

The Effect of Social Pressures on CEO Compensation¹

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Abstract

We analyze the effect of social pressures on CEO compensation due to interactions with other CEOs and social elites within 60 miles of the firm's headquarters, as well as comparisons of mansions in the local area. *Social premium* is the portion of CEO compensation that is linked to the number of local social peers and is not explained by local economic condition, firm performance and characteristics, and corporate governance variables. For S&P 1500 companies during 1994-2005, the average social premium for a CEO increases by \$560,000 if the number of peer CEOs increases from 15 to 82 (moving from the 25th to 75th percentile of the sample). Frequency of social interactions affects the social premium; peer CEOs in larger social circles or at greater geographic distance exert less social influence. The social premium result is robust to various pay measures, firm fixed effects, and state fixed effects. In addition, the social premium is greater when the board of directors better understands the local social norm.

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The Effect of Social Pressures on CEO Compensation

“I think that what Larry Ellison and Bill Gates have is phenomenal wealth,” Netscape cofounder Jim Clark once remarked. “I’m just a two-bit billionaire.”²

The increases in the level and dispersion of CEO compensation since the early 1990’s have attracted the attention of the media, scholars, activist shareholders, and regulators. Much progress has been made in understanding CEO compensation – how CEOs should be paid (the pay for performance relationship)³ and whether the interests of could ever be aligned with those of shareholders. Entrenched CEOs and lax boards of directors are often named as the culprits of the observed pattern of CEO pay.⁴ Still, what might have caused well-paid CEOs to expect even greater pay remains far from being fully understood.

To shed light on this heated debate from new perspectives, we investigate the effect of social interactions and pressures from social peers on CEO compensation. In particular, we show that CEO compensation contains a component (referred to as the *social premium*) that is positively linked to social pressures. The social premium is unique. It is beyond what can be explained by economic and governance factors previously shown to affect CEO compensation, and it remains after controlling for the cost of living and economic condition.

Most CEOs interact with peer CEOs and social elites by attending various social and charitable events, sharing membership in exclusive golf and country clubs, or simply competing for attention in the local news coverage. These activities inevitably invite comparisons and generate social ranks based on various indicators of wealth. Periodic comparisons of wealth make income relevant at the margin. As is well documented in the sociology and economics literature, one’s utility (i.e., happiness) at least in part depends

² *Globe and Mail*, March 10, 2004.

³ See Murphy (1999) for a comprehensive review of the literature on executive compensation.

⁴ Bebchuk and Fried (2004) exemplify the criticisms of the economic model’s ability to explain executive pay.

on the income of one's comparison group, after controlling for one's own income.⁵ In particular, Luttmer (2005) documents that one feels worse off when one's neighbors earn more. Thus, to improve social ranking, a CEO needs to receive pay higher than that of his peers. As the number of social peers increases, pressures for greater pay intensify.

The "coffee mug" experiment done by Kahneman, Knetsch, and Thaler (1990) demonstrates the endowment effect: one assigns a disutility of losing one's high social rank greater than the utility of gaining the rank. Thus, CEOs ranked higher in their social circles, enjoying the privilege of being at or near the top of the society, assign greater disutility on losing their ranks. In addition, these CEO have higher probabilities of losing their top spots on the social ladder because there are more contenders. The combination of the two motivates top CEOs in large social circles to demand the greatest pay. Meeting such a demand leads to the rise in both the level and dispersion of CEO pay over time. The resulting "hedonic treadmill" effect is strengthened in large social circles.

The increased divergence of CEO pay in large social circles helps distinguish our social theory from other theories, such as keeping up with the Joneses and striving for fairness. Keeping up with the Joneses describes the attempt to catch up to the group median (the Joneses) while striving for fairness makes a better case for comparing with peers in the same industry with similar performance. These two mechanisms, however, do not explain why those at or near the top still want more, nor do they predict that the demand for greater pay increases with the size of the social peer group.⁶

To test the effect of social pressures on CEO compensation, we first need to define social circles and quantify peer pressures for greater pay in these social circles. Our primary definition of a social circle for a CEO is peer CEOs whose corporate headquarters are located within 60 miles of the firm's headquarters. We use the locations of corporate headquarters to define social circles because (1) business-related social

⁵Azar (2007) attributes its origin to Weber's Law, written in the early 17th century; Seidl, Traub, and Morone (2003) document the effect of relative income in experimental studies and McBride (2001) and Hagerty (2000) do so in empirical studies. Veblen (1934) and Frank (2000) show that a 'consumption arm race' or 'conspicuous consumption' could occur if one must consume more to keep up with the consumption of one's comparison group. The resulting continual demand for raising pay is known as the 'hedonic treadmill' hypothesis (Firebaugh and Tach, 2005). In economics, Hamermesh (1975) models the influence of relative wages on efforts and incentives.

⁶ Previous studies on the effect of 'social comparison' on executive pay are mainly concerned with the directors' network; see for example, Larcker, Richardson, Seary, and Tuna (2005), Kovacevic (2005), O'Reilly, III., Main, and Crystal (1988), Barnea and Guedj (2006), and Hwang and Kim (2009).

activities of CEOs often occur in the communities where corporate headquarters are located; (2) the median distance between the corporate headquarters of S&P 500 firms and the main residences of their CEOs is 13.6 miles, according to Liu and Yermack (2007). Thus, most non business-related social activities of CEOs also take place near corporate headquarters; (3) the location of corporate headquarters is determined by factors largely exogenous to CEO compensation, such as the origin of the founding family, infrastructure, local taxes and costs, as well as the proximity to raw materials, suppliers, and customers. Thus, using locations of corporate headquarters helps us avoid the reverse causality between the choice of social circles and the determination of CEO compensation; and (4) historical locations of corporate headquarters are available by zip code in the Compact Disclosure database.

The choice of the 60-mile (100-kilometer) distance is based on previous studies in sociology and economics. Watts (2004) shows the importance of geography in people's social network. Kleinberg (2001) suggests defining a set of geographic groups by "centering" groups of various geographic radii at each person in the network. In addition, Mok, Carrasco, and Wellman (2008) demonstrate that the frequency of face-to-face interactions decreases with geographic distance, and Urry (2007) documents that an average American traveled about 30 miles per day in the 2000s.⁷ Moreover, the 60-mile distance is practical for attending social events, which occur fairly frequently but not every day. It has also been used in numerous economic and finance studies such as Kedia and Rajgopal (2009), Malloy (2005), and Coval and Moskowitz (2001).⁸

Social premium is measured by the portion of CEO compensation that is linked to the social circle size and is not explained by location specific variables and economic and governance variables previously shown to affect CEO compensation. Location specific variables include returns of local stocks in excess of market returns and the cost of living index for professionals in the local area. Economic variables include firm size, market-to-book, stock performance, accounting performance, and firm risk; and governance variables include whether a CEO serves as the chairman of the board, the percentage of

⁷ According to the census 2000 data, the median commuting time for an American worker was 25.5 minutes. This probably accounts for a major part of daily travels.

⁸ The distance of 50 miles was used by Ivkovic and Weisbenner (2007) in defining whether investors are in the neighborhood of the firms in which they invest.

shares held by blockholders, institutions and insiders, respectively; the number of directors, the percentage of inside directors, the Gompers, Ishii, and Metrick (2003) index (GIM); and CEO tenure.

Our study primarily focuses on the S&P 1500 companies during 1994-2005 and yields the following findings. First, CEO compensation contains a social premium. Using the value of ex-ante total pay (the ExecuComp variable *TDC1*, expressed in 2005 dollars), we find that the average pay for a CEO increases by \$0.56 million as the number of local CEOs (self-inclusive) increases from 15 to 82 (moving from the 25th to 75th percentile of the sample), all else being equal. The corresponding pay increase for an S&P 500 CEO is \$0.93 million. The social premium result is not driven by the largest social circles. It is also robust to various pay measures, state fixed effects, and non-linear effect of the cost of living in the local area.

One could argue that the link between CEO pay and the size of the social circle may be driven by factors omitted from our empirical specifications. We add firm fixed effects into the baseline regression to account for firm-specific and time-invariant characteristics. In addition, all empirical specifications include year fixed effects to capture time trend. The social premium remains statistically significant at better than 1% and is economically meaningful.

We next examine the effect of geographic distance of peers on the frequency of social interactions and the resulting social premiums in CEO compensation. We find that the effect of social pressures is the strongest in social circles within 30 miles of corporate headquarters; it is significantly weakened in the ring of 30 to 60 miles but remains statistically significant at better than 1%. The effect of social pressures disappears beyond 60 miles.

In addition to nearby CEOs, a CEO interacts with other influential and wealthy people in the local area. We next look at the influence of interactions with social elites on CEO compensation. Social elites are people who are listed on the *Social Register* and live within 60 miles of the firm's headquarters. Very few social elites are current CEOs. We find that interacting with social elites and interacting with local CEOs each has its incremental influence on CEO compensation; more peers in each social setting intensify social pressures for greater pay.

According to the *Conspicuous Consumption Theory* of Veblen (1934) and Frank (2000), wealthy people often use luxury homes to display wealth and signal social status to their peers. Examining this specific channel of social comparisons, we find that the luxury home value, measured by the 99th percentile of home values in the Metropolitan Statistical Area (MSA) of the corporate headquarters, is significantly and positively associated with the social premium in CEO compensation.

To distinguish our social theory that suggests greater pay dispersions in large social circles from existing compensation theories that suggest pay convergence to the group median over time, we link the dispersion of CEO compensation within a social circle to the size of the social circle. We find that both the standard deviation and the coefficient of variation of CEO pay within a social circle increase when the social circle includes more CEOs, confirming the social theory.

Our social theory suggests that a few highly paid CEOs, who boost the pay skewness within a social circle, set the pace of pay race for the rest of CEOs in their social circle. Thus, greater skewness of CEO pay within a social circle should be linked to higher CEO compensation subsequently. Our empirical result confirms this prediction. Social pressures caused by the display of wealth or public disclosure of high peer pay often take a year to yield a real effect on CEO pay. The time lag of one year is practical for putting a new compensation package into place.

Given that social premiums are not directly linked to firm performance, it is interesting to identify which firms award social premiums to their CEOs. Examining the variation of social premiums across industries, we find that CEOs in manufacturing, financial services, and new economy industries enjoy social premiums. In contrast, CEOs in the regulated utility industry do not receive social premiums. This evidence is consistent with the political constraint hypothesis, as shown by Joskow, Rose, and Wolfram (1996), because the utility industry has constantly been under political and regulatory scrutiny.

Lastly, we examine whether a board that better understands the local social norm is more sympathetic to awarding the social premium to its CEO. We find that the presence of directors who serve on the boards of other companies in the local area increases the magnitude of the social premium in CEO compensation. These common

local directors attend board meetings of other local companies, and are more familiar with local personal relationships and local news stories; see also Butler (2008). This finding confirms the social story. We also find in unreported regressions that interlocking directors which may tend to be more generous in granting high CEO pay do not have the same effect.

Our research contributes to the finance literature by applying concepts in sociology, especially the dependence of happiness on income relative to the comparison group and the influence of social pressures, to research on executive compensation. Our research complements (1) Kedia and Rajgopal (2009), who document the effect of local companies on the grants of stock options to rank and file workers due to labor market competition; (2) Yermack (2006), who investigates the association of long-distance golfing and adverse stock performance in the firm subsequently; (3) Bizjak, Lemmon, and Naveen (2008), who focus on the influence of industry/size peers (peers of occupations) on CEO compensation; and (4) Faulkender and Yang (2009), who show the selection bias of compensation peer companies and its influence on CEO compensation. Our research differs from concurrent papers by Bouwman (2009), who suggests that CEO pay regresses toward the average pay in the local area and attributes this to envy; and Francis, Hasan, John, and Waisman (2008), who examine the effect of geographic locations (urban, small city and rural) on pay for performance of CEOs and attribute the variation in pay for performance sensitivity to monitoring costs and competition in the local labor market.⁹ Looking into the social lives of CEOs, we examine the effect of pressures from social peers in the local area on CEO compensation. Social pressures provide an explanation as to what motivates highly paid CEOs to lobby for even greater pay, rather than simply attributing the behavior to greed.

The paper proceeds as follows. Section 1 summarizes the social pressure theory and proposes empirical hypotheses. Section 2 describes the data and develops the empirical strategy. Section 3 presents the results of multivariate regressions. Section 4 analyzes channels of social interactions, and Section 5 concludes.

⁹We believe it is the labor market for rank and file workers rather than top executives that is segmented by geographic locations; as shown in Kedia and Rajgopal (2009).

1. Empirical hypotheses

A CEO interacts with other CEOs and social elites in the local area. Comparisons with CEOs and social elites make a CEO's utility depend on his rank on the social ladder, which is determined by his wealth level relative to that of his peers. To achieve a higher social ranking or to retain the top ranking, a CEO needs to receive pay higher than that of his peers. As the social circle becomes larger, social pressures intensify and the pay dispersion within a social circle increases. We summarize the theory above in Hypotheses 1 and 2.

***Hypothesis 1:** There exists a social premium in CEO compensation. It increases with social pressure, which is measured by the size of the social circle.*

To test this prediction, we need to control for standard factors that influence CEO compensation; firm performance, size, growth, risks, and corporate governance; while regressing CEO pay on the size of the social circle. We also control for local economic conditions. A positive and significant coefficient on the size of the social circle would confirm Hypothesis 1.

***Hypothesis 2:** The dispersion of CEO compensation within a social circle increases with the size of the social circle.*

Our social pressure theory explains why CEOs who have been paid generously need even greater pay. As a result, pay dispersion is greater in social circles with more members. A positive link between the dispersion of CEO compensation within a social circle and the size of the circle would confirm Hypothesis 2.

Next, we examine whether a board of directors that better understands the local social norm responds to its CEO's social pressure more positively. In particular, a board that has directors who also serve on the boards of other companies in the local area (*common local directors*) is expected to be more sympathetic to the awards of social premiums.

Hypothesis 3: *The social premium in CEO compensation is higher in a firm that has common local directors.*

We test Hypothesis 3 by comparing social premiums in firms with common local directors with those in firms without common local directors. A finding that social premiums are higher in firms with common local directors would confirm Hypothesis 3.

2. Data, preliminary analysis, and empirical strategy

In this section, we describe the data, conduct a preliminary analysis, and list the main empirical strategy for multivariate analysis. Our sample contains the Standard and Poor's (S&P) 1500 companies between 1994 and 2005. The S&P 1500 companies are comprised of the S&P 500, S&P MidCap 400, and S&P SmallCap 600 companies. We use the historical S&P 1500 indices to identify sample firms.¹⁰

2.1 Variable descriptions

Compensation variables are from the ExecuComp database: the ex-ante total pay (*TDC1*) includes salary, bonuses, other annual compensation, total value of stock options and restricted stock granted during the year, long-term incentive payout, and other compensation. Our pay determination model includes the following pay determinants:

1. Firm performance (stock performance and accounting performance);
2. Complexity and risks of managerial tasks (size, market-to-book, growth, and risks);
3. Corporate governance (whether the CEO serves as the chairman of the board, the percentage ownership of blockholders, institutions and insiders; the number of directors, the percentage of inside directors, the GIM index, and CEO tenure);
4. Locations and local economic environment (returns of local stocks in excess of market returns and the cost of living index at the MSA level); and

¹⁰Our results are robust to using the S&P 500, S&P MidCap 400 and S&P SmallCap 600 index components as defined by Standard & Poor's in 2005.

5. Social variables (the number of local CEOs, the number of nearby social elites, the luxury home value in the MSA, and the number of common local directors).

We refer to the variables in groups #1 and #2 as the *economic variables*. Share price information is from the University of Chicago's Center for Research in Security Prices (CRSP); company financial and accounting information is from Standard and Poor's Compustat database. The historical locations of corporate headquarters are found using historical zip codes, provided by Compact Disclosure. These codes are linked to the latitudes and longitudes at <http://www.census.gov/geo/www/gazetteer/places2k.html>. The number of local CEOs is the number of S&P 1500 firms (self inclusive) whose headquarters are located within a 60-mile radius of a firm's headquarters.

Luxury home values by MSA are provided by a private source that also provided the data to *Business Week*. Home locations of social elites are found via zip codes of all people listed in the *Social Register*, 2004 Edition. The ACCRA cost of living indexes are provided by the *Council for Community and Economic Research* (www.coli.com). The sources for governance and director variables include the Investor Responsibility Research Center (IRRC), Corporate Proxy, and Compact Disclosure.

2.2 Preliminary analysis

Figure 1 plots the average level of CEO pay (*TDC1* in the ExecuComp database) in a social circle against the size of the circle measured by the number of local CEOs. The positive correlation between average CEO pay and the size of the social circle is economically significant. For example, the fitted line suggests that if a CEO moves from the average social circle to a circle with one more CEO, his compensation increases by \$13,200.

Table 1 provides descriptive statistics for variables used in the analysis. Panel A summarizes traditional pay determinants such as firm performance, risk and complexity of business (sales). It also contains economic conditions such as the cost of living index given by MSA and excess returns of local stocks, as measured by the value-weighted return (*TRSIYR*) of all companies headquartered within 60 miles of the firm's

headquarters less the CRSP value-weighted monthly market return (*VWRET*). In our regressions on social premiums, we control for these two local variables to show that social premiums in CEO compensation do not merely reflect pay adjustments for different living standards in different areas.

Panel B describes a list of eight variables of corporate governance that, according to earlier studies,¹¹ may affect CEO compensation. CEO tenure is the number of years a CEO has held the CEO title; other board characteristics are from the IRRC database and Compact Disclosure. Their definitions are self-explanatory. The GIM index measures the firm's anti-takeover provisions: a lower GIM index indicates better conditions for external corporate governance.

Panel C lists social variables. Column 1 describes our primary measure of the size of the social circle: the number of CEOs of S&P 1500 firms headquartered with 60 miles of the firm's headquarters (*local CEOs*). The average number of local CEOs is 60, the median is 45, and the 25th and 75th percentiles are 15 and 82, respectively. The largest social circles are in the following metropolitan areas: New York-White Plains-Wayne (NY-NJ) and Nassau-Suffolk (NY), each of which contains about 190 of S&P 1500 firms. There are 195 CEOs who have no peer CEOs within the 60-mile radius (for example, Bismarck, ND and Tupelo, MS each has only one of the S&P 1500 firms). Column 2 shows the year-to-year variation of the number of local CEOs due to adjustments of the S&P index components (associated with changes in market capitalization and liquidity, mergers and acquisitions, going bankrupt, or going private) and relocations of corporate headquarters.¹² Column 3 describes the number of social elites who are listed on the Social Register and live within 60 miles of the firm's headquarters (*nearby social elites*).¹³ Social elites include those who inherited wealth, or are top executives or former top executives, of which very few are current CEOs of S&P 1500 firms. The average and median numbers of nearby social elites are 1,328 and 267, respectively.

¹¹ See, for example, Core, Holthausen, and Larcker (1999), and Gompers, Ishii, and Metrick (2003).

¹² In our sample of S&P 1500 firms during 1994-2005, only 157 firms moved their corporate headquarters for more than 30 miles. Out of the 157 firms, 90 firms went through mergers and acquisitions within a year. Out of the remaining 67 firms, 20 appointed new CEOs in the year of the headquarters relocation.

¹³ See the 2004 Social Register published by the *Social Register Association* in New York City, New York.

Luxury homes may be used by CEOs and social elites to display and compare wealth. We use the 99th percentile of home values within each CEO's MSA as a proxy for the values of luxury homes in the area. In our sample, the mean and median of luxury home values in all MSAs are \$1.11 million and \$0.88 million, respectively; increasing to \$1.41 million and \$1.08 million, respectively, in 2005. These values are lower than \$2.3 million, the median market value of the main residences for S&P 500 CEOs in late 2006 (See Liu and Yermack, 2007). Considering that our sample includes CEOs of MidCap, SmallCap, as well as S&P 500 firms and that the price in the housing market went up during our sample period, we believe luxury home values in the MSA could serve as a proxy for the values of luxury homes in the local area to which CEOs, social elites, and their spouses pay attention. This variable, different from the cost of living index, is more relevant for social comparisons and is thus closely related to social premiums in CEO pay.

The three social variables discussed above are highly correlated. The correlation of the number of local CEOs and the number of social elites is 0.805, and the correlation of the number of local CEOs and the luxury home value in the MSA is 0.671. Thus in the empirical specification, we orthogonalize different social variables to capture the incremental effect of social pressures in each avenue on CEO compensation.

2.3 Empirical strategy

Our multivariate analyses examine the effect of social pressures on social premiums in CEO compensation. The baseline model has two groups of variables: the size of the social circle, a proxy for social pressures, and firm characteristics.

$\ln(TDC1)$

$= f(\ln(\text{number of local CEOs}), \text{market-to-book}, \sigma(\text{ROA}), \sigma(\text{stock return}), \ln(\text{sales}), \text{ROA}, \text{lagged ROA}, \text{stock return}, \text{lagged stock return}).$

This specification is in line with the economic model for executive pay (see Core, Holthausen, and Larcker, 1999; and Murphy, 1999) in which CEOs are compensated for stock and accounting performance, for managing complex operations, and for taking risks

and generating growth. We winsorize CEO compensation (*TDC1*) and the number of local CEOs at the 1st and 99th percentiles, then take a log transformation of each to overcome the skewness in the data. Econometrically, the coefficient estimate of $\ln(\text{number of local CEOs})$ measures the elasticity of CEO pay to social circle size.

We then add corporate governance variables and local economic variables, as described in Section 2.1, into this baseline model. It is critical to filter out the portion of CEO compensation adjusted for the local living standard before attributing CEO compensation to pressures from local social peers.

In all regressions except for the one with firm fixed effects, we include indicators for the Fama and French 49 industry classifications. Because the sample contains panel data over 12 years, we cluster standard errors at the firm level (see Petersen, 2009) and add year dummy variables in all regressions. Moreover, in separate tests, we add firm (state) fixed effects to account for the effect of firm-specific (state-specific) and time-invariant variables that are omitted in the specifications.

3. Empirical Results

We first show that the positive link between CEO pay and the number of local CEOs depicted in Figure 1 continues to hold in multivariate regression analyses. The number of S&P 1500 companies within 60 miles of the firm's headquarters measures the size of the social circle and serves as a proxy for social pressures. Table 2 summarizes our main empirical findings: CEO compensation increases with the number of local CEOs after controlling for other pay determinants. In other words, we show that the social premium exists.

There are four specifications, each of which uses the ex-ante total pay ($\ln(TDC1)$) as the dependent variable and includes an expanded set of explanatory variables. Column 1 reports the results using the number of local CEOs and a set of economic variables as explanatory variables. The coefficient estimate of $\ln(\text{number of local CEOs})$ has the predicted positive sign and is statistically significant at better than 1%. Not surprisingly, CEOs of larger firms and firms with higher risks, higher growth and better performance tend to receive higher pay.

Column 2 adds corporate governance variables,¹⁴ four of which are statistically significant: CEO compensation is higher in firms where the CEO chairs the board, where institutional shareholders have higher ownership, and where the board is larger. CEO compensation is lower in firms where blockholders have higher ownership. These findings are consistent with the existing literature such as Core, Holthausen, and Larcker (1999), Hartzell and Starks (2003), and Bizjak, Lemmon, and Naveen (2008).

Two local variables added in Column 3 measure local economic conditions that may affect the level of CEO compensation: the cost of living index in the MSA and the excess returns of local stocks. The coefficients of both variables are positive and significant at the 5% level. This indicates that CEO compensation is adjusted for local economic conditions.¹⁵ More importantly, $\ln(\text{number of local CEOs})$ is significant at greater than the 1% level, suggesting the social premium goes beyond compensating CEOs for different living standards in different geographic areas. Economically, the average social premium for a CEO in a social circle with 82 CEOs (the 75th percentile of social circles) is \$0.56 million higher than the average social premium for a CEO in a social circle with 15 CEOs (the 25th percentile of social circles).¹⁶ Observe that the average and median of CEO total pay in our sample are \$5.344 million and \$2.777 million, respectively. The pay difference of \$0.56 million corresponds to 10.5% and 20.0%, respectively, of the mean and median of CEO total pay.¹⁷

Column 4 adds an indicator for firms in the S&P 500 index and a variable interacting this indicator variable with $\ln(\text{number of local CEOs})$. The latter captures the incremental effect of social pressures on CEOs of large firms. We find that social

¹⁴ Core, Holthausen, and Larcker (1999) and Bebchuk and Cohen (2005) examine the role of corporate governance on executive pay. Nguyen (2005) shows the adverse influence of social elites on boards.

¹⁵ Our results are robust to using housing price indices by MSA, provided by the Office of Federal Housing Enterprise Oversight (*OFHEO*).

¹⁶ The average pay for S&P 1500 CEOs in a social circle with 15 CEOs is \$5.217 million. The predicted average pay for S&P 1500 CEOs in a social circle with 82 CEOs is calculated as follows: $\ln(\text{pay}(82)) - \ln(\text{pay}(15)) = 0.0601 * (\ln(82) - \ln(15))$, where the value of 0.0601 is obtained from Column 3 of Table 2. Thus, $\text{Pay}(82) = 5.217 * \exp(0.0601 * \ln(82/15)) = \5.777 million. This is higher than the average compensation for CEOs in circles with 15 CEOs by $5.777 - 5.217 = \$0.56$ million, all else being equal.

¹⁷ The social premium result also exists if we use the number of local CEOs in the previous year as the main explanatory variable. Our interpretation is as follows. A CEO learns from either public sources or face-to-face interactions with other local CEOs about what level of pay is needed to maintain or improve social ranking. In many cases, the CEO could form the pay expectation early on through either sharing compensation consulting firms or communicating directly with other local CEOs about what they are expected to receive. In these cases, CEOs can influence their own pay packages in the contemporaneous year. In other cases, the desired pay packages are implemented in the following year.

premiums in CEO compensation are significantly higher for the S&P 500 firms. Economically, we find that moving from the 25th to 75th percentile of social circles in our sample increases the social premium for an S&P 500 CEO by \$0.93 million.¹⁸ This result is not surprising because CEOs of large firms are under greater social pressures to receive higher pay. CEOs of large firms are less likely to make comparisons with CEOs of small firms because they often participate in different social circles: exclusive clubs and charity balls versus local chambers of commerce and Rotary Clubs.

One could argue that the association shown between CEO compensation and the number of local CEOs could be driven by factors not included in our regression models even though these models include numerous pay determinants. To address this concern, we add firm fixed effects into the baseline regression to take into account time-invariant firm characteristics. As shown in Table 3, some slowly changing or time-invariant factors that are not included in the baseline specification improve the explanatory power of the regression. The adjusted R-squared increases from 0.4552 to 0.6876 when firm fixed effects are added. This magnitude of increase in the adjusted R-squared is sizable, but not as large as what was documented in studies on capital structure (for example, see Lemmon, Roberts, and Zender, 2008). More importantly, the social premium remains: its economic significance actually increases and it is statistically significant at greater than the 1% level.¹⁹

We then repeat the main regression of CEO pay on the number of local CEOs using three alternative measures of pay: salary, salary and bonuses, and the ex-post total pay (*TDC2*, which is same as *TDC1* except we replace the value of options granted with the value of options exercised during the year). The regression results are summarized in Table 4. The social premium exists for all components of CEO compensation; it is weaker for salary and bonus payment and stronger for equity-based pay.²⁰

¹⁸ Using the coefficients for S&P 500 CEOs shown in Column 4 ($0.0858 = 0.0374 + 0.0484$), we find that the average CEO compensation in social circles of size 82 is \$0.93 million higher than that in social circles of size 15.

¹⁹ This result suggests that failure to account for time-invariant omitted variables causes one to underestimate the effect of social pressure on CEO compensation. The omitted variables simultaneously make CEO compensation higher and the number of peers lower.

²⁰ Even though the board has direct influence over the level of ex-ante total pay (*TDC1*), the ex-post total pay (*TDC2*) is highly correlated with the ex-ante one. In addition, CEOs and their spouses may also pay attention to the money pocketed and consumed by their social peers. Thus, social premiums exist when CEO compensation is measured ex post.

The social premium result is shown robust to various additional specifications in Table 5. First, the social premium result is not driven by the largest social circles such as ones in New York or New Jersey. When social circles with more than 82 local CEOs (the 75th percentile of our sample) are excluded from the analysis, social premiums actually go up. Our interpretation of this result is that a CEO can only socialize with a certain number of people on a regular basis. Second, social interactions are not limited to CEOs of the S&P 1500 firms. Counting the number of public companies whose market values of equity are greater than \$88 million (the 1st percentile of market capitalization in the S&P 1500 sample) and whose headquarters are located within 60 miles of the firm, the average number of local CEOs is 147.8 and the median is 105. As reported in Column 2, the social premium result survives using this alternative measure for social circle size. Next, social premiums are not merely reflecting some non-linear impact of costs of living. In the regression reported in Column 3, we include a squared term of the cost of living index in the MSA and show that social premiums remain. Moreover, the social premium result survives when state fixed effects are added into the regression; see Column 4. Lastly, we replace firm ROA and lagged firm ROA by industry adjusted values (subtracting the industry medians of the corresponding variables). The social premium result remains; see Column 5. Empirical findings reported in Tables 2-5 confirm Hypothesis 1.

The following describes some robustness results not included in the tables. First, to address potential endogeneity issue, we look at firms with headquarters relocations in our sample period. It is difficult to argue that a CEO decides to move the headquarters of the firm merely to boost his own compensation. We impose the following requirements: (1) the firm has the same CEO during the period of three years before to three years after the relocation; (2) the data on sales and CEO compensation is available in the seven-year window; and (3) there are at least 4 years between two relocations. We adopt a sufficiently long window to ensure that the adjustment of pay to the new social environment can be implemented. These requirements leave us with 125 firms in the sample. The average social circle size decreases by 2.3, while the median size increases by 1. We leave out the data in the first year of relocation to mitigate the effect of signing

on bonuses. We find weak relationship (significant at 10%) between the change of CEO total pay and the change of the number of local CEOs, after controlling for changes in firm size, as measured by sales. We have this statistically weaker result at least partially because more than 60% of the headquarters relocations are accompanied by mergers within one year.

Second, we look at the connection between CEO pay and the number of local peers within each social circle. The social interaction and social comparison theory suggests that the competition to reach the top of a social circle is stronger for a person in a cohort near the top. Thus, for social circles with at least 10 CEOs, we sort CEOs into above 90th percentile, between 75-90th percentile, and the third and fourth quartiles in terms of their compensation. Our results are strongest for firms in the top decile of pay. This corroborates the social pressure hypothesis.

Moreover, for the S&P 500 CEOs, we collect their golf club membership data (from USGA) because golf clubs can be specific venues of social interactions. We count the number of CEOs who are members of the same golf club which are located within a distance of 100 miles of the corporate headquarters. The number of golfing contacts explains CEO compensation above and beyond the number of local CEOs, but nearby CEOs who do not belong to the same golf club also have explanatory power for CEO pay. This evidence suggests golfing as one social channel for CEOs among various possibilities.

4. Sources of social pressures

In this section, we examine how CEOs socialize and conduct comparisons, and how various sources of social pressures accelerate the race for greater pay. First, we examine how geographic distance between CEOs and their social peers affects the frequency of social interactions and the pressures of social comparisons. We count the number of peer CEOs in the 30 miles circle, the 30-60 miles ring, and the 60-120 miles ring. The results presented in Table 6 demonstrate that the impact of social pressures on CEO compensation is the highest for social circles within 30 miles, getting much weaker (reduced by 64%) for social circles between 30 and 60 miles, and disappearing completely beyond 60 miles. These results are consistent with the premise that CEOs

attend social events within 30 miles (the average distance of daily travels for Americans) on a more regular basis, and thus are under greater influences of peers in these closer circles.

Next, we look at two tiers in social circles: local CEOs and nearby social elites. The average (median) number of social elites in a 60-mile radius for a CEO in our sample is approximately 22 (six) times of the number of local CEOs. To capture the incremental effect of social interactions, we orthogonalize the number of local CEOs to the number of social elites. As shown in Column 1 of Table 7, the estimated coefficients on both $\ln(\text{number of nearby social elites})$ and the residual term are positive and statistically significant, suggesting that while social elites affect the dynamics of CEO pay, peer CEOs in the same social circle impose additional pressures that elevate CEO pay.

As discussed in the literature of conspicuous consumption and confirmed by Liu and Yermack (2007), wealthy people tend to display luxury homes as a means of signaling their social status. We next examine the influence of the *luxury MSA home value* (the 99th percentile value of homes sold in the MSA) on the social premium in CEO compensation. We orthogonalize the number of local CEOs to the luxury home value in the MSA. The positive and statistically significant coefficients on both $\ln(\text{luxury MSA home value})$ and the residual term suggest that while comparing luxury homes is a means of social comparisons, there are additional pressures for greater pay coming from other comparisons with peer CEOs in the local area.²¹ Note that the luxury home value differs from the housing price index (or the cost of living index) averaged in the MSA. While purchasing luxury homes is one way for CEOs and nearby social elites to display wealth, the average MSA housing price index merely captures variations in living expenses across geographic areas.

4.1 Pay dispersion and skewness

One unique prediction of our social pressure theory is that as the social circle grows, social pressures increase at a greater rate for those ranked higher in their social circles. As a result, the pay dispersion is higher in larger social circles as CEOs compete

²¹ In an unreported regression, we orthogonalize $\ln(\text{number of local CEOs})$ to $\ln(\text{luxury home value})$, and orthogonalize $\ln(\text{luxury home value})$ to the MSA housing price index. The coefficient on $\ln(\text{number of local CEOs})$ does not change.

to maintain or even improve their ranks by lobbying for even greater pay. This implication clearly distinguishes our theory from fairness-based theories that predict pay convergence toward the median pay; i.e., a *decrease* in pay dispersion. For example, Bizjak, Lemmon, and Naveen (2008) predict that CEOs whose pay was below (above) the median peer pay in the previous year receive higher (lower) pay raises. While fairness-based theories capture the industry/size (occupation) norm, our theory reflects the social norm.

In this section, we examine the link between pay dispersion within a social circle and the size of the social circle, and the impact of pay skewness within a social circle on social premiums for CEOs in the circle. We use two measures for the dispersion of CEO pay within a social circle: the standard deviation and the coefficient of variation (standard deviation divided by the mean). In our empirical specification, pay dispersion in a social circle is regressed on the size of the circle, the average level of economic variables for firms in the circle, the average level of governance variables for firms in the circle, and the average level of local variables. As shown in Table 8, pay dispersion is indeed greater in a larger social circle, regardless of which dispersion measure is used. Additionally, pay dispersion within a social circle increases with the average institutional ownership and decreases with the average GIM index of firms in the circle.

Moreover, we link the level of CEO pay to the skewness of pay for CEOs within the social circle in both the previous year and the contemporaneous year. As shown in Table 9, CEO pay increases with pay skewness within the social circle in the previous year but not that in the contemporaneous year. This finding suggests that top paid CEOs, who have very generous pay packages, establish the aspiration level for the rest of CEOs in the social circle. Still, it takes time to put into place new compensation packages to reflect the aspirations. Empirical findings in Tables 8-9 confirm Hypothesis 2.

4.2 Justification of social premiums

In this section, we examine how the external and internal environments affect the magnitude of social premiums, which cannot be explained by performance, complexity, risk, corporate governance, and local economic conditions. First, we look at the heterogeneity of the social premiums across industry groups as classified in Murphy

(2003): manufacturing, regulated utility, financial, and new economy.²² Our results, as demonstrated in Table 10, show that on average, firms in manufacturing (the base), financial services, and new economy industries all grant social premiums to their CEOs. CEOs in the financial services industry receive greater total pay but not greater social premiums than do CEOs in manufacturing firms. More interestingly, CEOs in the regulated utility industry receive no social premiums. This is consistent with the political constraint theory shown by Joskow, Rose, and Wolfram (1996) in their study of CEO compensation in the electric utility industry. These authors postulate that under constant political and regulatory pressures, the boards of firms in the regulated utility industry are reluctant to grant compensation that is not directly linked to firm and CEO characteristics.

Lastly, we examine how the composition of the board affects social premiums in CEO compensation. If social premiums are granted following the social norm, we would expect social premiums to be higher in firms with directors who better understand the local social norm. This is precisely what we find, as shown in Table 11. The dummy variable $D(\text{common local directors})$ is set to 1 if at least one director of the firm serves on the board of another S&P 1500 company that is located within 60 miles of the firm. These directors attend board meetings of other local companies and are more familiar with personal relationships and social norms in the local area. The positive and significant coefficient of the interaction term of $D(\text{common local directors})$ and $\ln(\text{number of local CEOs})$ indicates the incremental effect of the existence of common local directors on the magnitude of social premiums in CEO compensation. Actually, moving from a firm without any common local director to a firm with at least one

²² According to Murphy (2003), the new economy firms are defined as companies competing in the computer, software, internet, telecommunications, or networking fields. Specifically, new economy firms are defined as companies with primary SIC designations of 3570 (Computer and Office Equipment), 3571 (Electronic Computers), 3572 (Computer Storage Devices), 3576 (Computer Communication Equipment), 3577 (Computer Peripheral Equipment), 3661 (Telephone & Telegraph Apparatus), 3674 (Semiconductor and Related Devices), 4812 (Wireless Telecommunication), 4813 (Telecommunication), 5045 (Computers and Software Wholesalers), 5961 (Electronic Mail-Order Houses), 7370 (Computer Programming, Data Processing), 7371 (Computer Programming Service), 7372 (Prepackaged Software), and 7373 (Computer Integrated Systems Design). Old economy firms are firms with SIC codes less than 4000 not otherwise categorized as new economy firms.

common local director, the social premium for a CEO doubles.²³ This evidence confirms Hypothesis 3.

5. Conclusion

“Let me tell you about the very rich. They are different from you and me”.²⁴

The behavior that paid CEOs demand even greater pay is often attributed to greed. This study helps us understand this phenomenon from the perspectives of social interactions and pressures from social peers. Our approach explicitly recognizes that a CEO’s view of one’s well-being, by definition, must be in the context of one’s social setting. CEOs socialize with other CEOs and social elites in their community and compare wealth through published sources (corporate proxy statements, Forbes’ list of the wealthiest people) as well as the visible display of wealth with luxury homes, aircrafts, and yachts. CEOs are aware of their social rankings and thus are propelled to demand greater pay to secure or improve their rankings, anticipating other CEOs will do the same.

The evidence presented in this paper suggests that the compensation for otherwise identical CEOs varies from one location to another, not simply due to difference in living expenses, but due to the wealth level needed to maintain the CEO’s status in the respective social circle. If there are compelling reasons for a company’s headquarters to be located in a certain geographical area, the board of directors would be compelled to follow the social norm and grant the social premium to its highly valuable CEO. However, the collective actions of the boards will inevitably raise CEO pay year after year and accelerate the pace of the “hedonic treadmill.”

²³ The average pay for S&P 1500 CEOs in a social circle with 15 CEOs is \$5.217 million. The predicted average pay for CEOs of S&P 1500 firms that do not have common local directors and is in a social circle with 82 CEOs is $5.217 * \exp(0.048 * \ln(82/15)) = \5.66 million. This is higher than the average pay for CEOs in social circles with 15 CEOs by $5.66 - 5.217 = \$0.44$ million, all else being equal. Similarly, the pay increase as moving from a circle with 15 CEOs to a circle with 82 CEOs for a CEO of an S&P 1500 firm that has common local directors is $5.217 * \exp((0.048 + 0.0501) * \ln(82/15)) - 5.217 = \0.95 million.

²⁴ By F. Scott Fitzgerald in the short story “Rich Boy” in “All the Sad Young Men.”

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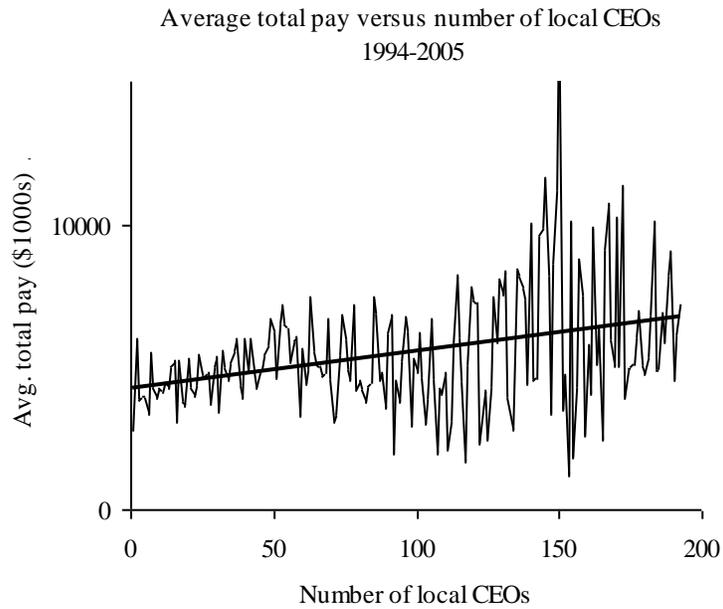


Figure 1: Effect of social factors on average total pay for S&P 1500 CEOs

The sample contains all S&P 1500 CEOs between 1994 and 2005 that have the data required for the regression analysis in Table 2. *Total pay* (ExecuComp variable *TDC1*, expressed in 2005 dollars) is the sum of salary, bonus, total value of restricted stock granted, total value of stock options granted, long-term incentive payouts, and other compensation. *The number of local CEOs* is the number of companies within 60 miles of the headquarters of the firm including the firm itself.

Table 1
Sample statistics

The sample in Panels A, B, and D is comprised of S&P 1500 firms between 1994 and 2005 with all of the variables needed for the regression analysis in Table 2; the sample in Panel C is additionally restricted by the availability of social variables. Unless otherwise stated, samples throughout the paper exclude the year of the headquarter relocation involving a move of at least 30 miles (because the number of local CEOs is indeterminate in the relocation year). The *Number of local CEOs* is the number of S&P 1500 companies within 60 miles of the headquarters of the firm, including the firm itself. *Sales* (data12) are in millions of 2005 dollars. *Market-to-book* is the ratio of the market value to the book value of equity (data25*data199/data216). *Stock return* is the trailing year stock return (ExecuComp variable *TRS1YR*). *ROA* is return on assets (data237/data6). *Firm risk (stock return)* is the annualized standard deviation of monthly stock returns in the trailing five years. *Firm risk (ROA)* is the standard deviation of ROA in the trailing five years. *Local stock return less market return* is the value weighted return (*TRS1YR*) of all firms headquartered within 60 miles of the firm's headquarters less the CRSP value weighted market return (*VWRETD*). The *Cost of living index* provides the living cost differential across U.S. urban areas for moderately affluent professionals (published by the *Council for Community and Economic Research*). *Tenure* is the number of years since the CEO gained the title of CEO at the firm. *% of shares held by blockholders* is the percentage of shares held by entities who own more than 5% of the outstanding shares. This variable, *% of shares held by institutions* and *% of shares held by insiders* are obtained from *Compact Disclosure*. *% of inside directors* is the percentage of board members who are the firm's officers. *GIM index*, as defined in Gompers, Ishii, and Metrick (2003), measures the anti-takeover provisions. *Number of nearby social elites* is the number of individuals who are listed in the 2004 Social Register and live within 60 miles of the firm's headquarters. *Luxury home value in the MSA* is the 99th percentile of the values for homes sold in the MSA, measured in dollars. *Number of common local directors* is the number of other S&P 1500 companies that is located within 60 miles and share some directors with the firm. *Total CEO pay* (ExecuComp variable *TDC1*) is the sum of salary, bonus, the total value of restricted stock granted, the total value of stock options granted, long-term incentive payouts, and other compensation. *TDC2* is the same as *TDC1* except we replace the value of stock options granted by the value of stock options exercised during the year. All pay data are reported in 2005 dollars. Throughout the paper, we winsorize total compensation, the number of local CEOs, and the number of nearby social elites at the 1st and 99th percentiles of the sample.

Panel A: Economic and local variables

Statistic	Sales (millions of dollars)	Market-to-book	Stock return (%)	ROA(%)	Firm risk (σ)		Local stock return less market return (%)	Cost of living index
					Stock return (%)	ROA (%)		
Average	5,945	3.41	15.75	4.42	39.18	3.68	3.99	116.98
SD.	15,822	9.87	46.88	10.11	19.48	6.84	46.33	33.46
25 th percentile	683	1.57	-10.92	1.57	26.28	0.99	-21.87	96.50
50 th percentile	1,682	2.24	10.73	4.44	34.58	2.08	-0.78	102.80
75 th percentile	4,952	3.53	34.74	8.17	46.89	4.17	22.38	130.30
Observations	11,031	11,031	11,031	11,031	11,031	11,031	11,031	11,031

Table 1 continued*Panel B: Governance variables*

Statistic	CEO chairs the board (1=yes; 0=no)	Tenure (years)	% of shares held by blockholders	% of shares held by institutions	% of shares held by insiders	% inside directors	Number of directors	GIM index
Average	0.71	8.88	31.9	64.6	6.2	29.3	9.47	9.41
SD.	0.45	7.33	22.4	21.0	11.2	25.1	3.77	2.64
25 th percentile	0	4	14.7	51.6	0.6	12.5	7	8
50 th percentile	1	7	29.0	66.9	1.8	22.2	9	9
75 th percentile	1	12	45.4	80.0	6.2	33.3	12	11
Observations	11,031	11,031	11,031	11,031	11,031	11,031	11,031	11,031

Panel C: Social variables

Statistic	Number of local CEOs	Year to year change in the number of local CEOs	Number of nearby social elites	Luxury home value in the MSA (dollars)	Number of common local directors
Average	60.2	0.2	1327.9	1,111,491	1.80
SD.	54.7	11.0	1,973.0	693,485	2.81
5 th percentile	3.0	-11.0	6.0	461,746	0.00
25 th percentile	15	-3	101	647,297	0
50 th percentile	45	0	267	879,681	1
75 th percentile	82	2	1,521	1,413,226	2
95 th percentile	185	11	6,247	2,736,053	8
Observations	11,031	10,552	11,031	7,307	9,484

Panel D: Compensation variables

Statistic	Total pay (TDC1, thousands of dollars)	Salary (thousands of dollars)	Salary and bonuses (thousands of dollars)	Ex post total pay (TDC2, thousands of dollars)
Average	5,344	772	1,698	5,473
SD.	7,148	381	1,847	15,871
25 th percentile	1,412	513	754	1,043
50 th percentile	2,777	722	1,210	2,050
75 th percentile	5,852	973	2,017	4,782
Observations	11,031	11,031	11,031	11,031

Table 2
Social, economic, governance and local determinants of CEO pay

The sample is comprised of S&P 1500 firms between 1994 and 2005, as described in Table 1. The dependent variable is $\ln(TDC1)$ (total pay in ExecuComp, expressed in 2005 dollars). $TDC1$ includes salary, bonuses, other annual compensation, total value of stock options and restricted stock granted during the year, long-term incentive payout, and other compensation. $D(S\&P500)$ is an indicator variable that is set to 1 if the firm is a member of the S&P 500 index; 0 otherwise. All variables are defined in Table 1. Standard errors are clustered at the firm level when computing significance; t-statistics are given in parentheses below each reported coefficient; ***, **, and * denote p -value ≤ 0.01 , 0.05 and 0.10, respectively.

Dependent variable	ln(TDC1)			
<i>Social variables</i>				
ln(number of local CEOs)	0.0791*** (6.08)	0.0750*** (6.08)	0.0601*** (4.31)	0.0374** (2.28)
D(S&P500) * ln(number of local CEOs)				0.0484** (2.12)
D(S&P500)				0.1332 (1.53)
<i>Economic variables</i>				
Market-to-book	0.0036* (1.66)	0.0029 (1.64)	0.0030* (1.67)	0.0022 (1.63)
Firm risk (ROA)	0.0076** (2.31)	0.0075** (2.20)	0.0074** (2.18)	0.0055* (1.85)
Firm risk (stock returns)	0.0178*** (4.63)	0.0210*** (4.63)	0.0211*** (4.67)	0.0209*** (4.60)
ln(sales)	0.4210*** (40.57)	0.3979*** (32.32)	0.3977*** (32.33)	0.3278*** (21.65)
ROA	0.0028** (2.33)	0.0031** (2.11)	0.0031** (2.08) ***	0.0027** (1.96)
Prior year ROA	0.0030** (2.29)	0.0041*** (2.76)	0.0041 (2.80)	0.0039*** (2.79)
Stock return	0.0015*** (8.35)	0.0014*** (6.62)	-0.0009 (-0.78)	-0.0008 (-0.73)
Prior year stock return	0.0016*** (10.30)	0.0018*** (9.47)	0.0018*** (9.34)	0.0019*** (10.05)
<i>Governance variables</i>				
CEO chairs the board		0.1793*** (6.20)	0.1787*** (6.19)	0.1688*** (5.91)
Tenure as CEO		-0.0006 (-0.25)	-0.0008 (-0.32)	-0.0003 (-0.13)
% of shares held by blockholders		-0.0025*** (-3.74)	-0.0025*** (-3.79)	-0.0020*** (-3.14)
% of shares held by institutions		0.0051*** (6.89)	0.0051*** (6.85)	0.0050*** (6.81)
% of shares held by insiders		-0.0016 (-1.20)	-0.0016 (-1.20)	-0.0013 (-0.98)
% inside directors		0.0004 (0.83)	0.0004 (0.82)	0.0004 (0.68)

Table 2 continued

Number of directors		0.0088**	0.0087**	0.0069*
		(2.23)	(2.19)	(1.73)
GIM index		0.0045	0.0052	0.0027
		(0.84)	(0.97)	(0.51)
<i>Local variables</i>				
Cost of living index			0.0010**	0.0008**
			(2.51)	(2.09)
Local stock return – market return			0.0023**	0.0023**
			(2.10)	(2.16)
Intercept	4.0689***	3.7252***	3.6576***	4.2087***
	(29.69)	(21.50)	(21.08)	(22.29)
Year fixed effects	Yes	Yes	Yes	Yes
Fama and French 48 industry fixed effects	Yes	Yes	Yes	Yes
Adjusted R-squared	0.4233	0.4537	0.4544	0.4649
Observations	13,691	11,031	11,031	11,031

Table 3
Firm fixed effects

The sample is comprised of S&P 1500 firms between 1994 and 2005, as described in Table 1. The dependent variable is $\ln(TDC1)$ (total pay in ExecuComp, expressed in 2005 dollars). $TDC1$, economic, governance, and local variables are defined in Table 1. Standard errors are clustered at the firm level when computing significance; t-statistics are given in parentheses below each reported coefficient; ***, **, and * denote p -value ≤ 0.01 , 0.05 and 0.10, respectively.

Test information	No firm fixed effects	Firm fixed effects
<i>Social variables</i>		
ln(number of local CEOs)	0.0582*** (4.09)	0.0977*** (3.89)
<i>Economic variables</i>		
Market-to-book	0.0032* (1.65)	0.0011* (1.65)
Firm risk (ROA)	0.0082** (2.30)	-0.0012 (-0.55)
Firm risk (stock returns)	0.0208*** (4.59)	0.0069** (2.20)
ln(sales)	0.3990*** (31.74)	0.2760*** (12.43)
ROA	0.0039** (2.42)	0.0047*** (5.28)
Prior year ROA	0.0045*** (2.95)	0.0036*** (4.12)
Stock return	-0.0008 (-0.72)	-0.0004 (-0.42)
Prior year stock return	0.0017*** (9.01)	0.0015*** (11.61)
<i>Governance variables</i>		
CEO chairs the board	0.1742*** (5.87)	0.1045*** (4.98)
Tenure as CEO	-0.0008 (-0.33)	0.0022 (1.42)
% of shares held by blockholders	-0.0026*** (-3.82)	-0.0027*** (-5.09)
% of shares held by institutions	0.0053*** (6.94)	0.0020*** (3.50)
% of shares held by insiders	-0.0016 (-1.17)	0.0028*** (3.25)
% inside directors	0.0005 (0.85)	0.0008** (2.04)
Number of directors	0.0084** (2.07)	0.0054* (1.77)
GIM index	0.0047 (0.87)	-0.0008 (-0.09)

Table 3 continued

Local variables

Cost of living index	0.0010** (2.39)	0.0004 (1.35)
Local stock return – market return	0.0022** (2.00)	0.0016* (1.65)
Intercept	3.6322*** (20.49)	5.6558*** (14.21)
Year fixed effects	Yes	Yes
Fama and French 48 industry fixed effects	Yes	No
Firm fixed effects	No	Yes
Adjusted <i>R</i> -squared	0.4552	0.6876
Observations	10,737	10,737

Table 4
Alternative pay measures

The sample is comprised of S&P 1500 firms between 1994 and 2005, as described in Table 1. *Salary*, *Salary and bonuses*, and *Ex-post total pay (TDC2)* are all given by ExecuComp. *TDC2* includes salary, bonus, other annual compensation, total value of stock options exercised during the year, total value of restricted stock granted during the year, long-term incentive payout, and other compensation. All pay variables are expressed in 2005 dollars and winsorized at the 1st and 99th percentiles. The economic, governance, and local variables are defined in Table 1. Standard errors are clustered at the firm level when computing significance; t-statistics are given in parentheses below each reported coefficient. ***, **, and * denote *p*-values ≤ 0.01 , 0.05 and 0.10, respectively.

Dependent variable	ln(Salary)	ln(Salary and bonuses)	ln(Ex-post total pay)
<i>Social variables</i>			
ln(number of local CEOs)	0.0280*** (3.99)	0.0266*** (2.63)	0.0694*** (5.43)
<i>Economic variables (see Table 2)</i>	Yes	Yes	Yes
<i>Governance variables (see Table 2)</i>	Yes	Yes	Yes
<i>Local variables (see Table 2)</i>	Yes	Yes	Yes
Intercept	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Fama and French 48 industry fixed effects	Yes	Yes	Yes
Adjusted <i>R</i> -squared	0.5465	0.5149	0.4774
Observations	11,239	11,239	11,031

Table 5
Additional robustness tests

The sample is comprised of S&P 1500 firms between 1994 and 2005, as described in Table 1. The dependent variable is $\ln(TDC1)$ (total pay in ExecuComp, expressed in 2005 dollars). $\ln(\text{number of local S\&P 1500 firms})$ is the same as the $\ln(\text{number of local CEOs})$. $\ln(\text{number of local public firms with a market value of equity} > \$88 \text{ million})$ is the number of public firms headquartered within 60 miles of the CEO's headquarter location that have a market value of equity $> \$88$ million (the 1st percentile of the market value of equity of S&P 1500 firms). The economic, governance, and local variables are the same as in Table 2. *Alternative economic variables* are the same as the economic variables included in Table 2 except that ROA and prior year ROA are replaced by industry adjusted values of these variables. Industry adjusted ROA is firm ROA minus the median value of ROA for the firm's Fama and French 49 industry. All variables are defined in Table 1. Standard errors are clustered at the firm level when computing significance; t-statistics are given in parentheses below each reported coefficient. ***, **, and * denote p -values ≤ 0.01 , 0.05 and 0.10 , respectively.

Sample description	Excluding social circles with more than 82 local CEOs	Using the number of local public firms with a MVE $> \$88$ million	Enhanced control for the cost of living	Adding state fixed effects	Industry adjusted ROA
<i>Social variables</i>					
$\ln(\text{number of local S\&P 1500 firms})$	0.0646*** (3.80)		0.0586*** (3.86)	0.0434** (2.02)	0.0606*** (4.34)
$\ln(\text{number of local public firms with a market value of equity} > \$88 \text{ million})$		0.0581*** (4.43)			
<i>Economic variables (see Table 2)</i>					
<i>Alternative economic variables</i>	Yes	Yes	Yes	Yes	No
<i>Governance variables (see Table 2)</i>	No	No	No	No	Yes
<i>Local variables</i>	Yes	Yes	Yes	Yes	Yes
Cost of living index	0.0007 (0.68)	0.0009** (2.34)	0.0020 (0.74)	0.0009** (2.10)	0.0010** (2.45)
Square of the cost of living index			0.0000 (-0.39)		
Local stock return – market return	0.0027** (2.16)	0.0023** (2.09)	0.0023** (2.10)	0.0021* (1.95)	0.0022** (2.04)
Intercept	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Fama and French 48 industry fixed effects	Yes	Yes	Yes	Yes	Yes
State fixed effects	No	No	No	Yes	No
Adjusted R -squared	0.4310	0.4544	0.4544	0.4664	0.4544
Observations	8,345	11,031	11,031	11,031	11,031

Table 6

Geographic distance of peers

The sample is S&P 1500 firms from 1994 to 2005. The dependent variable is $\ln(TDC1)$ (total pay in ExecuComp, expressed in 2005 dollars). The *number of nearby CEOs* is the number of S&P 1500 CEOs within 30 miles (excluding the firm's CEO), 30-60 miles, and 60-120 miles of the headquarters location of the firm, respectively. The economic, governance, and local variables are the same as in Table 2. All variables are defined in Table 1. Standard errors are clustered at the firm level when computing significance; t-statistics are given in parentheses below each reported coefficient. ***, **, and * denote p -values ≤ 0.01 , 0.05 and 0.10, respectively.

Sample Description	Geographic distance of peers		
	CEOs within 0-30 miles of the firm's headquarters	CEOs within 30-60 miles of the firm's headquarters	CEOs within 60-120 miles of the firm's headquarters
<i>Social variable</i>			
$\ln(\text{number of nearby CEOs} + 1)$	0.0659*** (4.87)	0.0234** (2.17)	-0.0127 (-1.18)
<i>Economic variables (see Table 2)</i>	Yes	Yes	Yes
<i>Governance variables (see Table 2)</i>	Yes	Yes	Yes
<i>Local variables (see Table 2)</i>	Yes	Yes	Yes
Intercept	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Fama and French 48 industry fixed effects	Yes	Yes	Yes
Adjusted R -squared	0.4559	0.4520	0.4516
Observations	11,031	11,031	11,031

Table 7
Channels of social comparisons

The sample is comprised of S&P 1500 firms between 1994 and 2005, as described in Table 1. The dependent variable is $\ln(TDC1)$ (total pay in ExecuComp, expressed in 2005 dollars). *Residual of $\ln(\text{number of local CEOs})$ on $\ln(\text{number of nearby social elites})$* is the error term in a regression of $\ln(\text{number of local CEOs})$ on $\ln(\text{number of nearby social elites})$. *Luxury home value* is the 99th percentile of the values of homes sold in the MSA where the corporate headquarters is located. The luxury home residual is similarly defined. Economic, governance, and local variables are the same as in Table 2. All variables are defined in Table 1. Standard errors are clustered at the firm level when computing significance; t-statistics are given in parentheses below each reported coefficient. ***, **, and * denote p -values ≤ 0.01 , 0.05 and 0.10, respectively.

Test information	Social elites	Luxury home value
<i>Social variables</i>		
$\ln(\text{number of nearby social elites})$	0.0234*** (2.69)	
Residual of $\ln(\text{number of local CEOs})$ on $\ln(\text{number of nearby social elites})$	0.0668*** (3.50)	
$\ln(\text{luxury home value})$		0.1189*** (3.11)
Residual of $\ln(\text{number of local CEOs})$ on $\ln(\text{luxury home value})$		0.0473*** (2.61)
<i>Economic variables (see Table 2)</i>	Yes	Yes
<i>Governance variables (see Table 2)</i>	Yes	Yes
<i>Local variables (See Table 2)</i>	Yes	Yes
Intercept	Yes	Yes
Year fixed effects	Yes	Yes
Fama and French 48 industry fixed effects	Yes	Yes
Adjusted R -squared	0.4544	0.4368
Observations	11,031	7,301

Table 8
Pay dispersion within a social circle

The sample is comprised of S&P 1500 firms between 1994 and 2005, as described in Table 1. The *coefficient of variation of CEO pay within a social circle* is the dispersion of CEO pay within a social circle divided by the average pay within the circle. CEO pay is *TDC1* in ExecuComp, expressed in 2005 dollars. Values of governance, economic and local variables used in this table are the averages over all CEOs in a social circle; these variables are defined in Table 1. Standard errors are clustered at the firm level when computing significance; t-statistics are given in parentheses below each reported coefficient. ***, **, and * denote *p*- values ≤ 0.01 , 0.05 and 0.10, respectively.

Dependent variable	ln(Standard deviation of CEO pay within a social circle)	ln(Coefficient of variation of CEO pay within a social circle)
<i>Social variable</i>		
ln(number of local CEOs)	0.3871*** (21.12)	0.1766*** (19.94)
<i>Economic variables (average over CEOs in a social circle)</i>		
Market-to-book	-0.0004 (-1.06)	-0.0004** (-2.18)
Firm risk (ROA)	0.0029** (1.98)	0.0021*** (2.75)
Firm risk (stock returns)	0.0038* (1.84)	0.0021* (1.76)
ln(sales)	0.0368*** (4.17)	0.0089** (2.10)
ROA	-0.0007 (-0.96)	-0.0002 (-0.63)
Prior year ROA	0.0006 (0.69)	0.0005 (1.27)
Stock return	0.0000 (0.00)	-0.0001 (-0.20)
Prior year stock return	0.0005*** (3.50)	0.0002*** (2.67)
<i>Governance variables (average over CEOs in a social circle)</i>		
CEO chairs the board	0.0350 (1.61)	0.0048 (0.40)
Tenure	0.0004 (0.27)	0.0012* (1.74)
% of shares held by blockholders	-0.0005 (-1.11)	-0.0003 (-1.09)
% of shares held by institutions	0.0010* (1.83)	0.0006** (1.96)
% of shares held by insiders	0.0003 (0.34)	0.0002 (0.34)
% inside directors	0.0000 (0.03)	-0.0003 (-1.29)
Number of directors	-0.0002 (-0.05)	-0.0031* (-1.72)
GIM index	-0.0135*** (-3.27)	-0.0076*** (-3.52)

Table 8 continued

Local variables (average over CEOs in a social circle)

Cost of living index	0.0048*** (14.17)	0.0020*** (10.76)
Local stock return – market return	0.0003 (0.40)	0.0002 (0.40)
Intercept	5.6144*** (44.78)	-0.9052*** (-16.48)
Year fixed effects	Yes	Yes
Adjusted <i>R</i> -squared	0.5163	0.3759
Observations	10,847	10,847

Table 9
CEO pay and pay skewness within a social circle

The sample is the S&P 1500 CEOs who are in social circles (1994-2005) with at least three members the previous year (needed to compute skewness). The dependent variable is $\ln(TDC1)$ (total pay in ExecuComp, expressed in 2005 dollars). Economic, governance, and local variables are the same as in Table 2. All variables are defined in Table 1. Standard errors are clustered at the firm level when computing significance; t-statistics are given in parentheses below each reported coefficient. ***, **, and * denote p -values ≤ 0.01 , 0.05 and 0.10, respectively.

<i>Social variables</i>	
ln(number of local CEOs)	0.0597*** (3.62)
Prior year: Skewness of total pay for CEOs within 60 miles of a CEO's corporate headquarters	0.0147** (2.26)
Current year: Skewness of total pay for CEOs within 60 miles of a CEO's corporate headquarters	0.0100 (1.46)
<i>Economic variables (see Table 2)</i>	Yes
<i>Governance variables (see Table 2)</i>	Yes
<i>Local variables (see Table 2)</i>	Yes
Intercept	Yes
Year fixed effects	Yes
Fama and French 48 industry fixed effects	Yes
Adjusted R -squared	0.4613
Observations	10,566

Table 10
Industry heterogeneity

The sample is comprised of S&P 1500 firms between 1994 and 2005, as described in Table 1. The dependent variable is $\ln(TDC1)$ (total pay in ExecuComp, expressed in 2005 dollars). $D(\text{Financial})$ is 1 for firms with SIC codes between 6000 and 6999; 0 otherwise. $D(\text{Utility})$ is 1 for firms with SIC codes between 4900 and 4999; 0 otherwise. $D(\text{New economy})$ is 1 for firms with SIC codes of 3570, 3571, 3572, 3576, 3577, 3661, 3674, 4812, 4813, 5045, 5961, 7370, 7371, or 7372; 0 otherwise; see Murphy (2003). Economic, governance, and local variables are the same as in Table 2. All variables are defined in Table 1. Standard errors are clustered at the firm level when computing significance; t-statistics are given in parentheses below each reported coefficient. ***, **, and * denote p -values ≤ 0.01 , 0.05 and 0.10, respectively.

<i>Social variables</i>	
ln(number of local CEOs)	0.0689*** (4.03)
D(Financial) * ln(number of local CEOs)	-0.0015 (-0.05)
D(Utility) * ln(number of local CEOs)	-0.0884*** (-2.70)
D(New economy) * ln(number of local CEOs)	0.0328 (0.67)
<i>Industry segments</i>	
D(Financial)	0.4676*** (2.94)
D(Utility)	0.3321* (1.85)
D(New economy)	0.1511 (0.69)
<i>Economic variables (see Table 2)</i>	Yes
<i>Governance variables (see Table 2)</i>	Yes
<i>Local variables (see Table 2)</i>	Yes
Intercept	Yes
Year fixed effects	Yes
Fama and French 48 industry fixed effects	Yes
Adjusted R-squared	0.4577
Observations	11,031

Table 11
Effect of common local directors

The sample is comprised of S&P 1500 firms between 1994 and 2005, as described in Table 1. The dependent variable is $\ln(TDC1)$ (total pay in ExecuComp, expressed in 2005 dollars). *Number of common local directors* is the number of other S&P 1500 companies that are located within 60 miles and share some directors with the firm. $D(\text{Common local directors})$ is set to 1 if the number of common local directors is greater than 0; 0 otherwise. The economic, governance, and local variables are the same as in Table 2. All variables are defined in Table 1. Standard errors are clustered at the firm level when computing significance; t-statistics are given in parentheses below each reported coefficient. ***, **, and * denote p -values ≤ 0.01 , 0.05 and 0.10, respectively.

<i>Social variables</i>	
ln(number of local CEOs)	0.0480*** (2.71)
ln(number of local CEOs) * D(Common local directors)	0.0501** (2.19)
D(Common local directors)	-0.1780** (-2.14)
<i>Economic variables (see Table 2)</i>	Yes
<i>Governance variables (see Table 2)</i>	Yes
<i>Local variables (See Table 2)</i>	Yes
Intercept	Yes
Year fixed effects	Yes
Fama and French 48 industry fixed effects	Yes
Adjusted R-squared	0.4551
Observations	9,484
