012<br>(0.021)   | -0.014<br>(0.024)    | -0.012<br>(0.021)   | -0.009<br>(0.022)    | -0.009<br>(0.020)    | 0.016<br>(0.017)     | 0.014<br>(0.015)     | 0.001<br>(0.022)     | -0.006<br>(0.021)   |
| Intercept              | 0.355***<br>(0.100)  | 0.017<br>(0.093)    | 0.329***<br>(0.100)  | 0.013<br>(0.093)    | -0.930***<br>(0.166) | -0.899***<br>(0.151) | -0.793***<br>(0.092) | -0.918***<br>(0.081) | 0.234**<br>(0.107)   | 0.083<br>(0.106)    |
| Ind. Fixed Effect      | No                   | No                  | No                   | No                  | No                   | No                   | No                   | No                   | Yes                  | Yes                 |
| Observations           | 426                  | 426                 | 427                  | 426                 | 427                  | 426                  | 427                  | 426                  | 427                  | 426                 |
| R-squared              | 0.132                | 0.333               | 0.141                | 0.334               | 0.280                | 0.412                | 0.558                | 0.659                | 0.149                | 0.224               |

**Table 4: Univariate Analysis: Non-Peer Pay vs. Peer Pay**

*Same industry* is determined by whether the firm and the potential peer share the same the 3-digit SIC code. *Salary* is salary payment of the potential peer CEO, *Cash Pay* is *salary + bonus + LTIP* in 2005 and *salary + bonus + noneq\_incent + LTIP* in 2006, *Total Pay* is the total compensation of the potential peer CEO (*TDC1*).

| <b>Panel A: Descriptive Statistics on Salary of Non-Peer vs. Peer Firms</b> |              |                     |                 |                         |
|---|--------------|---------------------|-----------------|-------------------------|
|   |              | <b>Non_Peer (A)</b> | <b>Peer (B)</b> | <b>Difference (B-A)</b> |
| <b>Different_ind (C)</b>  | Mean         | 0.897               | 1.148           | 0.251***                |
|   | Median       | 0.875               | 1.065           | 0.190***                |
|   | Observations | 383,420             | 4,492           |                         |
| <b>Same_ind (D)</b>   | Mean         | 0.832               | 1.016           | 0.184***                |
|   | Median       | 0.824               | 0.995           | 0.171***                |
|   | Observations | 4,024               | 1,861           |                         |
| <b>Diff_mean (C-D)</b>  |              | 0.065***            | 0.132***        |                         |
| <b>Diff_median (C-D)</b>  |              | 0.051***            | 0.070***        |                         |

  

| <b>Panel B: Descriptive Statistics on Cash Pay of Non-Peer vs. Peer Firms</b> |              |                     |                 |                         |
|---|--------------|---------------------|-----------------|-------------------------|
|   |              | <b>Non_Peer (A)</b> | <b>Peer (B)</b> | <b>Difference (B-A)</b> |
| <b>Different_ind (C)</b>  | Mean         | 2.972               | 4.527           | 1.554***                |
|   | Median       | 2.031               | 3.252           | 1.221***                |
|   | Observations | 383,420             | 4,492           |                         |
| <b>Same_ind (D)</b>   | Mean         | 2.534               | 4.144           | 1.610***                |
|   | Median       | 1.672               | 2.875           | 1.203***                |
|   | Observations | 4,024               | 1,861           |                         |
| <b>Diff_mean (C-D)</b>  |              | 0.438***            | 0.382***        |                         |
| <b>Diff_median (C-D)</b>  |              | 0.359***            | 0.377***        |                         |

  

| <b>Panel C: Descriptive Statistics on Total Pay of Non-Peer vs. Peer Firms</b> |              |                     |                 |                         |
|--|--------------|---------------------|-----------------|-------------------------|
|  |              | <b>Non_Peer (A)</b> | <b>Peer (B)</b> | <b>Difference (B-A)</b> |
| <b>Different_ind (C)</b>   | Mean         | 8.034               | 12.658          | 4.624***                |
|  | Median       | 5.337               | 9.783           | 4.115***                |
|  | Observations | 382,474             | 4,488           |                         |
| <b>Same_ind (D)</b>  | Mean         | 7.504               | 11.620          | 4.446***                |
|  | Median       | 4.596               | 8.482           | 3.891***                |
|  | Observations | 4,032               | 1,862           |                         |
| <b>Diff_mean (C-D)</b>   |              | 0.530***            | 1.038***        |                         |
| <b>Diff_median (C-D)</b>   |              | 0.741***            | 1.297***        |                         |

**Table 5: Peer Selection Sensitivity: Baseline**

The dependent variable is 1 if a potential peer (S&P 500 and S&P Mid-Cap 400) is chosen as a peer by a disclosing S&P 500 firm, and 0 otherwise.  $P\_salary$ ,  $P\_cashpay$ , and  $P\_totalpay$  are peer's salary payment, cash pay, and total pay ( $TDC1$ ).  $D(pisssp500)$  is 1 if a potential peer is in S&P 500, and 0 if it is in S&P Mid-Cap 400;  $D(pisssp400)$  is 1 if a potential peer is in S&P Mid-Cap 400, and 0 if it is in S&P 500.  $D(same\_industry)$  is 1 if the firm and potential peer share the same 3-digit SIC code.  $(P\_assets-f\_assets)$  is assets of the peer minus assets of the firm.  $D(pisbigger)$  is 1 if the peer's assets are greater than the firm's, and  $D(pissmaller)$  is 1 if peer's assets are smaller than the firm's.  $D(peer\_is\_Dow30)$  is 1 when the potential peer is a component of the DJIA.  $D(Year2006)$  is 1 for data in year 2006. Standard errors are in parentheses, \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

|                                   | (1)                  | (2)                  | (3)                  | (4)                  | (5)                  |
|-----------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| D(pisssp500) * p_salary           |                      | 0.143***<br>(0.049)  |                      |                      | 0.093*<br>(0.054)    |
| D(pisssp400) * p_salary           |                      | 0.486***<br>(0.114)  |                      |                      | 0.500***<br>(0.109)  |
| D(pisssp500) * p_cashpay          |                      |                      | 0.018***<br>(0.005)  |                      | 0.010*<br>(0.006)    |
| D(pisssp400) * p_cashpay          |                      |                      | 0.029***<br>(0.011)  |                      | 0.028**<br>(0.014)   |
| D(pisssp500) * p_totalpay         |                      |                      |                      | 0.005**<br>(0.002)   | 0.002<br>(0.002)     |
| D(pisssp400) * p_totalpay         |                      |                      |                      | 0.005<br>(0.005)     | -0.009*<br>(0.005)   |
| D(pisssp500)                      | 0.523***<br>(0.046)  | 0.772***<br>(0.110)  | 0.539***<br>(0.056)  | 0.511***<br>(0.056)  | 0.794***<br>(0.102)  |
| D(same_industry)                  | 1.916***<br>(0.053)  | 1.932***<br>(0.053)  | 1.922***<br>(0.052)  | 1.915***<br>(0.053)  | 1.932***<br>(0.052)  |
| (P_assets-f_assets)*D(pisbigger)  | -0.343***<br>(0.030) | -0.352***<br>(0.030) | -0.357***<br>(0.030) | -0.354***<br>(0.031) | -0.363***<br>(0.030) |
| (P_assets-f_assets)*D(pissmaller) | 0.425***<br>(0.035)  | 0.417***<br>(0.035)  | 0.419***<br>(0.036)  | 0.422***<br>(0.036)  | 0.415***<br>(0.036)  |
| D(pisbigger)                      | 0.012<br>(0.030)     | 0.008<br>(0.030)     | 0.012<br>(0.030)     | 0.011<br>(0.030)     | 0.010<br>(0.030)     |
| D(peer_is_Dow30)                  | 0.755***<br>(0.086)  | 0.699***<br>(0.087)  | 0.698***<br>(0.086)  | 0.714***<br>(0.087)  | 0.667***<br>(0.087)  |
| D(Year2006)                       | 0.126***<br>(0.042)  | 0.128***<br>(0.042)  | 0.136***<br>(0.042)  | 0.125***<br>(0.041)  | 0.132***<br>(0.042)  |
| Intercept                         | -2.397***<br>(0.055) | -2.794***<br>(0.109) | -2.482***<br>(0.065) | -2.427***<br>(0.063) | -2.826***<br>(0.102) |
| Observations                      | 353,159              | 351,668              | 351,668              | 350,733              | 350,361              |

**Table 6: Frequency of Chosen Peers and Peer Compensation**

The dependent variable is the number of times a potential peer is chosen as compensation peers by disclosing S&P 500 firms. The independent variable is the compensation level of the peer (*salary*, *cash pay*, and total compensation, *TDC1*, from *ExecuComp*). *Cash Pay* is *salary* + *bonus* + *LTIP* in 2005 and *salary* + *bonus* + *noneq\_incent* + *LTIP* in 2006. Standard errors are in parentheses, \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

|                    | <u>Peer Compensation 2005</u> |                      |                      | <u>Peer Compensation 2006</u> |                     |                      | <u>Non Dow30 vs. Dow30</u><br><u>(2006)</u> |                    |
|--------------------|-------------------------------|----------------------|----------------------|-------------------------------|---------------------|----------------------|---|--------------------|
|                    | (1)                           | (2)                  | (3)                  | (4)                           | (5)                 | (6)                  | (7)   | (8)                |
| P_salary           | 2.798***<br>(0.290)           |                      |                      | 16.358***<br>(1.149)          |                     |                      |   |                    |
| P_cashpay          |                               | 0.715***<br>(0.065)  |                      |                               | 5.480***<br>(0.414) |                      |   |                    |
| P_totalpay         |                               |                      | 0.975***<br>(0.075)  |                               |                     | 4.489***<br>(0.290)  |   |                    |
| P_salary*Non_Dow30 |                               |                      |                      |                               |                     |                      | 12.716***<br>(1.063)                        |                    |
| P_salary*Dow30     |                               |                      |                      |                               |                     |                      |   | 9.774<br>(10.248)  |
| Intercept          | -0.648***<br>(0.185)          | -0.238***<br>(0.086) | -0.750***<br>(0.150) | -3.899***<br>(0.753)          | -0.234<br>(0.546)   | -2.204***<br>(0.594) | -2.158***<br>(0.685)                        | 16.315*<br>(9.435) |
| Observations       | 881                           | 881                  | 880                  | 861                           | 861                 | 859                  | 832   | 29                 |
| R-squared          | 0.096                         | 0.120                | 0.160                | 0.191                         | 0.170               | 0.219                | 0.147                                       | 0.033              |

**Table 7: Peer Selection Sensitivity and Firm Characteristics**

|                                 | (1)                 | (2)                 | (3)                 | (4)                 | (5)                 | (6)                 | (7)                 | (8)                 |
|---------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| D(pisssp500)*p_salary           | 0.143***<br>(0.049) | 0.144***<br>(0.049) | 0.140***<br>(0.049) | 0.037<br>(0.051)    | 0.056<br>(0.064)    | 0.079*<br>(0.044)   | 0.090**<br>(0.045)  | 0.141***<br>(0.050) |
| D(pisssp400)*p_salary           | 0.486***<br>(0.114) | 0.480***<br>(0.114) | 0.478***<br>(0.115) | 0.439***<br>(0.124) | 0.459***<br>(0.142) | 0.456***<br>(0.111) | 0.458***<br>(0.114) | 0.480***<br>(0.118) |
| D(pisssp500)                    | 0.772***<br>(0.110) | 0.774***<br>(0.109) | 0.769***<br>(0.110) | 0.794***<br>(0.112) | 0.772***<br>(0.113) | 0.780***<br>(0.109) | 0.782***<br>(0.110) | 0.773***<br>(0.110) |
| ROA                             |                     | 0.020<br>(0.031)    |                     |                     |                     |                     |                     |                     |
| ROA*D(pisssp500)*p_salary       |                     | 0.016<br>(0.023)    |                     |                     |                     |                     |                     |                     |
| ROA*D(pisssp400)*p_salary       |                     | 0.044<br>(0.043)    |                     |                     |                     |                     |                     |                     |
| Stock_ret                       |                     |                     | -0.006<br>(0.021)   |                     |                     |                     |                     |                     |
| Stock_ret*D(pisssp500)*p_salary |                     |                     | 0.024*<br>(0.014)   |                     |                     |                     |                     |                     |
| Stock_ret*D(pisssp400)*p_salary |                     |                     | 0.052**<br>(0.024)  |                     |                     |                     |                     |                     |
| Assets*D(pisssp500)*p_salary    |                     |                     |                     | 0.152***<br>(0.022) |                     |                     |                     |                     |
| Assets*D(pisssp400)*p_salary    |                     |                     |                     | -0.025<br>(0.054)   |                     |                     |                     |                     |
| # of Business_seg               |                     |                     |                     |                     | 0.011<br>(0.024)    |                     |                     |                     |
| Bseg*D(pisssp500)*p_salary      |                     |                     |                     |                     | 0.035*<br>(0.019)   |                     |                     |                     |
| Bseg*D(pisssp400)*p_salary      |                     |                     |                     |                     | 0.025<br>(0.031)    |                     |                     |                     |
| Mktshr                          |                     |                     |                     |                     |                     | 0.187<br>(0.128)    |                     |                     |
| Mktshr*D(pisssp500)*p_salary    |                     |                     |                     |                     |                     | 0.305***<br>(0.090) |                     |                     |
| Mktshr*D(pisssp400)*p_salary    |                     |                     |                     |                     |                     | 0.206<br>(0.165)    |                     |                     |
| HHI                             |                     |                     |                     |                     |                     |                     | 0.246*<br>(0.142)   |                     |
| HHI*D(pisssp500)*p_salary       |                     |                     |                     |                     |                     |                     | 0.267***<br>(0.095) |                     |
| HHI*D(pisssp400)*p_salary       |                     |                     |                     |                     |                     |                     | 0.183<br>(0.181)    |                     |
| Ind_sales_growth3               |                     |                     |                     |                     |                     |                     |                     | -0.073*<br>(0.038)  |
| Ind_sgr3*D(pisssp500)*p_salary  |                     |                     |                     |                     |                     |                     |                     | 0.011<br>(0.032)    |
| Ind_sgr3*D(pisssp400)*p_salary  |                     |                     |                     |                     |                     |                     |                     | 0.099<br>(0.074)    |
| Controls: same as in Table 5    | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 |
| Observations                    | 351,668             | 351,668             | 350,162             | 351,668             | 253,363             | 342,600             | 342,600             | 341,094             |

**Table 7: Peer Selection Sensitivity and Firm Characteristics (Continued ...)**

The dependent variable is 1 if a potential peer is chosen as a peer, and 0 otherwise. *P\_salary* is the salary payment for peer CEO. *D(pissp500)* is 1 if a potential peer is in S&P 500, and 0 if it is in S&P Mid-Cap 400; *D(pissp400)* is 1 if a potential peer is in S&P Mid-Cap 400, and 0 if it is in S&P 500. *ROA*, *Stock\_ret*, and *Assets* are firm's ROA, stock return and market value of assets. *# of Business\_seg* (shortened as *Bseg*) is the number business segments with distinctive 3-digit SIC codes, *Mktshr* is the market share of the firm in the 3-digit SIC industry. *HHI* is the Herfindhal Index by 3-digit SIC code industry in *Compustat*. *Ind\_sales\_growth3* (shortened as *Ind\_sgr3*) is the industry sales growth rate over part 3 years. Standard errors are in parentheses, \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

**Table 8: Peer Selection Sensitivity and Corporate Governance**

|                                | (1)                 | (2)                 | (3)                 | (4)                 | (5)                 | (6)                 | (7)                 |
|--------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| D(pissp500)*p_salary           | 0.072<br>(0.053)    | 0.200**<br>(0.097)  | 0.212***<br>(0.074) | 0.135***<br>(0.050) | 0.141***<br>(0.049) | 0.170*<br>(0.099)   | 0.088<br>(0.056)    |
| D(pissp400)*p_salary           | 0.565***<br>(0.125) | 0.086<br>(0.213)    | 0.324**<br>(0.150)  | 0.433***<br>(0.114) | 0.494***<br>(0.113) | 0.732***<br>(0.211) | 0.501***<br>(0.137) |
| D(pissp500)                    | 0.787***<br>(0.109) | 0.764***<br>(0.109) | 0.793***<br>(0.109) | 0.755***<br>(0.109) | 0.787***<br>(0.108) | 0.778***<br>(0.108) | 0.775***<br>(0.108) |
| CEO/COB                        | 0.003<br>(0.067)    |                     |                     |                     |                     |                     |                     |
| CEO/COB* D(pissp500)*p_salary  | 0.090**<br>(0.046)  |                     |                     |                     |                     |                     |                     |
| CEO/COB* D(pissp400)*p_salary  | -0.117<br>(0.085)   |                     |                     |                     |                     |                     |                     |
| GIM-index                      |                     | 0.004<br>(0.011)    |                     |                     |                     |                     |                     |
| GIM*D(pissp500)*p_salary       |                     | -0.006<br>(0.007)   |                     |                     |                     |                     |                     |
| GIM*D(pissp400)*p_salary       |                     | 0.038**<br>(0.016)  |                     |                     |                     |                     |                     |
| E-index                        |                     |                     | 0.029<br>(0.024)    |                     |                     |                     |                     |
| E-index*D(pissp500)*p_salary   |                     |                     | -0.038**<br>(0.019) |                     |                     |                     |                     |
| E-index*D(pissp400)*p_salary   |                     |                     | 0.058*<br>(0.031)   |                     |                     |                     |                     |
| Avg_inst_holdings              |                     |                     |                     | -0.670**<br>(0.297) |                     |                     |                     |
| Aih*D(pissp500)*p_salary       |                     |                     |                     | 0.182<br>(0.137)    |                     |                     |                     |
| Aih*D(pissp400)*p_salary       |                     |                     |                     | 0.784***<br>(0.229) |                     |                     |                     |
| Tenure(CEO-board median)       |                     |                     |                     |                     | -0.004<br>(0.006)   |                     |                     |
| Reltenure*D(pissp500)*p_salary |                     |                     |                     |                     | -0.003<br>(0.004)   |                     |                     |
| Reltenure*D(pissp400)*p_salary |                     |                     |                     |                     | -0.003<br>(0.007)   |                     |                     |
| Indep_directors_%              |                     |                     |                     |                     |                     | 0.509***<br>(0.194) |                     |
| Indepper*D(pissp500)*p_salary  |                     |                     |                     |                     |                     | -0.039<br>(0.134)   |                     |
| Indepper*D(pissp400)*p_salary  |                     |                     |                     |                     |                     | -0.329<br>(0.246)   |                     |
| Avg_num_otherboards            |                     |                     |                     |                     |                     |                     | 0.090*<br>(0.048)   |
| Avgothbd* D(pissp500)*p_salary |                     |                     |                     |                     |                     |                     | 0.042<br>(0.031)    |
| Avgothbd* D(pissp400)*p_salary |                     |                     |                     |                     |                     |                     | -0.017<br>(0.071)   |
| Observations                   | 313,251             | 317,504             | 319,910             | 347,028             | 313,251             | 314,004             | 314,004             |

**Table 8: Peer Selection Sensitivity and Corporate Governance (Continued ...)**

The dependent variable is 1 if a potential peer is chosen as a peer, and 0 otherwise.  $P\_salary$  is the salary payment for peer CEO.  $D(pissp500)$  is 1 if a potential peer is in S&P 500, and 0 if it is in S&P Mid-Cap 400;  $D(pissp400)$  is 1 if a potential peer is in S&P Mid-Cap 400, and 0 if it is in S&P 500.  $CEO/COB$  is 1 if a CEO serves as the Chairman of the Board.  $GIM-index$  ( $GIM$ ) is the Gomper-Ishii-Metrick index on 24 governance provisions, and E-index is the entrenchment index on six governance provisions (Bebchuck et al 2004).  $Avg\_inst\_holdings$  (shortened as  $Aih$ ) is the average institutional ownership according to 13-F filings in *Thomson Financial*.  $Tenure(CEO-board\ median)$  ( $Reltenure$ ) is CEO's tenure less the median of directors' tenure.  $Indep\_directors\_%$  ( $Indepper$ ) is the percentage of independent directors.  $Avg\_num\_otherboards$  ( $Avgothbd$ ) is the average number of other boards the firm's directors serve on. Control variables are the same as in Table 5 (not reported). Standard errors are in parentheses, \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

**Table 9: Predicated Peer Pay or Excess Peer Pay**

$P_{comp\_pred}$  is the predicate value of peer compensation using firm size and stock performance, while  $P_{comp\_res}$  is the error term in the predictive regression.  $P_{comp}$  is peer salary, peer cash pay and peer total pay.  $D(piisp500)$  is 1 if a potential peer is in S&P 500, and 0 if it is in S&P Mid-Cap 400;  $D(piisp400)$  is 1 if a potential peer is in S&P Mid-Cap 400, and 0 if it is in S&P 500. Standard errors are in parentheses, \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

|                              | (1)                 | (2)                 | (3)                 | (4)                 | (5)                 | (6)                 |
|------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| D(piisp500)                  | 0.435***<br>(0.050) | 0.023<br>(0.246)    | 0.446***<br>(0.046) | 0.272***<br>(0.075) | 0.485***<br>(0.050) | 0.369***<br>(0.097) |
| P_salary_pred                | 0.682***<br>(0.149) |                     |                     |                     |                     |                     |
| P_salary_res                 | 0.035<br>(0.065)    |                     |                     |                     |                     |                     |
| D(piisp500)*p_salary_pred    |                     | 0.831***<br>(0.181) |                     |                     |                     |                     |
| D(piisp400)*p_salary_pred    |                     | 0.382*<br>(0.221)   |                     |                     |                     |                     |
| D(piisp500)*p_salary_res     |                     | -0.017<br>(0.067)   |                     |                     |                     |                     |
| D(piisp400)*p_salary_res     |                     | 0.614***<br>(0.151) |                     |                     |                     |                     |
| P_cashpay_pred               |                     |                     | 0.083***<br>(0.011) |                     |                     |                     |
| P_cashpay_res                |                     |                     | 0.007<br>(0.005)    |                     |                     |                     |
| D(piisp500)*p_cashpay_pred   |                     |                     |                     | 0.097***<br>(0.014) |                     |                     |
| D(piisp400)*p_cashpay_pred   |                     |                     |                     | 0.032*<br>(0.018)   |                     |                     |
| D(piisp500)*p_cashpay_res    |                     |                     |                     | 0.005<br>(0.005)    |                     |                     |
| D(piisp400)*p_cashpay_res    |                     |                     |                     | 0.029**<br>(0.012)  |                     |                     |
| P_totalpay_pred              |                     |                     |                     |                     | 0.014**<br>(0.006)  |                     |
| P_totalpay_res               |                     |                     |                     |                     | 0.000<br>(0.002)    |                     |
| D(piisp500)*p_totalpay_pred  |                     |                     |                     |                     |                     | 0.018**<br>(0.008)  |
| D(piisp400)*p_totalpay_pred  |                     |                     |                     |                     |                     | 0.002<br>(0.009)    |
| D(piisp500)*p_totalpay_res   |                     |                     |                     |                     |                     | -0.002<br>(0.002)   |
| D(piisp400)*p_totalpay_res   |                     |                     |                     |                     |                     | 0.006<br>(0.005)    |
| Controls: same as in Table 5 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 | Yes                 |
| Observations                 | 335,859             | 335,859             | 335,859             | 335,859             | 335,243             | 335,243             |

**Table 10: Peer Selection Sensitivity and Shareholder Votes on Executive Compensation**

Shareholder votes on executive compensation are provided by *ISS* (Institutional Shareholder Services). We count the votes during the five years prior to the fiscal year of peer disclosure: total votes (*Total\_pay\_res\_vote*, *Tpr*), votes got at least 10%, 30%, and 50% shareholders approved (*Payres10*, *Payres30*, *Payres50*; shortened as *Pr10*, *Pr30* and *Pr50*), and the average votes over the period (*Mean\_pay\_res\_vote*, *Mprv*). We also interact these voting variables with *P\_salary*: the salary payment for peer CEO. *D(pissp500)* is 1 if a potential peer is in S&P 500, and 0 if it is in S&P Mid-Cap 400; *D(pissp400)* is 1 if a potential peer is in S&P Mid-Cap 400, and 0 if it is in S&P 500. Standard errors are in parentheses, \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

|                                   | (1)                  | (2)                 | (3)                 | (4)                 | (5)                 |
|-----------------------------------|----------------------|---------------------|---------------------|---------------------|---------------------|
| <i>D(pissp500)*p_salary</i>       | 0.089**<br>(0.044)   | 0.097**<br>(0.045)  | 0.102**<br>(0.046)  | 0.098**<br>(0.046)  | 0.125**<br>(0.049)  |
| <i>D(pissp400)*p_salary</i>       | 0.538***<br>(0.118)  | 0.529***<br>(0.117) | 0.523***<br>(0.118) | 0.525***<br>(0.120) | 0.505***<br>(0.125) |
| <i>D(pissp500)</i>                | 0.751***<br>(0.109)  | 0.754***<br>(0.109) | 0.756***<br>(0.110) | 0.757***<br>(0.110) | 0.774***<br>(0.110) |
| <i>total_pay_res_vote</i>         | 0.020**<br>(0.010)   |                     |                     |                     |                     |
| <i>Tpr * D(pissp500)*p_salary</i> | 0.015***<br>(0.006)  |                     |                     |                     |                     |
| <i>Tpr * D(pissp400)*p_salary</i> | -0.057***<br>(0.021) |                     |                     |                     |                     |
| <i>Payres10</i>                   |                      | 0.021*<br>(0.011)   |                     |                     |                     |
| <i>Pr10*D(pissp500)*p_salary</i>  |                      | 0.016**<br>(0.006)  |                     |                     |                     |
| <i>Pr10*D(pissp400)*p_salary</i>  |                      | -0.053**<br>(0.023) |                     |                     |                     |
| <i>Payres30</i>                   |                      |                     | 0.026*<br>(0.013)   |                     |                     |
| <i>Pr30*D(pissp500)*p_salary</i>  |                      |                     | 0.019**<br>(0.008)  |                     |                     |
| <i>Pr30*D(pissp400)*p_salary</i>  |                      |                     | -0.056**<br>(0.028) |                     |                     |
| <i>Payres50</i>                   |                      |                     |                     | 0.034*<br>(0.018)   |                     |
| <i>Pr50*D(pissp500)*p_salary</i>  |                      |                     |                     | 0.025**<br>(0.011)  |                     |
| <i>Pr50*D(pissp400)*p_salary</i>  |                      |                     |                     | -0.073**<br>(0.035) |                     |
| <i>Mean_pay_res_vote</i>          |                      |                     |                     |                     | 0.000<br>(0.001)    |
| <i>Mprv*D(pissp500)*p_salary</i>  |                      |                     |                     |                     | 0.000<br>0.000      |
| <i>Mprv*D(pissp400)*p_salary</i>  |                      |                     |                     |                     | -0.001<br>(0.001)   |
| Controls: same as in Table 5      | Yes                  | Yes                 | Yes                 | Yes                 | Yes                 |
| Observations                      | 351,668              | 351,668             | 351,668             | 351,668             | 351,668             |

**Table 11: Peer Selection Sensitivity and Compensation Consultants**

|                           | Peer Salary Payment |                     |                     | Peer Cash Compensation |                     |                     | Peer Total Compensation |                     |                     |
|---------------------------|---------------------|---------------------|---------------------|------------------------|---------------------|---------------------|-------------------------|---------------------|---------------------|
|                           | (1)                 | (2)                 | (3)                 | (4)                    | (5)                 | (6)                 | (7)                     | (8)                 | (9)                 |
| D(psp500)*p_pay           | 0.159***<br>(0.052) | 0.109*<br>(0.056)   | 0.111**<br>(0.056)  | 0.016***<br>(0.006)    | 0.012*<br>(0.006)   | 0.011*<br>(0.006)   | 0.004**<br>(0.002)      | 0.004**<br>(0.002)  | 0.004**<br>(0.002)  |
| D(psp400)*p_pay           | 0.538***<br>(0.156) | 0.491***<br>(0.160) | 0.533***<br>(0.168) | 0.031**<br>(0.013)     | 0.028**<br>(0.013)  | 0.036***<br>(0.012) | 0.005<br>(0.006)        | 0.005<br>(0.006)    | 0.008<br>(0.006)    |
| D(psp500)                 | 0.791***<br>(0.140) | 0.786***<br>(0.140) | 0.785***<br>(0.140) | 0.541***<br>(0.058)    | 0.536***<br>(0.059) | 0.534***<br>(0.059) | 0.504***<br>(0.057)     | 0.497***<br>(0.057) | 0.494***<br>(0.057) |
| D(Cook)                   |                     | 0.094<br>(0.069)    | 0.122*<br>(0.072)   |                        | 0.111**<br>(0.054)  | 0.116**<br>(0.054)  |                         | 0.124**<br>(0.051)  | 0.130**<br>(0.052)  |
| D(Towers)                 |                     | 0.017<br>(0.087)    | 0.038<br>(0.091)    |                        | 0.09<br>(0.082)     | 0.092<br>(0.082)    |                         | 0.115<br>(0.079)    | 0.119<br>(0.079)    |
| D(Hewitt)                 |                     | 0.11<br>(0.070)     | 0.099<br>(0.072)    |                        | 0.162***<br>(0.055) | 0.162***<br>(0.055) |                         | 0.195***<br>(0.053) | 0.196***<br>(0.054) |
| D(Mercer)                 |                     | 0.02<br>(0.064)     | 0.036<br>(0.069)    |                        | 0.021<br>(0.050)    | 0.022<br>(0.050)    |                         | 0.05<br>(0.049)     | 0.051<br>(0.050)    |
| D(Watson)                 |                     | -0.055<br>(0.120)   | -0.086<br>(0.112)   |                        | 0.025<br>(0.101)    | 0.024<br>(0.100)    |                         | 0.027<br>(0.095)    | 0.024<br>(0.094)    |
| D(Cook)*p_pay             |                     | 0.039<br>(0.048)    |                     |                        | 0.007<br>(0.006)    |                     |                         | 0.001<br>(0.002)    |                     |
| D(Towers)*p_pay           |                     | 0.116**<br>(0.048)  |                     |                        | 0.013**<br>(0.005)  |                     |                         | 0.003<br>(0.002)    |                     |
| D(Hewitt)*p_pay           |                     | 0.042<br>(0.047)    |                     |                        | -0.001<br>(0.007)   |                     |                         | -0.003*<br>(0.002)  |                     |
| D(Mercer)*p_pay           |                     | 0.010<br>(0.048)    |                     |                        | 0.003<br>(0.006)    |                     |                         | -0.001<br>(0.002)   |                     |
| D(Watson)*p_pay           |                     | 0.049<br>(0.063)    |                     |                        | -0.007<br>(0.008)   |                     |                         | -0.002<br>(0.002)   |                     |
| D(Cook)*D(psp500)*p_pay   |                     |                     | 0.029<br>(0.048)    |                        |                     | 0.008<br>(0.006)    |                         |                     | 0.001<br>(0.002)    |
| D(Cook)*D(psp400)*p_pay   |                     |                     | -0.177*<br>(0.102)  |                        |                     | -0.033**<br>(0.016) |                         |                     | -0.013**<br>(0.006) |
| D(Towers)*D(psp500)*p_pay |                     |                     | 0.108**<br>(0.048)  |                        |                     | 0.015***<br>(0.006) |                         |                     | 0.003<br>(0.002)    |
| D(Towers)*D(psp400)*p_pay |                     |                     | -0.032<br>(0.103)   |                        |                     | -0.012<br>(0.012)   |                         |                     | -0.008<br>(0.006)   |
| D(Hewitt)*D(psp500)*p_pay |                     |                     | 0.046<br>(0.046)    |                        |                     | -0.001<br>(0.007)   |                         |                     | -0.003<br>(0.002)   |
| D(Hewitt)*D(psp400)*p_pay |                     |                     | 0.116<br>(0.105)    |                        |                     | 0.000<br>(0.013)    |                         |                     | -0.004<br>(0.005)   |
| D(Mercer)*D(psp500)*p_pay |                     |                     | 0.005<br>(0.049)    |                        |                     | 0.003<br>(0.006)    |                         |                     | -0.001<br>(0.002)   |
| D(Mercer)*D(psp400)*p_pay |                     |                     | -0.102<br>(0.115)   |                        |                     | 0.003<br>(0.014)    |                         |                     | -0.001<br>(0.005)   |
| D(Watson)*D(psp500)*p_pay |                     |                     | 0.059<br>(0.060)    |                        |                     | -0.008<br>(0.009)   |                         |                     | -0.002<br>(0.002)   |
| D(Watson)*D(psp400)*p_pay |                     |                     | 0.221<br>(0.157)    |                        |                     | 0.008<br>(0.016)    |                         |                     | 0.004<br>(0.005)    |
| Observations              | 280,943             | 280,943             | 280,943             | 280,943                | 280,943             | 280,943             | 280,196                 | 280,196             | 280,196             |

**Table 11: Peer Selection Sensitivity and Compensation Consultants (Continued ...)**

The sample is disclosing S&P 500 firms in 2006 of which we found information on compensation consultants from their proxy statements.  $D(psp500)$  is 1 if a potential peer is in S&P 500, and 0 if it is in S&P Mid-Cap 400;  $D(psp400)$  is 1 if a potential peer is in S&P Mid-Cap 400, and 0 if it is in S&P 500.  $D(Cook)$ ,  $D(Towers)$ ,  $D(Hewitt)$ ,  $D(Mercer)$  and  $D(Watson)$  are 1 when the firm's compensation consultants are Cook Associates, Inc., Towers Perrin, Hewitt Associates, Mercer Human Resources Consulting, and Watson Wyatt Worldwide, respectively.  $P\_pay$  is among peer salary (*salary*), peer cash pay (*salary + bonus + LTIP* in 2005 and *salary + bonus + noneq\_incent + LTIP* in 2006), and peer total pay (*TDCI*). Control variables are the same as in Table 5 (not reported). Standard errors are in parentheses, \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

## Appendix

For the 2005 (voluntary disclosure) sample, the disclosures for the 415 that we were not able to identify the compensation peer groups ranged from providing no information to stating that “they are firms of similar size” to stating that some of them belonged to a particular index but provided no information on the rest of the firms, to giving an incomplete list.<sup>1</sup> Due to the variation in disclosures, we estimated the extent to which sample selection may bias the results of our examination. There are some significant differences between those that provide full disclosure and those that do not: disclosing firms are larger in size and earned higher stock returns during fiscal year 2005 so not surprisingly, the CEOs of these firms were paid an average of \$1.33 million more in salary and bonus and \$3.81 million more in total compensation (including option grants) than non-disclosers. There does not appear to be significant differences in measures of governance for reporting versus non-reporting firms, although non-disclosing firms do appear to have greater block-holder ownership than firms that report their compensation peer groups. In terms of industry representation, commercial banks (SIC 6020), pharmaceutical preparations (SIC 2834), and petroleum refining (SIC 2911) have the highest numbers of disclosing firms.

To determine whether there is a significant difference in compensation between those disclosing peer group representation and those not disclosing, we ran a regression of CEO compensation on size, the Fama-French 12 industry classifications, and the firm’s stock return plus a dummy variable for whether or not full disclosure occurred. The economic interpretation of the coefficient corresponding to the full disclosure dummy variable is the incremental compensation associated with having provided complete information on the members of the compensation peer group. In unreported results, we find that the estimated coefficient is positive but statistically insignificant, indicating that the disclosing group may be reasonably representative of the entire S&P 500. Our prior is that if anything, those fully disclosing are the ones least likely to be manipulating the compensation process since it is easier to question the process of determining CEO pay when more information is provided. The firms most likely to be excessively paying their chief executives would likely be the firms least willing to provide the names of the compensation peer group and then be in a position to have to justify such a group.

The following table provides detailed explanations of how we constructed the variables that we use in our analysis, as well as providing their source. We categorize them based on the type of variable and when we use it in the analysis.

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<sup>1</sup> Here are a couple examples of vaguer disclosure ranked from informative to uninformative. ***Dillard’s Inc:*** The comparison group is composed of department stores, specialty stores and other public companies that were family-founded and continue to be family-managed. Not all of the companies in the comparison group are included in the Standard & Poor’s Supercomposite Department Stores Index. ***Clear Channel Communications:*** The consultant provided the Compensation Committee with market pay data for base salary, bonus, total cash compensation, long-term incentives, and total direct compensation for Media Peers and General Industry Peers. ***Verizon:*** The Committee has set the total compensation of Verizon’s senior management group at levels that are intended to be competitive with market peers, i.e., other large, global, public companies with whom Verizon competes for executive talent.

| Variable  | Definition  | Sources   |
|---|---|---|
| <b>Panel A: Descriptive Statistics of Compensation Variables</b>    |   |   |
| <i>Salary</i>   | salary payment  | <i>Salary</i> in ExecuComp  |
| <i>Cashpay</i>  | total cash pay  | salary + bonus + LTIP in 2005 (ExecuComp)<br>salary + bonus + noneq_incent + LTIP in 2006<br><i>TDC1</i> in ExecuComp |
| <i>Totalpay</i>   | CEO total Compensation: Salary + Bonus + Other Annual<br>+ Restrictd Stock Grants + LTIP Payouts + All Other<br>+ Value of Options Grants in 2005 | Constructed using <i>Salary</i> in ExecuComp  |
| <i>Ind_size_median_pay</i>  | The median pay for peer firms in the same 3-digit SIC industry and<br>with size within 25 - 400% of firm size (market value of assets)            | Constructed using <i>Salary</i> in ExecuComp  |
| <i>Ind_median_pay</i>   | The median pay for peer firms in the same 3-digit SIC industry  | Constructed using <i>Salary</i> in ExecuComp  |
| <i>Firm_lagged_pay</i>  | Salary payment of the firm's CEO in the previous year   | Constructed using <i>Salary</i> in ExecuComp  |
| <b>Panel B: Descriptive Statistics of Firm-Peer Characteristics</b> |   |   |
| <i>Number_of_peers</i>  | Number of compensation peers of a disclosing firm   | DEF-14A filings at the SEC (Edgar database)   |
| <i>%firm_peer_same_ind</i>  | Percentage of compensation peers from the same 3-digit<br>SIC industry  | DEF-14A filings and Compustat   |
| <i>Diff_mean_assets</i>   | firm assets less the average peer assets  | ASSETS-COMMEQ+MKTVL in ExecuComp  |
| <i>Diff_median_assets</i>   | firm assets less the median peer assets   | ASSETS-COMMEQ+MKTVL in ExecuComp  |
| <i>Diff_mean_ROA</i>  | firm ROA less the average peer ROA  | using <i>ROA</i> in ExecuComp   |
| <i>Diff_median_ROA</i>  | firm ROA less the median peer ROA   | using <i>ROA</i> in ExecuComp   |
| <i>Diff_mean_stock_ret</i>  | firm stock return less the average peer stock return  | <i>TRS1Y R</i> in ExecuComp   |
| <i>Diff_median_stock_ret</i>  | firm stock return less the median peer stock return   | <i>TRS1Y R</i> in ExecuComp   |
| <i>Diff_mean_stock_ret3</i>   | firm stock return less the average peer stock return over 3 yrs   | <i>TRS3Y R</i> in ExecuComp   |
| <i>Diff_median_stock_ret3</i>                                       | firm stock return less the median peer stock return over 3 yrs  | <i>TRS3Y R</i> in ExecuComp   |
| <i>Diff_mean_stock_ret5</i>   | firm stock return less the average peer stock return over 5 yrs   | <i>TRS5Y R</i> in ExecuComp   |
| <i>Diff_median_stock_ret5</i>                                       | firm stock return less the median peer stock return over 5 yrs  | <i>TRS5Y R</i> in ExecuComp   |
| <i>D(same_industry)</i>   | 1 if firm and peer are in the same 3-digit SIC industry;<br>0 otherwise   | using <i>DNUM</i> in Compustat  |
| <i>Diff_assets(pisbigger)</i>                                       | firm assets minus peer assets when peer is bigger than firm   | ASSETS-COMMEQ+MKTVL in ExecuComp  |
| <i>Diff_assets(pissmaller)</i>                                      | firm assets minus peer assets when peer is smaller than firm  | ASSETS-COMMEQ+MKTVL in ExecuComp  |
| <i>D(pisbigger)</i>   | 1 if peer is bigger than firm, 0 otherwise  | ASSETS-COMMEQ+MKTVL in ExecuComp  |
| <i>D(peer_is_Dow30)</i>   | 1 if a peer is in the DJIA; 0 otherwise   | DowJones  |

**Panel C: Descriptive Statistics of Firm Characteristics**

|                          |   |                            |
|--------------------------|---|----------------------------|
| <i>Assets</i>            | Market value of firm assets   | ASSETS-COMMEQ+MKTVAL       |
| <i>ROA</i>               | Return on Assets  | ROA in ExecuComp           |
| <i>Stock_ret</i>         | 1 yr return to shareholders (div reinv)   | TRS1YR in ExecuComp        |
| <i>Volatility</i>        | Volatility (60 mo) used to calc BS values   | BS_VOLATILITY in ExecuComp |
| <i>#Business_seg</i>     | Number of unique 3-digit SIC industries a firm's business segments cover                          | using BUSSEG in Compustat  |
| <i>Mktshr</i>            | Firm's sales as a fraction of total sales of all Compustat firms in the same 3-digit SIC industry | using Data12 in Compustat  |
| <i>HHI</i>               | Sum of squared market shares (using sales) of firms in the same 3-digit SIC industry              | using Data12 in Compustat  |
| <i>Inc_sales_growth3</i> | Sales growth rate in the 3-digit SIC industry over 3 yrs  | using Data 12 in Compustat |

**Panel D: Descriptive Statistics of Corporate Governance**

|                             |  |  |
|-----------------------------|--|--|
| <i>D(CEO/COB)</i>           | 1 if CEO serves as the chair of the board of directors; 0 otherwise        | IRRC Directors                         |
| <i>Rel_tenure</i>           | CEO tenure less the median tenure of directors                             | IRRC Directors                         |
| <i>GIM - index</i>          | Gompers-Ishii-Metrick index on 24 governance provisions                    | IRRC Governance                        |
| <i>E - index</i>            | Entrenchment index on six governance provisions; see Bebchuk et al. (2004) | downloaded from Bebchuk's website      |
| <i>Avg_inst_holdings</i>    | Total institutional share ownership  | Thomson Financial Institutional (13-F) |
| <i>Indep_directors_%</i>    | Percentage of independent directors  | IRRC Directors                         |
| <i>Avg_num_other_boards</i> | Average # of other boards firm's directors serve on                        | IRRC Directors                         |

**Panel E: Descriptive Statistics of Shareholder Votes on Executive Compensation**

|                           |  |     |
|---------------------------|--|-----|
| <i>Total_pay_res_vote</i> | Number of shareholder proposals on executive compensation in prior 5 yrs                           | ISS |
| <i>Payres10</i>           | Number of shareholder proposals on executive compensation in prior 5 yrs that got 10% of the votes | ISS |
| <i>Payres30</i>           | Number of shareholder proposals on executive compensation in prior 5 yrs that got 30% of the votes | ISS |
| <i>Payres50</i>           | Number of shareholder proposals on executive compensation in prior 5 yrs that got 50% of the votes | ISS |
| <i>Mean_pay_res_vote</i>  | mean votes of shareholder proposals on exec. comp. received in prior 5 yrs                         | ISS |

**Panel F: Descriptive Statistics of Compensation Consultants**

|                  |   |   |
|------------------|---|---|
| <i>D(Cook)</i>   | 1 if <i>Cook Associates, Inc.</i> is hired as an external compensation consultant             | DEF-14A filings at SEC's Edgar database |
| <i>D(Towers)</i> | 1 if <i>Towers Perrin</i> is hired as an external compensation consultant                     | DEF-14A filings at SEC's Edgar database |
| <i>D(Hewitt)</i> | 1 if <i>Hewitt Associates</i> is hired as an external compensation consultant                 | DEF-14A filings at SEC's Edgar database |
| <i>D(Mercer)</i> | 1 if <i>Mercer Human Resources Consulting</i> is hired as an external compensation consultant | DEF-14A filings at SEC's Edgar database |
| <i>D(Watson)</i> | 1 if <i>Watson Wyatt Worldwide</i> is hired as a compensation consultant                      | DEF-14A filings at SEC's Edgar database |

**Table A2: Disclosing S&P 500 Firms in Fiscal Year 2005**

| SIC  | GVKEY  | NAME                         | SIC  | GVKEY  | NAME                         |
|------|--------|------------------------------|------|--------|------------------------------|
| 1311 | 8068   | OCCIDENTAL PETROLEUM CORP    | 1311 | 11923  | ANADARKO PETROLEUM CORP      |
| 1311 | 15084  | BURLINGTON RESOURCES INC     | 1311 | 16478  | EOG RESOURCES INC            |
| 1389 | 22794  | BJ SERVICES CO               | 1531 | 2845   | CENTEX CORP                  |
| 1531 | 8823   | PULTE HOMES INC              | 2030 | 5568   | HEINZ (H J) CO               |
| 2085 | 2435   | BROWN-FORMAN -CL B           | 2086 | 12756  | COCA-COLA ENTERPRISES INC    |
| 2111 | 8543   | ALTRIA GROUP INC             | 2600 | 6104   | INTL PAPER CO                |
| 2631 | 10426  | TEMPLE-INLAND INC            | 2711 | 6475   | KNIGHT-RIDDER INC            |
| 2820 | 4087   | DU PONT (E I) DE NEMOURS     | 2834 | 1478   | WYETH                        |
| 2834 | 2403   | BRISTOL-MYERS SQUIBB CO      | 2834 | 6266   | JOHNSON & JOHNSON            |
| 2834 | 6730   | LILLY (ELI) & CO             | 2834 | 7257   | MERCK & CO                   |
| 2834 | 8530   | PFIZER INC                   | 2834 | 9459   | SCHERING-PLOUGH              |
| 2836 | 9699   | SIGMA-ALDRICH CORP           | 2840 | 8762   | PROCTER & GAMBLE CO          |
| 2844 | 1920   | AVON PRODUCTS                | 2911 | 2991   | CHEVRON CORP                 |
| 2911 | 7017   | MARATHON OIL CORP            | 2911 | 8549   | CONOCOPHILLIPS               |
| 2911 | 10156  | SUNOCO INC                   | 2911 | 15247  | VALERO ENERGY CORP           |
| 3011 | 5234   | GOODYEAR TIRE & RUBBER CO    | 3420 | 10016  | STANLEY WORKS                |
| 3531 | 2817   | CATERPILLAR INC              | 3570 | 5606   | HEWLETT-PACKARD CO           |
| 3577 | 11636  | XEROX CORP                   | 3640 | 3497   | COOPER INDUSTRIES LTD        |
| 3663 | 7585   | MOTOROLA INC                 | 3663 | 24800  | QUALCOMM INC                 |
| 3674 | 157858 | FREESCALE SEMICONDUCTOR INC  | 3711 | 8253   | PACCAR INC                   |
| 3760 | 6774   | LOCKHEED MARTIN CORP         | 3812 | 7985   | NORTHROP GRUMMAN CORP        |
| 3841 | 2111   | BECTON DICKINSON & CO        | 4011 | 7923   | NORFOLK SOUTHERN CORP        |
| 4813 | 2146   | BELLSOUTH CORP               | 4841 | 3226   | COMCAST CORP                 |
| 4911 | 9846   | EDISON INTERNATIONAL         | 4922 | 4242   | EL PASO CORP                 |
| 4924 | 8470   | PEOPLES ENERGY CORP          | 4931 | 5742   | CENTERPOINT ENERGY INC       |
| 5331 | 4016   | DOLLAR GENERAL CORP          | 5399 | 29028  | COSTCO WHOLESALE CORP        |
| 5411 | 6502   | KROGER CO                    | 5651 | 7922   | NORDSTROM INC                |
| 5731 | 2184   | BEST BUY CO INC              | 5812 | 11366  | WENDY'S INTERNATIONAL INC    |
| 5940 | 14624  | OFFICE DEPOT INC             | 6020 | 2019   | BANK OF NEW YORK CO INC      |
| 6020 | 4737   | FIRST HORIZON NATIONAL CORP  | 6020 | 7238   | MELLON FINANCIAL CORP        |
| 6020 | 7647   | BANK OF AMERICA CORP         | 6020 | 7711   | NATIONAL CITY CORP           |
| 6020 | 7982   | NORTHERN TRUST CORP          | 6020 | 8007   | WELLS FARGO & CO             |
| 6020 | 8245   | PNC FINANCIAL SVCS GROUP INC | 6020 | 10187  | SUNTRUST BANKS INC           |
| 6020 | 11856  | BB&T CORP                    | 6035 | 5216   | GOLDEN WEST FINANCIAL CORP   |
| 6111 | 10121  | SLM CORP                     | 6111 | 15208  | FEDERAL HOME LOAN MORTG CORP |
| 6211 | 7267   | MERRILL LYNCH & CO INC       | 6211 | 12124  | MORGAN STANLEY & CO. Inc     |
| 6211 | 30128  | LEHMAN BROTHERS HOLDINGS INC | 6211 | 114628 | GOLDMAN SACHS GROUP INC      |
| 6311 | 1487   | AMERICAN INTERNATIONAL GROUP | 6311 | 6742   | LINCOLN NATIONAL CORP        |
| 6311 | 143356 | PRUDENTIAL FINANCIAL INC     | 6331 | 9351   | SAFECO CORP                  |
| 6351 | 24287  | AMBAC FINANCIAL GP           | 7320 | 4423   | EQUIFAX INC                  |
| 8011 | 23877  | COVENTRY HEALTH CARE INC     | 8071 | 64166  | QUEST DIAGNOSTICS INC        |
| 9997 | 5047   | GENERAL ELECTRIC CO          |      |        |                              |