The Geography of Executive Compensation

Christa H.S. Bouwman

Case Western Reserve University and

Wharton Financial Institutions Center

October 2011

Based on a variety of theoretical motivations, this paper first examines empirically whether geography affects CEO compensation and finds that it does. Specifically, if the CEOs of firms that are geographically-close to CEO i's firm experience a 1% increase in salary in a given year, CEO i will experience a 0.3% increase in salary the following year *ceteris paribus*. Based on cash and total compensation, the effects are roughly half and one third the size of the salary effect. These results are obtained while controlling for previously-documented factors that affect CEO compensation – including the average CEO compensation at similar-sized industry peers – and proxies for the cost of living. Similar results are obtained using a variety of alternative specifications, including instrumental variable regressions to deal with potential endogeneity concerns.

The paper then examines four possible reasons for geography to affect CEO compensation: (i) local labor market competition for CEOs; (ii) local hiring of similar CEOs; (iii) the effect of "leading firms" in the vicinity; and (iv) envy among geographically-close CEOs. The results are most consistent with envy.

† Weatherhead School of Management, Case Western Reserve University, 10900 Euclid Avenue, 362 PBL, Cleveland, OH 44106. Tel.: 216-368-3688. Fax: 216-368-6249. E-mail: christa.bouwman@case.edu.

Keywords: CEO compensation; Geography; Envy
JEL Classification: D8, G3, J3, R1

I am grateful to Zahi Ben-David, Jesse Fried, Yaniv Grinstein, Dirk Jenter, Li Jin, Cami Kuhnen, Kevin Murphy, Antoinette Schoar, and Yuhai Xuan for helpful suggestions, and to seminar participants at MIT Sloan School of Management, the University of Vienna, Case Western Reserve University, the Financial Intermediation Research Society Meeting, and the Financial Management Association for useful comments. Burch Kealey (directEDGAR) and Rimas Biliunas kindly provided me with part of the headquarter relocation data, and the Council for Community and Economic Research generously gave me the ACCRA Cost of Living Index data for all localities in the sample

THE GEOGRAPHY OF EXECUTIVE COMPENSATION

"It isn't that the CEOs are such terrible people, it's that the system, with its envy-driven compensation mania, has developed to a place where it brings out the absolute worst in good people. […] What makes CEO pay so difficult is that only a few of the people who are earning these huge amounts are actually worth it. Everyone else figures they have to keep up, or recognize that their guy isn't as good. Who wants the recognition that the company down the street has a remarkable CEO, but we have a mediocre klutz?"

Berkshire Hathaway's Charles Munger ("Taking on envy-driven CEO pay," Chicago Tribune, January 7, 2007.)

1. INTRODUCTION

While distance has been shown to matter in economic transactions for a variety of reasons, related primarily to information frictions (see, for example, Coval and Moskowitz, 1999, 2001; Hong, Kubik, and Stein, 2005; Kedia and Rajgopal, 2009), [1] standard optimal contracting theory suggests that geography has no role to play in executive compensation. The CEO's pay should merely depend on his reservation utility, his disutility for effort, his risk aversion, the risk in the payoff (e.g., Holmstrom, 1979), and possibly his perceived ability (e.g., Holmstrom and Ricart i Costa, 1986). Yet, if one goes beyond the standard model, there may be many reasons why geography might affect compensation. One reason may be geographic differences in labor market competition. Another may be the local hiring of CEOs with similar performance-relevant attributes, leading to pay clustering within geographies. A third reason may be due to a "leading-firm" effect, whereby firms in a given area follow leading firms in that area when it comes to setting CEO pay. And a fourth reason may be envy. Dur and Glazer (2008), Bartling and Von Siemens (2010) and others have introduced envy into the principal-agent model and shown that envy affects compensation contracts, effort supply and firm profits. Goel and Thakor (2010) establish theoretically and empirically that CEO pay envy affects firms' merger decisions. Moreover, because envy reference groups are typically geographically based (e.g., Persky and Tam, 1990), one may hypothesize that a link may be forged between geography and executive compensation. These considerations motivate the question empirically addressed in this paper: does geography affect CEO compensation, and if so, what factors generate this relationship?

The first part of the paper examines the effect of geography on executive compensation and documents a strong link. Specifically, I show that CEO compensation (salary, cash compensation, and total compensation) is positively and significantly related to the average level of compensation of CEOs employed

[1] For a more extensive overview, see Section 2.

at other firms headquartered within a 100-kilometer radius.[2] These results are obtained while controlling for other factors that have been found to affect CEO compensation, including the average compensation at similar-sized firms in the same industry (Bizjak, Lemmon, and Naveen, 2008; Faulkender and Yang, 2010).[3] Differences in the cost of living are also controlled for in all regressions.

The results are robust to using a variety of alternative specifications. Similar results are also obtained using instrumental variable (IV) regressions to deal with endogeneity (reverse causality). The main endogeneity concern is that while CEO i's compensation may be influenced by the average compensation of geographically-proximate CEOs, the compensation of those CEOs could also be affected by the compensation of CEO i. This issue is dealt with by lagging the compensation of the geographically-proximate CEOs in the analyses, but I also use IV regressions as an additional robustness check.

The coefficients on the (natural log of the) average salary, cash and total compensation of geographically-close CEOs are positive and generally highly statistically significant. The results are also economically significant. For example, the main regression results suggest that a 1% increase in salary enjoyed by geographically-close CEOs in the previous year results in a 0.3% increase in CEO salary in the current year. Based on cash and total compensation, the effects are roughly half and one-third the size of the salary effect. The effect of geography on CEO compensation is sizeable and tends to be at least as big as the effect of industry peer compensation.

The second part of the paper examines which of the four reasons identified above (local labor market competition, local hiring of similar CEOs, a leading-firm effect, and CEO pay envy) generate the relationship between geography and CEO compensation. The results appear to be most consistent with envy.

The motivation for local labor market competition for CEOs playing a role is that if firms limit themselves to hiring CEOs from the geographic areas in which their headquarters are located, then local competition for talent will link geography and CEO compensation. To test this, the sample is limited to companies that were part of the S&P 500 in the previous year. These are the largest and most prominent firms that compete in national or even global labor markets for their CEOs, so the compensation contracts for

[2] Similar results are obtained using the median compensation at geographically-close firms, and using a 250-kilometer cutoff. The CEO's own compensation is *not* included in the average compensation of geographically-close CEOs to exclude the effect of intertemporal wage correlations.
[3] The CEO's own compensation is *excluded* from the average compensation of CEOs at industry peers.

their CEOs should *not* be affected by the locations of the headquarters of these firms.[4] But even for these firms, I find that geography affects CEO compensation, casting doubt on the local-labor-market explanation.

A related possibility is that firms in an area, for some reason, prefer to hire CEOs with similar performance-relevant characteristics. If so, I would find a correlation between CEO pay and compensation at geographically-close firms simply because similar CEOs should receive similar pay. Test results suggest, however, that this is unlikely to be a driver of the results.

A third possible reason why geography may matter is that physical proximity could create "neighborhood effects" that cause firms to follow "leading" firms in the vicinity in setting CEO compensation (Glaeser, Sacerdote, and Scheinkman, 1996; Kedia and Rajgopal, 2009).[5] This literature asserts that leading firms influence others but are themselves *not* influenced by others. If the leading-firm effect holds, then my previous results could be attributed to the dominant effect of leading firms that happened to be in the geographic proximity, rather than the independent effect of geography *per se.* To investigate this, I classify the top three firms in any locality as the leading firms in that locality, and base this classification on a variety of metrics. I then perform two tests. I first examine whether the compensation of CEOs at these leading firms is influenced by the compensation of the CEOs of other firms in the area. In contrast to the leading-firm hypothesis, I tend to find that CEO salary and total compensation at leading firms are statistically significantly affected by CEO compensation at other firms. Second, if the leading-firm hypothesis is correct, CEO compensation of a "non-leading" firm should be more strongly influenced by CEO compensation at leading firms than by the average CEO compensation at *all* firms in that geographic area. However, my tests reveal the opposite – while leading firms have a positive effect on CEO compensation at non-leading firms, the effect tends to be *smaller* than the effect of the average compensation at all geographically-proximate firms. Thus, both tests produce results that are generally inconsistent with the "leading-firm" effect.

A fourth possible reason why geography affects CEO compensation is envy. The literature on the foundation of human preferences asserts that envy is hardwired in people by evolution, just like risk aversion (e.g., Foster, 1972; Robson, 2001) and it causes them to have "relative consumption" preferences – they care

[4] Yonker (2010) focuses on a different "local labor market" effect. He finds that firms are more likely to hire "local" CEOs, i.e. CEOs who were born and raised in that state, and that the tendency to recruit "local" CEOs is weakest for the largest firms, which is consistent with the hypothesis posed here that the labor market for S&P500 firms should not be local.

[5] Hong, Kubik and Stein (2004) show that social interaction, such as that which occurs among neighbors or in churches, affects the stock-market participation of individuals.

about their *relative* status (e.g., Duesenberry, 1949; Frank, 1985; Solnick and Hemenway, 1998).[6] This literature emphasizes five aspects of envy that are relevant to my tests.

First, envy is strongest within "reference groups" because people tend to compare themselves more with those who they feel are "similar" to them (e.g., Festinger, 1954; Adams, 1963; Elster, 1991; Clark and Oswald, 1996; Ferrer-i-Carbonell, 2005).

Second, while similarity for reference group formation is often defined quite broadly to include social standing, profession, etc., physical proximity is of pivotal importance, and maybe more so than similarity on demographic attributes (e.g., Strauss, 1968; Richer, 1976; Gartrell, 1982). Kulik and Ambrose (1992) suggest that one reason may be that proximity facilitates social interaction and increases the availability of information about others.[7] Several studies provide empirical evidence on the importance of physical proximity for envy reference groups (e.g., Persky and Tam, 1990; Ferrer-i-Carbonell, 2005; Luttmer, 2005). Persky and Tam (1990) even argue that absent information about an individual's reference group, spatial considerations should be paramount and reference groups should be defined geographically.

Third, while individuals make many different comparisons for envy purposes, a key comparison is made on *income* (e.g., Duesenberry, 1949; Frank, 1984a,b, 1985; Easterlin, 1995; McBride, 2001; Ferrer-i-Carbonnell, 2005; Dur and Glazer, 2008; Bartling and Von Siemens, 2010; Goel and Thakor, 2005, 2010).[8] Studies consistently report a significantly negative relationship between an individual's well-being or welfare and others' incomes, implying that the bigger the gap in income between an individual and his referent group, the less happy and more envious he is (e.g., Kapteyn and van Herwaarden, 1980; Clark and Oswald, 1996; Kapteyn, van de Geer, van de Stadt, and Wansbeek, 1997; McBride, 2001; Ferrer-i-Carbonell, 2005).[9]

---

[6] Envy is common and experienced by most people regardless of their cultural background (e.g, Schoeck, 1969; Foster, 1972).

[7] Early suggestions that envy may be affected by geographic closeness can be found in the works of the philosopher Thomas Aquinas (1265-1274), who argues: *"[…] a man envies not those who are far removed from him, whether in place, time, or station, but those who are near him […]."*

[8] There is an evolutionary explanation for this. When competing for access to scarce resources, the goal is to be better than rivals with whom one is competing. For example, when competing for a mate, women place a premium on their potential mates' financial prospects because they are able to invest in themselves and their offspring, while men value a woman's youth and attractiveness because she can deliver healthy offspring. As a result, other women being more attractive elicits envy in women, while men experience envy when other men have more financial resources (e.g., Hill and Buss, 2008).

[9] The intra-company evidence is generally based on surveys and case studies. Nickerson and Zenger (2008) describe several, including the following. A wooden toy manufacturer greatly increased productivity in one unit by introducing a bonus system, but due to pay envy by other units, returned to its original pay structure even though this lowered productivity and caused key employees to leave. After Tenneco had acquired a small firm, it planned to retain talent by keeping it as a stand-alone unit and offering special bonuses to its employees, but decided against it to ensure internal equity. Harvard decided to mimic the reward system used by privately-managed hedge funds to enhance performance of its endowment; while successful, the high pay was opposed by students, alumni, donors, and faculty in 2004 and led

In fact, many individuals would accept a reduced absolute level of income if they could have a better relative income (see Solnick and Hemenway, 1998). These studies typically focus on the income gap (although some include lagged own pay and lagged pay of the reference group as two separate variables) and define an individual's reference income as the *average* income of the reference group. I will do the same in my analyses, but also perform robustness checks using the median.

Fourth, while both intra- and inter-firm income comparisons are made (e.g., Summers and DeNisi, 1990; Lee and Martin, 1991; Kulik and Ambrose, 1992; Martin and Lee, 1992; Blau, 1994), higher-level employees are far more likely to use external referents than lower-level employees (Goodman, 1974; Oldham, Kulik, Stepina, and Ambrose, 1986). Kulik and Ambrose (1992) argue that this may be driven by two forces: upper-level employees have more inter-organizational contacts, increasing the availability of information about external referents; and firms' practice of CEO pay benchmarking also suggests that firms view external comparisons as proper for top-level individuals. More recently, Goel and Thakor (2010) have specifically focused on CEO pay envy. Assuming that CEOs are endowed with relative consumption preferences and that CEOs of larger firms earn more, they show theoretically and empirically that envious CEOs may engage in size-enhancing mergers, even at the expense of shareholder value. The popular press also suggests that CEOs envy each other's pay packages:

"Since securities regulators began requiring more disclosure of CEO pay in 1992, executives have been able to see in detail what others are earning, spurring 'pay envy.'" ("U.S. companies tweak CEO pay packages ahead of vote." Reuters, January 5, 2011.)

Finally, income comparisons are mostly "upwards" (Duesenberry, 1949). That is, the effect of envy is asymmetric in that individuals' happiness is negatively affected by earning less than the reference group, but significantly less positively affected by earning more (see also Frank, 1985; Hollander, 2001; Ferrer-i-Carbonell, 2005; Goel and Thakor, 2005, 2010). I verify the asymmetry in my analyses.

All five features of envy are relevant for my analysis. A particularly important question is how CEOs choose their reference groups. Oldham, Kulik, Stepina, and Ambrose (1986) find that most employees use only one or two referent groups. A natural first reference group for CEOs seems to be other CEOs at

---

to significantly-restricted pay and the departure of key fund managers and parts of Harvard's endowment. While these examples focus on employees in general rather than CEOs, they do show that pay envy exists and points at a trade-off in terms of the incentive benefits of those affected by incentive plans (in terms of higher effort and/or ability to attract superior talent), and comparison costs imposed by those not included in the plan. The evidence suggests that within companies, envy leads to wage compression, i.e., wage structures that weaken the link between pay and performance (see also Frank, 1985; Akerlof and Yellen, 1990).

similar-sized industry peers. However, since compensation consultants and executive compensation committees benchmark CEO compensation against that earned at similar-sized firms in the same industry (Bizjak, Lemmon, and Naveen, 2008; Faulkender and Yang, 2010), one would expect a link between CEO pay and that of its industry peers even absent envy. To make sure that this is not driving my results, all regressions in this paper control for industry-peer compensation. A second natural reference group for a CEO is suggested by the observation that envy has a strong spatial aspect, and is therefore comprised of the CEOs of companies in physical proximity of the CEO's own company. Thus, spatial considerations might influence the CEO's pay expectation in negotiations with the board, and also influence the responsiveness of the board to such an expectation; this could cause geography to affect CEO compensation.[10]

Two tests are performed to examine the effect of envy. The first is based on the insight that the effect of relative status concerns should be strongest (weakest) the further the CEO's pay lies below (above) the average of geographically-proximate CEOs *ceteris paribus*. This suggests that CEOs who earn the least relative to their geographic peers will end up obtaining the biggest compensation increases. I therefore regress the percentage change in CEO compensation on the CEO's percentage "compensation gap," the difference between the compensation of geographically-close CEOs and the CEO's own compensation, plus control variables. I find that the coefficient on the compensation gap is positive and significant, which supports the hypothesis that relative status concerns drive the effect of geography on CEO pay. Note that this result cannot be explained away as a mere "economic mean reversion" effect. The results indeed suggest that the CEO is catching up with the mean, but it is the pursuit of a mean that should be irrelevant, were it not for envy.

A second test of envy focuses on professional sports players' compensation. The idea is as follows. Based on existing executive compensation theories, the compensation of sports stars should be of no

[10] Even if CEOs do not explicitly demand higher compensation based on relative status concerns, their compensation demands may more subtly reflect expectations that have been shaped by them observing the compensation packages of top earners in the area. The board, which is itself aware of the same compensation data, may perceive some pressure to adjust the CEO's wage to be comparable to those of local CEOs, as the following quotes suggest: *"A few CEOs actually feel uncomfortable with the high pay their boards urge them to accept. But given their directors' fear that lower pay might send the wrong message to the company or investors, they feel they can't afford the luxury of such modesty."* ("CEO pay: The prestige, the peril." BusinessWeek, November 20, 2006.) *"Every board wanted to pay their CEO in the top quartile."* ("U.S. companies tweak CEO pay packages ahead of vote." Reuters, January 5, 2011.) While the expressed discomfort of CEOs with higher pay may be little more than "politically correct" public modesty, the point still remains that boards may perceive all sorts of pressure to make the pay packages of their CEOs comparable to those of others in the area. The maintained hypothesis throughout is that CEOs possess some bargaining power in the determination of their compensation. For empirical evidence and discussions on this, see, for example, Lorsch and Maciver (1989); Hermalin and Weisbach (1998); Baker and Gompers (2003); Bebchuk and Fried (2004); Fahlenbrach (2009).

consequence for CEO compensation. However, CEOs may envy how much sports stars in their geographic areas make. So if envy drives executive compensation, then sports stars' wages may have a role to play. The results indeed show that CEO compensation is statistically significantly related to the compensation of sports stars in their geographic areas. A robustness check in which I randomly assign each city's sports teams to another city shows that CEO pay is not related to the salaries of randomly-assigned sports stars. In other words, CEO pay is not affected by salaries of sports stars from randomly chosen geographies, but only by the salaries of spatially-affiliated sports stars. This further buttresses the envy explanation.[11]

While the results suggest that envy can explain why CEO compensation is geographically clustered, the documented CEO pay dynamics are potentially consistent with both envy and another story: it may be that there is undervaluation of CEO talent early in the CEO's career that is corrected over time as shareholders learn about CEO quality. Since such learning is likely to be the greatest during the first few years of a CEO's tenure, the documented CEO pay adjustments could be driven by CEOs with short tenures whose compensation levels are simply being adjusted upward to the levels of more senior peers. Tests reveal some support for this possibility, but the support is far weaker than for the envy-based explanation. Moreover, this learning story *cannot* explain why geographic clustering occurs in the first place.

The rest of the paper is organized as follows. Section 2 discusses the related literature. Section 3 describes the data and discusses the methodology. Section 4 presents the main empirical results. Section 5 includes robustness checks and instrumental variable regressions. Section 6 examines the four alternative explanations for why geography affects CEO compensation. Section 7 summarizes and concludes.

2. THE RELATED LITERATURE

This paper is related to three strands of the literature. The first strand is the literature on the economic ramifications of distance. In most of the papers in this strand, distance matters because of informational advantages: information is more efficiently procured when distances are smaller. For example, Coval and Moskowitz (1999, 2001) and Huberman (2001) document that investors prefer to invest in the stock of geographically-close firms. Hong, Kubik, and Stein (2005) show that mutual fund managers in the same city

[11] One may wonder why any firm would be willing to pay its CEO more because sports stars in the area make more. However, the effect of envy in this case may not be manifested quite as literally. Higher sports star compensation may simply be at work in the background, creating an environment that is more conducive to CEOs bargaining more aggressively for higher compensation and boards more willing to listen because very large compensation packages are in the news and "socially acceptable." Such a political-economy explanation is consistent with the view that CEO compensation determination is the outcome of a Nash bargaining game between the CEO and the board (see Bebchuk and Fried, 2004).

hold similar portfolios. Butler (2008) finds that "local" investment banks have a competitive advantage over nonlocal banks in municipal bond underwriting. Malloy (2005) finds that analysts provide more accurate forecasts when they are located geographically closer to the firms they analyze. Uysal, Kedia, and Panchapagesan (2008) find that acquirer returns are significantly higher in geographically-proximate deals. Petersen and Rajan (2002) show that greater usage of information technology at banks has enabled small firms to borrow over greater distances. Distance matters for different reasons in a small group of papers. For example, John and Kadyrzhanova (2008) document a geographic clustering of firms with anti-takeover provisions due to peer effects. Kedia and Rajgopal (2009) argue competitive reasons cause firms to grant more stock options to rank-and-file workers when a higher percentage of geographically-close firms grant more options.[12] My paper fits into this smaller group of papers. The average compensation of geographically-close CEOs seems to affect CEO compensation because CEOs care about their wages *relative* to those of geographically-proximate CEOs in their reference group.

The second strand of the literature to which this paper is related contains papers that examine the *level* of executive compensation.[13] For example, Bebchuk and Grinstein (2005) find that from 1993-2003, executive pay has grown beyond what can be explained by changes in firm performance, size, and industry mix. Gabaix and Landier (2008) argue that the substantial increase in CEO pay between 1980 and 2003 can be attributed to increases in market capitalization. Bizjak, Lemmon, and Naveen (2008) and Faulkender and Yang (2010) show that competitive benchmarking using peer groups affects the level of CEO pay. Yermack (1997), Bertrand and Mullainathan (2001), Bebchuk and Fried (2004), and Kuhnen and Zwiebel (2009) explain the rise in executive pay on the basis of an increase in managerial entrenchment. By contrast, this paper focuses on the effect of labor market competition, local hiring of similar CEOs, leading firms, and envy on executive pay.

The third strand of the literature to which this paper is related consists of papers on the effects of envy (see, e.g., Smith and Kim, 2007 for an overview). Early contributions on the importance of envy-related social concerns in economics include Smith (1759), Marx (1849), Veblen (1899), and Keynes (1930). More recent theoretical contributions in Economics have used relative-consumption preferences to formalize

[12] Specifically, Kedia and Rajgopal (2009) argue that labor markets for rank-and-file employees are geographically segmented. To attract and retain such employees, firms examine the use of options at other firms in the local community with whom they compete for labor. Firms will thus be more inclined, for competitive reasons, to offer options if geographically-close firms offer options.

[13] Another part of the literature on executive compensation has focused on estimating and explaining the pay-for-performance sensitivity of executive compensation (Jensen and Murphy, 1990; Hall and Liebman, 1998; Murphy, 1999; Bebchuk and Fried, 2004).

envy and explain compressed wages (Frank, 1984b; Lazear, 1989; Levine, 1991), involuntary unemployment (Akerlof and Yellen, 1990), the effectiveness of tournaments (Grund and Sliwka, 2005), and optimal employee compensation contracts (Dur and Glazer, 2008; Bartling and Von Siemens, 2010). A small body of empirical evidence on the effect of envy suggests that: workers are not paid their marginal products due to positional concerns (Frank, 1984a); wage dispersion reduces (increases) turnover of administrators with relatively high (low) salaries (Pfeffer and Davis-Black, 1992); individuals care about their compensation relative to that of others (Solnick and Hemenway, 1998); and self-reported happiness is lower when neighbors earn more (Luttmer, 2005). A key message emerging from this literature is that people do not envy everyone, but only those in their own reference groups and that reference groups have a strong spatial aspect (e.g., Thomas Acquinas, 1265-1274; Persky and Tam, 1990; Elster, 1991).

Specific applications of envy to issues in Finance have appeared in recent papers. Goel and Thakor (2005) show theoretically that CEO pay envy causes corporate socialism in investment, while Goel and Thakor (2010) find theoretically and empirically that CEO pay envy can lead to merger waves. Shue (2011) empirically examines the effect of peer interactions on mergers and CEO pay, and concludes that the effects she documents may be driven by information exchanges and/or envy. This paper is the first to link envy to the geography of CEO compensation, with the theoretical motivation being the use of geography in the definition of reference groups.

3. METHODOLOGY, VARIABLE DESCRIPTIONS, AND SAMPLE

This section first explains the methodology. It then explains how distances are calculated and defines "geographic closeness." Finally, the variables and the sample are described.

3.1. Methodology and Dependent Variable

To test whether the compensation of geographically-close CEOs affects CEO compensation, the following model is estimated:

$$logCEOcomp_{i,t} = \beta_0 + \beta_1 logaveCEOgeoclose_{i,t-1} + B'X_{i,t-1} + \lambda_t + \eta_j \quad (1)$$

where $logCEOcomp_{i,t}$ is the natural log of CEO *i*'s compensation in period *t*, and $logaveCEOgeoclose_{i,t-1}$ is the natural log of the average compensation of CEOs geographically-close to CEO *i* in period *t-1* (defined in Section 3.2). *X* is a matrix of control variables (discussed in Section 3.3) including the natural log of the average compensation of CEOs at similar-sized industry peers, CEO age, CEO tenure, firm size, growth

options, firm performance, and proxies for local market conditions. Year fixed effects (λ_t) and industry fixed effects (η_j) are included. Industries are based on 17 Fama-French groupings.[14] Robust standard errors clustered by firm are reported.[15]

Note that $logaveCEOgeoclose$ is lagged relative to $logCEOcomp$ in part to address the endogeneity concerns mentioned earlier. This approach is in line with the existing literature that examines the impact of industry peer compensation on CEO pay (e.g., Bizjak, Lemmon, and Naveen, 2008; Faulkender and Yang, 2010). To further deal with endogeneity, Section 5.7 reports the results of IV regressions.

Three alternative definitions of compensation are used in the tests: salary, cash compensation, and total compensation. These variables are taken from ExecuComp (items: salary, total_curr, and tdc1, respectively). Salary is defined as the compensation part that is fixed (non-contingent) at the beginning of the year. Cash compensation is the sum of salary and bonus. Total compensation includes salary, bonus, long-term incentive payouts, other compensation, restricted stock grants, and the Black-Scholes value of stock option grants. CEO compensation is measured in logs to control for well-documented skewness in the level of CEO pay.

3.2. Key Independent Variable: Average Compensation of Geographically-Close CEOs

The key independent variable in most regressions is $logaveCEOgeoclose_{i,t-1}$, the log of the average salary, cash or total compensation received in the *previous* year by CEOs who work at firms headquartered within a 100-kilometer radius of the firm, i.e., that are "geographically close" (e.g., Coval and Moskowitz, 2001; Malloy 2005; Uysal, Kedia, and Panchapagesan, 2008; Kedia and Rajgopal, 2009).[16] As indicated before, the average compensation of geographically-close CEOs does *not* include the CEO's own compensation.

To calculate geographic closeness, I start by obtaining the location (city) of the headquarters of every firm in the sample from Compustat, and latitude and longitude data from the Census 2000 U.S. Gazetteer. Two checks are performed. First, since Compustat assigns the latest headquarter location to all years, I verify the headquarter location for every firm over the entire sample period using 10Ks (and other financial documents if needed), and correct the headquarter location, if necessary. To see why this correction is necessary, consider a firm that relocated its headquarters from Dallas to New York in 1996. Absent this correction, I would use the average compensation of CEOs in the New York area in all years, rather than

[14] Similar results are obtained when 48 industry groupings are used.
[15] Results are similar when standard errors are clustered by state.
[16] Results are similar if a 250-kilometer radius is used instead.

Dallas compensation for the pre-1996 period.[17] The second check involves checking city names to ensure that they correspond with the names found in the Gazetteer "places" files and correcting them when needed.[18] In case a city name could not be found on the Gazetteer file (90 instances), I check the actual location of the city on maps.google.com and assign the observation to the nearest place that is on the Gazetteer file within a 15-kilometer radius of the original location. The actual distance between cities is then estimated using the Haversine formula.[19]

3.3. Control Variables

Executive compensation committees often use data on executive pay at similar-sized industry peers for benchmarking purposes to determine the compensation packages awarded to top management at their firms (e.g., Bizjak, Lemmon and Naveen, 2008; Faulkender and Yang, 2010). To ensure that this practice is not driving my results, I create industry-size terciles (based on total assets) in each year and assign each firm to the appropriate peer group in that year. The average peer compensation (excluding the CEO's own compensation) in the previous year is then included in the regressions as a control variable.

Age is a well-recognized determinant of compensation and has been shown to be significantly related with CEO pay (e.g., Gibbons and Murphy, 1992; Bognanno, 2001). I therefore control for the CEO's age in the regressions.

CEOs who have been in office longer may receive higher compensation because they are more reputable/skilled and the passage of time has enabled this skill to be revealed (e.g., Milbourn, 2003), or because longer tenure strengthens the CEO's ability to influence the board and hence, his compensation (Lorsch and Maciver, 1989; Hermalin and Weisbach, 1998; Baker and Gompers, 2003; Fahlenbrach, 2009). To capture this, CEO tenure, defined as the number of years the executive has been the firm's CEO, is included in the regressions as a control variable.

The CEO pay literature finds that compensation tends to be highly correlated with organization size and growth opportunities, presumably because it requires greater skill to manage a larger, more complex

[17] Small-sample evidence based on firms that move their headquarters over a distance of at least 100 kilometers suggests that CEO compensation before the move is indeed significantly affected by the average compensation of geographically-close CEOs in the pre-move area.

[18] The Gazetteer "places" files contain "cityfips," five-digit Federal Information Processing Standard (FIPS) codes that uniquely identify "populated places," including cities, towns, boroughs, villages and census districts.

[19] The haversine formula gives great-circle distances between two points on a sphere. The distance between cities 1 and 2 is calculated as $d_{12} = R \times 2 \times \arcsin(\min(1, \sqrt{a}))$, where R is the earth's radius (approximately 6371 kilometers), $a = (\sin(dlat / 2))^2 + \cos(lat_1) \times \cos(lat_2) \times (\sin(dlon / 2))^2$. In this expression, $dlat = lat_2 - lat_1$ and $dlon = lon_2 - lon_1$. Lat_1 and lon_1 (lat_2 and lon_2) are the latitudes and longitudes of $City_1$ and $City_2$, respectively.

company with higher growth prospects (e.g., Rosen, 1982; Smith and Watts, 1992). Firm size and growth opportunities are therefore added as control variables. Firm size is measured as the natural log of total assets as of the prior fiscal year end. Growth opportunities are measured by the firm's market-to-book (M/B) ratio, calculated as the market value of equity divided by the book value of equity as of the prior fiscal year end.

Agency theory predicts a positive (causal) relationship between firm performance and CEO compensation, as long as the monotonicity condition for performance/output to be increasing in effort is satisfied (Grossman and Hart, 1983; Prendergast, 1999). Moreover, if more skilled agents produce higher output on average, wages will also be increasing in output (see Prendergast, 1999, 2002). To capture these effects, two measures of firm performance are included: stock returns and profitability. Stock returns are the average monthly stock returns over the prior fiscal year. Profitability is return on assets, measured as net income divided by total assets as of the prior fiscal year end.

A potential determinant of CEO pay is the cost of living in the area. I therefore control for differences in the cost of living by using three alternative proxies. The main proxy is the ACCRA Cost of Living Index, obtained from C2ER, the Council for Community and Economic Research.[20] This index is constructed as follows. Every quarter, C2ER obtains pricing data on six major consumer expenditure categories (housing, grocery items, utilities, transportation, health care, and miscellaneous goods and services) from chambers of commerce, economic development agencies, and universities in over 300 U.S. cities. C2ER then applies weights to these categories based on data from the U.S. Bureau of Labor Statistics' 2004 Consumer Expenditure Survey to obtain the actual cost of living in each participating place. These cost of living numbers are then used to construct the ACCRA Cost of Living Index: the average price level of all participating places in a quarter is set to 100, and each place's score is expressed as a percentage of this average. For example, in 2006, cost of living in the most expensive place (New York City) was 214.7 percent of the average, while that in the least expensive place (Joplin, MO) was 82.0 percent of the average. The ACCRA Cost of Living Index is available for virtually every place in my sample for most years. I calculate the *average* cost of living around each firm's headquarters using the same 100-kilometer distance cutoff as before. In addition to this main proxy, two alternative cost of living proxies (based on the fraction of houses over $1 million and the third quartile house value) are explained and used in Section 5.4.

[20] I am grateful to C2ER for providing me with their ACCRA cost of living index for the geographic areas in my sample in the fourth quarter of every year.

One might argue that my three cost-of-living proxies may not fully capture the real cost-of-living differences across geographies because not all the goods and services being consumed by residents in an area are included in the basket or asset whose cost/price is being measured by these proxies. To deal with this, I rely on the argument that higher income levels go hand in hand with higher demand and higher prices of goods and services in the area. In other words, CEO compensation may be higher in areas in which the average income of *all* geographically-proximate people is higher. Thus, I obtain the average per capita income for every locality in my study from the 2000 decennial Census and use it as an additional cost-of-living control variable in all regressions. For consistency, the natural log of the *average* per capita income is calculated using the same 100-kilometer distance cutoff as before.

3.4. Sample

Data on CEO compensation are retrieved for all firms included in the ExecuComp database from 1992 to 2006. Following Milbourn (2003), three ExecuComp variables are used to classify whether an executive was the firm's CEO during the fiscal year: "Became CEO," "Left Office," and "Month of fiscal year-end." In particular, if a person became CEO or left office during the fiscal year, the executive is classified as the firm's CEO in that fiscal year only if the person was in office for at least six months.

The final sample includes 12,359 CEO-year observations.[21] Table 1 Panel A contains key summary statistics on the regression variables. Panels B and C show the top and bottom 25 cities, respectively, in average compensation of CEOs at firms headquartered within a 100-kilometer radius in 2005.

Place Table 1 here

4. REGRESSION RESULTS

Table 2 Panel A reports the main regression results based on (the natural log of) the three compensation measures: salary, cash compensation and total compensation. The results show that the remuneration of geographically-close CEOs has a positive and statistically significant impact on CEO compensation (t-statistics of 3.86, 3.54, and 3.13 based on salary, cash compensation, and total compensation, respectively). Not surprisingly, the coefficients on the average compensation of CEOs in the same industry-size tercile are also highly significant. This is consistent with the view that compensation consultants and executive

[21] I impose the restriction that all variables included in the base regressions are available.

compensation committees take the compensation at similarly-sized firms in the same industry into account when setting CEO pay.

The results are economically significant as well. For example, the coefficient on the average salary of geographically-proximate CEOs is 0.313, suggesting that if other CEOs within a 100-kilometer radius enjoyed a 1% salary increase in the previous year, the CEO will experience a 0.313% increase in salary this year *ceteris paribus*. The magnitude of this effect is 1.5 times as large as the magnitude of the effect of industry-peer compensation. The effect of geography on cash compensation is half this size, and the effect on total compensation is somewhat smaller. A 1% increase in cash compensation (total compensation) experienced by geographically-close CEOs in the previous year results in a 0.156% (0.110%) increase in CEO cash compensation (total compensation) this year.

Using these results, one can conduct a simple, albeit qualified, thought experiment: how would moving a firm's headquarter from a bottom-25 city (in terms of average compensation of geographically-close CEOs) to a top-25 city affect CEO compensation, *ceteris paribus*? The data suggest that if we were to move a company from say Springfield, MO (a bottom-25 city) to Princeton, NJ (a top-25 city) in 2006, the CEO's salary would improve by 29%, the CEO's cash compensation would increase by 29%, and total compensation would go up by 23%, with all of these increases being accounted for solely by the impact of geography. However, such a calibration exercise must be interpreted with caution, since it extrapolates results based on local linearity assumptions that may not be valid globally.

The results in this section suggest that the compensation of geographically-proximate CEOs is an important determinant of CEO pay.[22]

Place Table 2 here

5. ROBUSTNESS CHECKS

In this section, I perform a variety of checks to see if the effect of geography on CEO compensation is robust to using alternative specifications, introducing additional control variables, and using an instrumental variable approach. I conclude that it is.

[22] The adjusted R2, which ranges from 16% to 40%, is comparable to other studies which include year and industry fixed effects like I do (see Gabaix and Landier, 2008; Engelberg, Gao, and Parsons, 2010; Faulkender and Yang, 2010).

5.1. Median Compensation

The main analyses examine whether the *average* compensation of geographically-close CEOs affects CEO compensation. Since CEO pay is skewed and averages are highly affected by the right tail, the regressions above use the natural log of compensation rather than compensation per se. While standard in the literature, one may worry that using logs is not sufficient to deal with skewness of compensation. As a robustness check, I now use (the natural log of) the *median* compensation of geographically-close CEOs instead.[23] All of the original control variables are included in these regressions, except that the average compensation at similar-sized industry peers has also been replaced by the median compensation at those firms.

Table 2 Panel B shows the results. The coefficients on the median compensation of geographically-close CEOs are of similar size to the ones based on averages presented in Panel A and are significant for all three compensation measures. Thus, the use of medians does not materially affect the results.

5.2. Alternative Cost of Living Proxies

The main regressions include the ACCRA Cost of Living Index to control for differences in the cost of living. One could argue that because CEOs earn substantially more than the average person in a locality, the general cost of living may not be relevant for them. Rather, more "upscale" benchmarks have to be used.

To address this concern, I now use two alternative proxies in lieu of the cost of living index. The first one is the fraction of houses in the area that exceeds $1 million. This variable is obtained from the Census 2000 and is available in the year 2000 only. One weakness of this proxy is that in some areas a $1 million house may not be what CEOs opt for; they may be living in more expensive houses. To deal with this, my second proxy is the third quartile house price. As a first step, the Census 2000 third quartile house price is obtained, i.e., only 25% of the houses in the area are more expensive than this price. To obtain a different value in every sample year, the Census 2000 value is adjusted for annual house price appreciation in the area based on the Federal Housing Finance Agency House Price Index (FHFA HPI).[24] Both alternative cost of living proxies are average values calculated using the same 100-kilometer cutoff as before.

Table 3 Panels A and B contain the results using the fraction of houses that exceed $1 million and the third quartile house price, respectively. As can be seen, the sample sizes are roughly 25% and 35%

[23] The median compensation of geographically-close CEOs does *not* include the CEO's own compensation.

[24] The implicit assumption is that the third quartile house price will appreciate at the same rate as an average house. Since this may not hold, regressions are also run using the unadjusted third quartile house price values. The coefficients and significance levels are similar to those shown in Table 5 Panel B (not shown for brevity).

smaller than before. Importantly, however the results are similar to those shown in Table 2 Panel A. While the coefficients on the average salary and cash compensation of geographically-close CEOs are slightly smaller than before, the coefficients on total compensation are somewhat bigger. Moreover, the coefficients remain highly significant, generally at the 1% level. Thus, using alternative cost of living proxies leaves the main results unaffected.

Place Table 3 here

5.3. CEO Skill, Agency, and Risk Aversion

The main regressions include a broad range of control variables that are standard in the empirical CEO compensation literature. It is possible, however, that some key factors highlighted by the theories such as CEO skill, agency, and risk aversion, have not been sufficiently controlled for. I now examine this possibility by including additional control variables.

CEOs with greater skill/ability are expected to earn more. The main regressions include CEO tenure as a skill proxy, and firm size (it takes more skill to run a larger firm) and firm performance as reflected in stock returns and profitability (more skilled CEOs will show better performance) may also be interpreted as skill proxies to some extent. However, as further robustness checks, I now consider two additional skill proxies. The first proxy is an external CEO dummy variable that equals one if the CEO joined the firm less than two years prior to becoming the CEO (Milbourn, 2003). The idea is that an external candidate needs to have greater perceived ability than an insider with in-depth knowledge of the firm to be appointed as a CEO, so promotion to CEO within two years of joining the firm is an indication of skill. Since information on the date the CEO joined the firm is missing in many cases, I lose roughly half the sample when I include this proxy. The second skill proxy is based on CEO education, with the idea being that more educated CEOs are more skilled.[25] Since CEO education may matter and could affect pay, I obtain information on CEO education from BoardEx, and include two dummy variables that equal one if the CEO has an MBA (37%) or a law degree (9%), respectively.[26] Since education data are only available for a small subset of the firms, adding the education dummies leaves me with only twenty percent of the main sample. I will therefore present the results both with and without the education dummies.

[25] The Spence (1976) signaling model predicts that more skilled individuals acquire higher levels of education.
[26] I do not include an undergraduate degree dummy since over 96% of the CEOs has such a degree.

The main regressions include two agency proxies (stock returns and profitability). Since agency problems are greater in firms with higher cash flows (Jensen and Meckling, 1976), I add cash flow divided by total assets as an additional measure.

Risk averse individuals prefer wage structures that are flatter (less performance-sensitive) than those preferred by risk neutral and risk loving individuals (see Prendergast, 1999). Assuming that CEOs self-select into compensation schemes that are consistent with their risk preferences (Lazear, 1998), the ratio of salary to total compensation can be used as a measure of CEO risk aversion – the higher the ratio, the more risk averse the CEO.

Table 4 Panel A shows the results using these additional proxies for skill (external CEO dummy only), agency, and risk aversion. Pay is higher when the CEO is more skilled and when agency problems are greater (both significant based on total compensation only). More risk averse CEOs earn significantly less (significant based on all three compensation measures).[27] Importantly, the coefficients on the average compensation of geographically-close CEOs are similar in size and significance to those in Table 2 Panel A. Adding CEO education dummies (Table 4 Panel B) yields a drastically smaller sample but leaves the main results unchanged.[28]

Place Table 4 here

5.4. Personal Networks

Engelberg, Gao, and Parsons (2010) find that CEOs with large personal networks ("rolodex") earn more than those with small networks. The effect is particularly strong for local connections and for unique connections. If CEOs located next to well-paid peers have more valuable networks, this could possibly explain the observed link between CEO pay and pay at geographically-close firms.

To examine the validity of this claim, I construct each CEO's rolodex following Engelberg, Gao, and Parsons (2010). I obtain the curriculum vitae of all senior executives and directors at every firm in the BoardEx database. They include information on education (degree, institution attended, and graduation year), social activities (memberships, positions held in charities, etc.), and employment history (names of current and past employers, plus start and end dates of various roles). Since BoardEx' coverage prior to

[27] The reason is that if firms are sorting CEOs based on risk aversion, the menu that is offered will provide higher expected wages to those willing to bear more risk (or else all CEOs would opt for less uncertain wages).
[28] It is not clear why the coefficients on the average salary and cash compensation of geographically-close CEOs are far bigger than those in the main regressions, or why the coefficient on total compensation is somewhat less significant.

2000 is very limited, I discard observations before 2000 (as in Engelberg, Gao, and Parsons, 2010; Fracassi and Tate, forthcoming). I match the BoardEx firms with CRSP and Compustat and limit the sample to firms and individuals that are part of this matched database.[29]

For each individual (senior executive or director) in this matched database I establish the number of connections to other individuals (excluding executives and directors at his current firm of employment) in the database. The main connection variable of interest is the individual's rolodex, which equals the sum of his past professional, school, and social connections. Past professional connections are between individuals who used to work at the same company, but no longer do. School connections are between individuals who attended the same university and graduated less than two years apart. Social connections are between individuals who hold active positions at the same social organization. I rerun the main regressions while first controlling for the CEO's rolodex and then including its components.

Table 5 Panels A and B show the results. Clearly, the sample sizes are far smaller than those in Table 2 because BoardEx data are only available for a subset of firms. Panel A shows that the coefficient on the CEO's rolodex is positive in all cases, and significant in the cash and total compensation regressions. Panel B shows that the coefficients on the three rolodex components (the CEO's past professional, school, and social connections) are positive and significant in the total compensation regression,[30] and that the coefficients on the CEO's social connections are also significant in the salary and cash compensation regressions. Importantly, in both panels, the inclusion of the CEO's rolodex does not affect the main results: the coefficients on CEO pay at geographically-close firms continue to be significant based on all three compensation measures.

Place Table 5 here

Engelberg, Gao, and Parsons (2010) show that the effect of the CEO's rolodex on CEO pay is strongest for local and unique connections. It is therefore important to check whether the inclusion of such connections affects my results.

To examine whether including the CEO's local rolodex alters my findings, I limit the CEO's rolodex to local connections, i.e., to directors and executives of firms within a 100-kilometer radius of the firm's headquarters, and rerun the regressions. Consistent with Engelberg, Gao, and Parsons (2010), I find that in

[29] To enhance sample size, I first match based on CIK, then based on ticker and cusip, cusip only, and finally using the name-recognition-based Levenshtein algorithm.

[30] This is consistent with Engelberg, Gao, and Parsons (2010), who only show results that include the three rolodex components in CEO total pay regressions.

the CEO total pay regression, the coefficient on the local rolodex is significant and substantially larger than the coefficient on the (total) rolodex in Table 5 Panel A, suggesting that local connections have a far bigger impact on CEO total pay than connections over greater distances. Notably, including the local rolodex yields coefficients on CEO compensation at geographically-proximate firms that are similar in size and significance to those shown in Table 5 Panel A (not shown for brevity). Thus, the results are robust to the inclusion of the local rolodex variables.

To address whether adding the CEO's unique connections impacts my results, I decompose the CEO's rolodex into two mutually exclusive parts – a unique rolodex (the firm has access to these individuals only through the CEO) and a duplicate rolodex (the firm has access to these individuals through another executive or director). When I rerun the regressions, I find that the coefficients on the CEO's unique (duplicate) rolodex are positive and significant (insignificant) in all three CEO pay regressions, confirming that it is indeed the CEO's unique rolodex that seems to drive CEO pay (not shown for brevity).

The analyses above clearly show that the CEO's personal connections (total, individual components, local, and unique) have a significant impact on CEO pay. However, my main results are robust to their inclusion.

5.5. Differences in Corporate Governance

Differences in corporate governance may affect CEO compensation. Two robustness checks, discussed below, are performed to deal with this. The results are reported in Table 6.

Place Table 6 here

5.5.1. Differences in Director Monitoring

Director monitoring may impact CEO pay. Although the evidence is inconclusive, this literature tends to find that CEO compensation is positively related to the fraction of outside directors (e.g., Lambert, Larcker, and Weigelt, 1993; Core, Holthausen, and Larcker, 1999) and board size (e.g., Core, Holthausen, and Larcker, 1999). The main regressions do not control for these corporate governance aspects because their inclusion results in a loss of more than half of the sample. However, as a robustness check, I now control for these governance characteristics.

I obtain the number of outside directors and board size from The Corporate Library's directorships database.[31] The fraction of outside directors is calculated as the number of outsiders (i.e., board members who are not current executives, retired executives, or the family of present or past management) divided by the total number of directors.

Table 6 Panel A contains the regression results. Consistent with the existing literature, the fraction of outside directors and board size have a positive (and generally significant) effect on CEO pay. Importantly, however, the coefficients on the average compensation of geographically-close CEOs remain positive and highly significant based on salary and cash compensation.[32]

5.5.2. Controlling for Antitakeover Protection and Institutional Block Ownership

Antitakeover protection and monitoring by institutional blockholders could also have a significant impact on CEO compensation. For example, antitakeover provisions may foster managerial entrenchment by sheltering management from the market for corporate control (see DeAngelo and Rice, 1983; Gompers, Ishii, and Metrick, 2003; Dittmar and Mahrt-Smith, 2007), and entrenched managers may find it easier to set their own pay (Bebchuk and Fried, 2004). Institutional blockholders have sufficient capital at stake to monitor management and seem to affect their actions (e.g., Gillan and Starks, 2000; Dlugosz, Fahlenbrach, Gompers, and Metrick, 2006; Dittmar and Mahrt-Smith, 2007).

To measure antitakeover protection, I use the Gompers, Ishii, and Metrick (2003) index, which measures the number of antitakeover provisions in a firm's charter. The index is reported about every two years by the Investor Responsibility Research Center (IRRC). To increase sample size, I interpolate the index for the missing sample years. Higher index values are associated with more antitakeover protection.

To measure monitoring by institutional blockholders, I obtain data on institutional ownership from the 13-F filings by Thomson Financial. The sum of all ownership positions of at least five percent held by institutional investors is used in the analysis. Greater ownership suggests better monitoring.

Table 6 Panel B contains the results. As expected, greater antitakeover protection is positively associated with CEO compensation. Maybe surprisingly, greater monitoring by institutional blockholders is also associated with higher pay (only significant based on CEO salary). Importantly, the coefficients on the

[31] These data are available from 2001 onward.

[32] The coefficient on total compensation loses significance (t-statistic 1.53). This is consistent with Chhaochharia and Grinstein (2009), who find that the equity/option-based component of CEO compensation is lower at firms with boards that are more independent.

average pay of geographically-proximate CEOs continue to be highly significant based on all three compensation measures even after controlling for antitakeover protection and institutional block ownership.

5.6. Exclude Three Key States or the Ten Largest Cities

It has been suggested that compensation practices in New York, New Jersey and California may differ from those in other states, but may weigh heavily in the results I document. To ameliorate concerns that observations from these three states are exercising a disproportionate influence on the results, the regressions are rerun using a sample that excludes these states. Similarly, compensation may be set differently in the very largest cities. I therefore also redo the analysis excluding the ten largest cities as per the 2000 Census: New York City, Los Angeles, Chicago, Washington-Baltimore, San Francisco, Philadelphia, Boston, Detroit, Dallas, and Houston.

Table 7 contains the results. Panel A, which excludes the three states, shows salary and cash compensation coefficients which are somewhat smaller than those shown in Table 2, while the coefficient on total compensation is larger. The coefficients in Panel B, which excludes the largest cities, are similar to the main results. Importantly, in all cases, the coefficients on CEO compensation continue to be positive and significant, generally at the 1% level. Thus, the inclusion of New York, New Jersey, and California or the ten largest cities does not seem to drive the main results.

Place Table 7 here

5.7. Instrumental Variable Approach

There is a potential endogeneity problem that needs to be confronted. If the compensation of CEO *i* is affected by the compensation of CEOs at nearby firms, then compensation of the CEOs at these nearby firms is also influenced by the compensation of CEO *i*. To deal with this potential endogeneity problem, the compensation of geographically-close CEOs was lagged in all regressions. However, I now use an instrumental variable approach as an additional robustness check.

Specifically, in the spirit of Leary and Roberts (2009), I use the lagged idiosyncratic component of geographically-close firms' stock returns as an instrument for those firms' CEO compensation.[33] This instrument is valid because it satisfies the relevance and exclusion restrictions. The relevance restriction requires that other firms' idiosyncratic stock returns directly affect CEO compensation at those firms.

[33] Leary and Roberts (2009) use this variable as an instrument for other firms' capital structure.

According to the theory, this restriction is met. Specifically, Holmstrom (1979) and Ramakrishnan and Thakor (1984) imply that CEOs should be compensated based only on the idiosyncratic return because the systematic component of the return is uninformative of effort. The exclusion restriction requires that idiosyncratic stock returns at geographically-close firms should not directly affect CEO compensation at *this* firm. Since the idiosyncratic stock return of a firm is, by definition, devoid of any linkages with the returns of other firms, the idiosyncratic stock returns at geographically-close firms should not reflect the performance of this firm and hence the CEO compensation of its CEO, implying that the exclusion restriction is also satisfied.[34]

To isolate the idiosyncratic part of stock returns, I use Leary and Roberts' (2009) five-factor model:

$$R_{i,t} = \alpha + \beta_{i,t}^{m}\left(Rm_t - Rf_t\right) + \beta_{i,t}^{SMB} SMB_t + \beta_{i,t}^{HML} HML_t + \beta_{i,t}^{MOM} MOM_t + \beta_{i,t}^{IND}\left(Rind_{j,t} - Rf_t\right) + \eta_{i,t} \quad (2)$$

The first three factors are the Fama-French factors: the excess return on the market, the small minus big portfolio return, and the high minus low portfolio return. The fourth factor is the momentum factor. The fifth factor is the excess return on an equal-weighted industry portfolio. This is not a priced factor, yet is included to ensure that the instrument (the estimated residual) is orthogonal to industry shocks.

As in Leary and Roberts (2009), the model is estimated for each firm on a rolling annual basis using up to 60 (minimum: 24) monthly returns. For example, to obtain idiosyncratic returns for a firm in 2006, the model is estimated using returns from January 2001 through December 2005. The estimated coefficients and actual factor returns for these 60 months are used to compute the January – December 2006 expected returns. The idiosyncratic returns are then calculated as the actual return minus the expected return in each month. Since the CEO compensation data used in this paper are annual, I annualize the idiosyncratic returns.

Table 8 contains the results. Before running the instrumental variable regressions, I perform a Hausman test for endogeneity, shown at the bottom of Panel A. The null hypothesis is that the potentially endogenous variable (average compensation at geographically-close CEOs) is exogenous. To perform this test, I regress $logaveCEOgeoclose$ on all the exogenous variables used in the main regressions in Table 2 Panel A plus the instrument to obtain the residual values. I then include these residuals as an additional regressor in the main regressions (i.e., I regress CEO compensation on the average compensation of

[34] Note that in a single-factor CAPM world or in a setting in which industry controls are included, this result should hold even when the comparison group is other firms in the industry. That is, since the idiosyncratic return is firm-specific, by construction it reflects only the performance of the firm in question and not that of other firms, even within the same industry. Thus, idiosyncratic returns of one firm should have no direct impact on executive compensation at another firm. And this should hold with at least as much force when the comparison group is geographically-proximate firms.

geographically-close CEOs and all the other exogenous variables plus the first-stage residuals). If the coefficients on the residuals are statistically significant, I reject the null hypothesis that $logaveCEOgeoclose$ is exogenous. As shown in Panel A of Table 8, I do not reject the null hypothesis that it is exogenous based on total compensation, as the p-value > 0.10 for the Hausman test. The results are very different based on salary and cash compensation – I do find evidence of endogeneity based on these measures (p-values < 0.10). The Hausman test results suggest that the original analyses were appropriate for total compensation, but that an instrumental variable approach is needed for salary and cash compensation. Nonetheless, I show instrumental variable results based on all three measures.

The first-stage regression results in Panel A show that idiosyncratic stock returns are strongly correlated with CEO compensation at geographically-close firms (generally significant at the 1% level). The second-stage results in Panel B show that the average salary, cash compensation, and total compensation of geographically-close CEOs have a positive effect on CEO compensation (significant at the 5% level based on salary and cash compensation). Thus, the instrumental variable regressions confirm the main results.

Place Table 8 here

6. POTENTIAL EXPLANATIONS FOR THE LINK BETWEEN GEOGRAPHY AND CEO PAY

The results above suggest that the average compensation of geographically-close CEOs has a significant impact on CEO compensation. In this section, I examine four alternative explanations for this link: local competition for talent, local hiring of similar CEOs, a leading-firm effect, and envy. CEO pay envy appears to be the most plausible explanation.

6.1. Local Competition for CEOs?

One possibility is that CEOs operate in geographically-segmented labor markets, in which case the results may be driven by the effect of local labor market competition for CEOs that generates geographic clustering of CEO compensation (e.g., Vietorisz and Harrison, 1973; Kennan and Walker, 2008).[35] Note first that this effect is a plausible conjecture for small and mid-sized firms, whereas the ExecuComp database includes only relatively large, listed companies. Such firms are unlikely to limit their CEO search to their local labor

[35] Kedia and Rajgopal (2009) show that geographic clustering exists in the offering of stock options to rank-and-file employees.

markets and hence are less likely to be subject to the vagaries of local labor market competition. Nonetheless, this issue is now examined further using a counterfactual.

To do this, I limit the sample to the largest and most prominent companies in the U.S., those that were part of the S&P 500 in the previous year. The labor market for the CEOs at these firms is global or national rather than local. Therefore, if I found geographic clustering of CEO compensation at these firms, it would represent strong evidence that my results are *not* driven by local labor market competition.

Table 9 contains the results. The coefficients on the average compensation of geographically-close CEOs tend to be bigger than before and continue to be positive and statistically significant. This means that even at the largest and most prominent firms, for which CEO labor markets are global or national, geography affects CEO compensation. Thus, local labor market competition cannot explain the effect of geography on CEO pay.

Place Table 9 here

6.2. Local Hiring of Similar CEOs?

It may be that certain areas, for some reason, tend to attract firms that employ CEOs with similar attributes like age or education. To the extent that these attributes are determinants of CEO pay, we would find geographic clustering of CEO compensation. I now investigate this possibility by focusing on CEO characteristics included in the main regressions and in one of the robustness checks: CEO age, tenure, external CEO dummy, risk aversion, and education.

If this story has merit, I should find that the standard deviation of these variables within each local area is considerably smaller, on average, than the standard deviation for the entire sample. For each CEO characteristic I find, however, that the two are very similar. Specifically, the standard deviation of CEO age is 7.3 years in an average local area versus 7.4 years in the overall sample. For the other variables, the corresponding standard deviations are 7.2 years versus 7.6 years (CEO tenure), 0.47 versus 0.50 (external CEO dummy), 0.23 versus 0.24 (risk aversion), 0.47 versus 0.48 (MBA degree), and 0.25 versus 0.29 (law degree). I conclude that the results are unlikely to be driven by local firms hiring "similar" CEOs.

6.3. Leading-Firm Effect?

The leading-firm effect is suggested by the literature on social interaction which proposes that agents may be influenced by others (e.g., Murphy, Shleifer, and Vishny, 1993). Initially, a few leading agents adopt a

practice, and subsequent social interaction with these leaders causes others to adopt the practice as well. Glaeser, Sacerdote, and Scheinkman (1996) argue that not all agents are equal: some agents influence their neighbors but cannot themselves be influenced. Kedia and Rajgopal (2009) use this insight to examine whether the existence of leading firms can explain observed geographic differences in option grants for rank-and-file employees.[36] In the context of this paper, the social interaction effect suggests that leading firms determine the compensation levels for their CEOs and geographically-proximate firms then follow suit, generating the link between geography and executive compensation that I find. This possibility is now examined by performing two tests.

In both tests, leading firms are initially defined as the top three firms within a 100-kilometer radius based on (five-year average) sales growth. Robustness checks alternatively define leading firms as the top three firms in terms of: sales;[37] market-to-book (M/B); and profitability (return on assets; ROA).

As a first test, the base regressions are rerun while limiting the sample to leading firms, and asking: is the compensation of CEO *i* at a leading firm influenced by the average compensation of CEOs at other firms in the geographic vicinity? The leading-firm effect would say no.

Table 10 Panel A defines leading firms based on sales growth. Contrary to what the leading-firm effect predicts, the coefficients on the average compensation of geographically-proximate CEOs continue to be significant based on total compensation and are almost significant based on salary (t-statistic 1.61) and cash compensation (t-statistic 1.53). Similar, but somewhat weaker results (significance generally based on salary and total compensation) are shown in Panel C using alternative definitions of leading firms.

As a second test, the base regressions from Table 2 Panel A are rerun, but in computing the average compensation of CEOs of "other firms" within a 100-kilometer radius, attention is limited to just the CEO compensation at the leading (top three) firms. These leading firms are subsequently excluded from the regressions. If the leading-firm effect is driving the results, the coefficients on these alternative average CEO compensation measures should be larger than those presented in Table 2 Panel A and more significant. That is, compensation of firm *i*'s CEO should be more strongly influenced by the average compensation of

[36] They hypothesize that, for example in the Seattle area, some firms may have adopted option plans because the leading firm – Microsoft – had adopted such a plan.

[37] Kedia and Rajgopal (2009) identify leading firms based on sales. Since firm size is a strong predictor of CEO pay, one might think that a leading-firm measure based on sales is to be avoided because it could somehow cause me to pick up a firm-size effect. This concern is not warranted. It is true that the larger the leading firms are, the higher should be CEO pay at those leading firms (ceteris paribus). However, the leading firm analysis examines whether compensation at leading firms is *correlated* with compensation at nearby firms. That is, firm size is merely used to identify leading firms. Identifying leading firms based on other size-based measures (market value of equity and market share) yields similar results.

geographically-proximate leading firms than by the average compensation of all geographically-proximate firms.

Table 10 Panel B presents the results using the main leading firms measure based on sales growth. The coefficients on the average compensation of geographically-close CEOs employed at top three firms are positive and significant in all cases. However, contrary to what the leading-firm effect predicts, the coefficients are far smaller than those presented in Table 2 Panel A and the t-statistics are not as big. Similar results can be seen in Panel D based on the alternative leading-firm definitions.

Thus, the evidence presented above does not seem to support a leading-firm effect.

Place Table 10 here

6.4. CEO Pay Envy?

As indicated in the Introduction, the first step in examining an envy-based explanation for my results is the definition of the reference group. CEOs seem to have two natural reference groups: CEOs at similar-sized industry peers and CEOs at companies headquartered near the CEO's own company. The first should matter even absent envy because compensation consultants and executive compensation committees typically benchmark CEO pay against that earned at similar-sized firms in the same industry. However, to make sure that this is not driving my results, all envy regressions below control for industry-peer compensation. The second reference group, defined by geography, has not been previously examined empirically and is the key focus of my study.

6.4.1. Main Envy Results

The first test of envy builds on the insight that the less a person earns relative to his peers, the more envious he will be.[38] This implies that the bigger the percentage compensation gap between the CEO and his peers, the greater the percentage increase in compensation he will try to obtain in order to "catch up with his peers." To examine this, I regress the percentage change in CEO compensation (salary, cash compensation or total compensation) on the CEO's "percentage compensation gap," the difference between the compensation of

[38] A CEO earning 50% less than his peers (wage gap = +50%) will be more envious than a CEO earning 10% less than his peers (wage gap = +10%). The latter will be more envious than a CEO who earns 10% more than his peers (wage gap = -10%). And the latter will be more envious than a CEO earning 50% more than his peers (wage gap = -50%).

geographically-close CEOs and the CEO's own compensation (expressed as a percentage of the compensation of geographically-close CEOs), plus control variables.[39]

The control variables are similar to those included in the previously-reported regressions, except that the compensation at similar-sized industry peers has been replaced with the percentage compensation gap between similar-sized industry peers and the CEO. In addition, firm size and profitability have been replaced with the change in firm size, and the change in profitability. The compensation wage gap and these new control variables are all measured as of the previous fiscal year-end.

If geography affects CEO compensation through envy, I should find the following results. First, the coefficient on the compensation gap between geographically-close CEOs and the CEO should be positive and significant. Second, the effect should be asymmetric: it should be stronger for CEOs who earn less than their peers than for CEOs who earn more. Third, the effect should be the strongest based on total compensation. The argument is that an envious CEO compares the portion of the compensation of reference-group members that he can observe with a similar portion of his own compensation, and will attempt to be as inclusive as possible in terms of the compensation comparison he makes (e.g., Goel and Thakor, 2005, 2010). With inter-CEO comparisons, the most inclusive comparison is based on total compensation since this is observable.

Table 11 contains the results. As is evident, the results are consistent with the envy hypothesis. Panels A and B use the entire sample and show that for all three compensation measures, the coefficients on the percentage compensation gap between geographically-close CEOs and the CEO are positive and significant, regardless of whether the compensation gap is measured relative to the average geographically-close CEO (main specification in Panel A) or median (robustness check in Panel B). Thus, the bigger the gap, the bigger is the subsequent increase in pay. As expected, the effect is strongest based on total compensation in both panels. To test the asymmetry hypothesis, Panel C limits the sample to CEOs whose total compensation is less than that of their geographically-close peers. It shows that the results are indeed far stronger for these CEOs and that the results are again strongest based on total compensation. The compensation gap coefficient of 0.562 in the last column suggests that among CEOs who are likely to be the most envious, if last year's total compensation gap were one percentage point higher, this year's total compensation would almost be 0.6 percentage points higher.

[39] Thus, if a CEO earns \$0.8 million and geographically-close CEOs earn \$1 million on average, the compensation gap equals (1 – 0.8) / 1 = 20%. In contrast, if the CEO earns \$1.2 million, the gap is -20%.

Note that, as discussed earlier, this result cannot be explained away as a mere "economic reversion to the mean" effect. While the results suggest that the CEO is catching up with the mean wage of CEOs in the geographic neighborhood, it is a mean that should be irrelevant in the context of standard optimal contracting theory, which assigns no role to geography. In other words, given the deliberate manner in which CEO compensation is determined, absent envy, there is neither a statistical nor an economic mean-reversion story that explains this finding.

Place Table 11 here

6.4.2. Envy – Evidence from Sports Players

A second test of envy is inspired by the following quote, which suggests that status concerns could cause the compensation of CEOs in an area to be correlated with the compensation of professional athletes in that area:

"*In part, greed may account for these huge salaries and perks. But for some CEOs, high pay is also a status symbol, the currency of competition with other CEOs. Other chiefs expect big packages because they've internalized our culture's view of CEOs as celebrities or potential heroes. If Alex Rodriguez can make about $20 million a year with the Yankees (and not come through in the clutch), the thinking goes, don't CEOs deserve an extra zero or two?*" ("CEO pay: The prestige, the peril." BusinessWeek, November 20, 2006.)

To conduct this test, I rerun the main regressions while replacing the average pay of geographically-close CEOs with the pay of geographically-close professional sports players. What professional athletes make is *not* used in benchmarking for setting CEO compensation. Moreover, sports stars function in the labor markets of their own professional leagues and their compensation is not affected by what the CEOs of corporations in their geographies make. However, the wages of sport stars are very public and represent salient information that could cause an individual CEO as well as the collection of geographically-close CEOs to be envious, which could positively affect their wage demands.

Data on the compensation of all professional sports players are obtained from *USA Today's* salaries database. This database contains the salaries (including signing bonus) of: Major League Baseball (MLB) players from 1988-2008; National Basketball Association (NBA) players from 2001-2006; National Football League (NFL) players from 2000-2007; and National Hockey League (NHL) players from 2000-2007 (except 2004). Thus, I have sufficient data for all the years in my sample period based on MLB players, and for roughly half the years based on NBA, NFL, and NHL players.

To calculate the compensation of geographically-close sports players, the following approach is used. For each MLB, NBA, NFL, and NHL team, I first calculate the average compensation of all its players ("team average") and of its top three players ("top 3 average"). For each company, I then locate the sports teams that are geographically close to its headquarters. *Per league*, I then take the average compensation of all the geographically-close teams (average of "team average") and top three players (average of "top 3 average"). As an additional sports player compensation variable I take the highest compensation of all geographically-close teams and of the top three players *regardless of league*. Since I only have salary (including signing bonus) for sports players, I report only the CEO salary regressions.[40]

Table 12 shows the results based on the top three sports players: CEO compensation is significantly related to the compensation of top sports players in four out of five regressions.[41] For example, the results based on MLB compensation suggests that if the top three geographically-close MLB players earned one percentage point more in the previous year, CEO compensation would be 0.114 percentage points higher this year.

Place Table 12 here

While I do not claim that these results establish causation of any sort, envy seems to provide the most plausible explanation for why sports player compensation may affect CEO compensation.[42] To further examine the validity of this, I perform a robustness check in which each city's sports teams are randomly assigned to another city which has one or more sports teams itself (e.g., the New York teams are assigned to Denver, the St. Louis teams to Boston, the Miami teams to Chicago, etc.). The idea is to see if sports stars' salaries are affecting CEO compensation, regardless of location (which would be inconsistent with a spatially-defined envy explanation) or whether wage comparisons with sports stars are location-specific, as required by the envy explanation. Results from this check reveal that CEO compensation is *not* statistically significantly related to salaries of randomly-assigned sports stars (t-statistics generally close to zero; not shown for brevity). Thus, CEO pay is positively and significantly related only to the salaries of local sports stars in the CEO's spatial neighborhood, supporting an envy-based explanation.

[40] Regressions using CEO cash compensation yield similar results. Regressions using CEO total compensation yield no significance.
[41] Regressions based on the average compensation of geographically-close sports players yield somewhat weaker results (not shown for brevity).
[42] Recall that this result cannot be driven by differences in the cost of living since proxies for cost of living are included in these regressions.

As indicated in the Introduction (see also footnotes 10 and 11), I do *not* interpret these results as indicating that the salaries of geographically-proximate sports stars enter explicitly into formal pay-setting discussions for CEOs. It is more likely that higher salaries for sports stars in the area raise the expectations of CEOs (due to envy) when it comes to their compensation, and gives boards of directors "cover" in terms of levels of CEO compensation that are considered "politically acceptable." For example, in many cities, local newspapers routinely report the highest-paid people in the area, and include CEOs and sports stars in the group. Higher wages for sports stars can not only spark CEO envy but also make higher CEO salaries stick out less prominently for critics to target.

6.4.3. Could the Dynamics of CEO Pay Adjustments be Driven by Learning About Skill?

The results suggest that envy provides the most plausible explanation for why CEO pay is geographically clustered. It is important, however, to examine whether alternative stories can potentially explain the CEO pay *dynamics* documented above. One possibility – which cannot explain geographic clustering of CEO pay per se – is initial undervaluation of CEO talent and subsequent learning through time. To see why, note that *conditional* on geographic clustering of CEO compensation, there should be some heterogeneity in say CEO age within each geography. Older CEOs, who have survived dismissal, have higher revealed ability/quality than younger CEOs within that geography. Over time, the wages of successful younger CEOs will adjust upward to the mean within the geography due to intertemporal talent revelation. If this alternative story of CEO pay adjustment dynamics has merit, then I should find that the results are the strongest for CEOs who have been on the job for a relatively short time since the uncertainty and related learning about quality should be the greatest for these CEOs. I therefore split the sample into CEOs with short tenures (up to and including 3 years) and those with long tenures (exceeding 3 years) and rerun the regressions.

Table 13 contains the results. Consistent with this alternative explanation, the coefficient on the CEO salary gap is indeed bigger for CEOs with short tenures (see Panel A) than for those with long tenures (see Panel B). However, the coefficient on the cash compensation gap is not significant for CEOs with short tenures while being highly significant for CEOs with long tenures. Furthermore, the coefficients on the CEO total compensation gap are similar across the two groups. Thus, these results provide at best mixed support for this learning story as an explanation of the dynamics of CEO pay adjustments, but do not shed light on why the clustering of CEO pay occurs in the first place.

Place Table 13 here

7. SUMMARY AND CONCLUSION

This paper has examined whether CEO compensation depends on how much geographically-close CEOs earn, and if so, why. The results show that CEO compensation exhibits a strong geographical bias: CEO compensation is positively and significantly related to the level of compensation of CEOs employed at firms headquartered within a 100-kilometer radius. These results were obtained while controlling for other factors that have been found to affect CEO compensation, including CEO age, CEO tenure, firm size, growth options, firm performance, year and industry fixed effects. All regressions also included the average (or median) compensation of similar-sized firms in the same industry, and proxies for local market conditions. The results are robust to using a variety of alternative specifications, including additional control variables, and using instrumental variable regressions.

Several potential explanations for this effect were examined. First, the results could be driven by the effect of local labor market competition for CEOs. I find that this effect cannot explain the results. Second, firms within a given geography may simply hire CEOs with similar performance-relevant attributes. My empirical tests suggest that this is not the case. Third, it is possible that CEO compensation reflects the social-interaction effect proposed by Murphy, Shleifer, and Vishny (1993) and Glaeser, Sacerdote, and Scheinkman (1996), which would predict that CEO compensation is largely influenced by compensation policies at leading firms (rather than all firms) in the geographic vicinity. The empirical evidence does not support this hypothesis. Fourth, CEOs may exhibit envy, so that their concern with the compensation of geographically-proximate CEOs in their reference group could lead to geographical clustering of CEO pay. The empirical evidence is most supportive of this hypothesis.

While envy seems to provide the most plausible explanation for why CEO pay is geographically clustered, the CEO pay dynamics documented above are potentially consistent with both envy and a learning-about-CEO-quality story. I do find some evidence in support of this alternative hypothesis, but it is not as strong as the evidence in support of the envy hypothesis. Moreover, the learning story cannot explain why geographic clustering of CEO pay occurs in the first place.

Given that envy, like risk aversion, has deep evolutionary roots (e.g., Foster, 1972; Robson, 2001), it should perhaps not be surprising that it affects CEO pay, possibly through a deep parameter like the CEO's reservation wage. Future research could focus on the effects of envy on other corporate finance decisions.

References

Adams, J. Stacey, 1963, Toward an understanding of equity, Journal of Abnormal and Social Psychology 37: 422-436.

Akerlof, George A., and Janet L. Yellen, 1990, The fair wage-effort hypothesis and unemployment, Quarterly Journal of Economics 105: 255-283.

Aquinas, Thomas, 1265-1274, Summa Theologiae.

Baker, Malcolm, and Paul A. Gompers, 2003, The determinants of board structure at the initial public offering, Journal of Law and Economics 46: 569-598.

Bartling, Bjorn, and Ferdinand A. von Siemens, 2010, The intensity of incentives in firms and markets: Moral hazard with envious agents, Labour Economics 17: 598-607.

Bebchuk, Lucian, and Jesse Fried, 2004, Pay without performance: The unfulfilled promise of executive compensation, Cambridge, MA: Harvard University Press.

Bebchuk, Lucian, and Yaniv Grinstein, 2005, The growth of executive pay, Oxford Review of Economic Policy 21: 283-303.

Bertrand, Marianne, and Sendhil Mullainathan, 2001, Are CEOs rewarded for luck? The ones without principals are, Quarterly Journal of Economics 96: 901-932.

Bizjak, John M., Michael L. Lemmon, and Lalitha Naveen, 2008, Does the use of peer groups contribute to higher pay and less efficient compensation?, Journal of Financial Economics 90: 152-168.

Blau, Gary, 1994, Testing the effect of level and importance of pay referents on pay level satisfaction, Human Relations 47: 1251-1268.

Bognanno, Michael L., 2001, Corporate tournaments, Journal of Labor Economics 19: 290-315.

Butler, Alexander W., 2008, Distance still matters: Evidence from municipal bond underwriting, Review of Financial Studies 21: 763-784.

Chhaochharia, Vidhi, and Yaniv Grinstein, 2009, CEO compensation and board structure, Journal of Finance 64: 231-261.

Clark, Andrew E., and Andrew J. Oswald, 1996, Satisfaction and comparison income, Journal of Public Economics 61: 359-381.

Core, John E., Robert W. Holthausen, and David F. Larcker, 1999, Corporate governance, chief executive officer compensation, and firm performance, Journal of Financial Economics 51: 371-406.

Coval, Joshua, and Tobias Moskowitz, 1999, Home bias at home: Local equity preference in domestic portfolios, Journal of Finance 54: 2045-2073.

Coval, Joshua, and Tobias Moskowitz, 2001, Geography of investment: informed trading and asset prices, Journal of Political Economy 109: 811-841.

DeAngelo, Harry, and Eugene Rice, 1983, Antitakeover charter amendments and stockholder wealth, Journal of Financial Economics 11: 329–359.

Dittmar, Amy, and Jan Mahrt-Smith, 2007, Corporate governance and the value of cash holdings, Journal of Financial Economics 83: 599–634.

Dlugosz, Jen R., Rudiger Fahlenbrach, Paul Gompers, and Andrew Metrick, 2006, Large blocks of stock: Prevalence, size, and measurement, Journal of Corporate Finance 12: 594-618.

Duesenberry, James S., 1949, Income, saving and the theory of consumer behavior, Harvard University Press, Cambridge, Massachussetts.

Dur, Robert, and Amihai Glazer, 2008, Optimal contracts when a worker envies his boss, Journal of Law, Economics and Organization 24: 120-137.

Easterlin, Richard A., 1995, Will raising the incomes of all increase the happiness of all?, Journal of Economic Behavior and Organization 27: 35-57.

Elster, John, 1991, Envy in social life, in Richard J. Zeckhauser, ed., Strategy and Choice, Cambridge, Massachusetts and London, England: The MIT Press.

Engelberg, Joseph, Pengjie Gao, and Christopher A. Parsons, 2010, The price of a CEO's rolodex, working paper.

Fahlenbrach, Rudiger, 2009, Shareholder rights, boards, and CEO compensation, Review of Finance 13: 81-113.

Faulkender, Michael, and Jun Yang, 2010, Inside the black box: The role and composition of compensation peer groups, Journal of Financial Economics 96: 257-270.

Ferrer-i-Carbonell, Ada, 2005, Income and well-being: An empirical analysis of the comparison income effect, Journal of Public Economics 89: 997-1019.

Festinger, Leon, 1954, A theory of social comparison processes, Human Relations 7: 117-140.

Foster, George M., 1972, The anatomy of envy, Current Anthropology 13: 165–202.

Fracassi, Cesare, and Geoffrey Tate, forthcoming, External networking and internal firm governance, Journal of Finance.

Frank, Robert H., 1984a, Are workers paid their marginal products?, American Economic Review 74: 549-571.

Frank, Robert H., 1984b, Interdependent preferences and the competitive wage structure, Rand Journal of Economics 15: 510-520.

Frank, Robert H., 1985, Choosing the right pond: Human behavior and the quest for status, Oxford University Press, New York.

Gabaix, Xavier, and Augustin, Landier, 2008, Why has CEO pay increased so much?, Quarterly Journal of Economics 123: 49-100.

Gartrell, C. David, 1982, On the visibility of wage referents, Canadian Journal of Sociology 7: 117-143.

Gibbons, Robert, and Kevin J. Murphy, 1992, Optimal incentive contracts in the presence of career concerns: Theory and evidence, Journal of Political Economy 100: 468-505.

Gillan, Stuart L., and Laura T. Starks, 2000, Corporate governance proposals and shareholder activism: The role of institutional investors, Journal of Financial Economics 57: 275–305.

Glaeser, Edward L., Bruce Sacerdote, and Jose A. Scheinkman, 1996, Crime and social interactions, Quarterly Journal of Economics 111: 507-548.

Goel, Anand M., and Anjan V. Thakor, 2005, Green with envy: Implications for corporate investment distortions, Journal of Business 78: 2255-2288.

Goel, Anand M., and Anjan V. Thakor, 2010, Do envious CEOs cause merger waves?, Review of Financial Studies 23: 487-517.

Gompers, Paul A., Joy L. Ishii, and Andrew Metrick, 2003, Corporate governance and equity prices, Quarterly Journal of Economics 118: 107–155.

Goodman, Paul S., 1974, An examination of referents used in the evaluation of pay, Organizational Behavior and Human Performance 12: 170-195.

Grossman, Sanford J., and Oliver Hart, 1983, An analysis of the principal-agent problem, Econometrica 51:7-46.

Grund, Christian, and Dirk Sliwka, 2005, Envy and compassion in tournaments, Journal of Economics and Management Strategy 14: 187–207.

Hall, Brian, and Jeffrey Liebman, 1998, Are CEOs really paid like bureaucrats?, Quarterly Journal of Economics 93: 653-691.

Hermalin, Benjamin, and Michael Weisbach, 1998, Endogenously chosen boards of directors and their monitoring of the CEO, American Economic Review 88: 96-118.

Hill, Sarah E., and David M. Buss, 2008, The evolutionary psychology of envy, in R. Smith editor Envy: Theory and research, Oxford University Press: New York.

Hollander, Heinz, 2001, On the validity of utility statements: Standard theory versus Duesenberry's, Journal of Economic Behavior and Organization 45: 227-249.

Holmstrom, Bengt, 1979, Moral hazard and observability, Bell Journal of Economics 10: 74-91.

Holmstrom, Bengt, and Joan Ricart i Costa, 1986, Managerial incentives and capital management, Quarterly Journal of Economics 101: 835-860.

Hong, Harrison, Jeffrey D. Kubik, Jeremy C. Stein, 2004, Social interaction and stock-market participation, Journal of Finance 59: 137-163.

Hong, Harrison, Jeffrey D. Kubik, Jeremy C. Stein, 2005, Thy neighbor's portfolio: Word-of-mouth effects in the holdings and trades of money managers, Journal of Finance 60: 2801-2824.

Huberman, Gur, 2001, Familiarity breeds investment, Review of Financial Studies 14: 659–680.

Jensen, Michael C., and William H. Meckling, 1976, Theory of the firm: Managerial behavior, agency costs and ownership structure, Journal of Financial Economics 3: 305-360.

Jensen, Michael C., and Kevin J. Murphy, 1990, Performance pay and top-management incentives, Journal of Political Economy 98: 225-64.

John, Kose, and Dalida Kadyrzhanova, 2008, Relative governance, working paper.

Kapteyn, Arie, and Floor G. van Herwaarden, 1980, Interdependent welfare functions and optimal income distribution, Journal of Public Economics 14: 375-397.

Kapteyn, Arie, Sara van de Geer, Huib van de Stadt, and Tom Wansbeek, 1997, Interdependent preferences: An econometric analysis, Journal of Applied Econometrics 12: 665-686.

Kedia, Simi, and Shiva Rajgopal, 2009, Neighborhood matters: The impact of location on broad based stock option plans, Journal of Financial Economics 92: 109-127.

Kennan, John, and James Walker, 2008, The effect of expected income on individual migration decisions, working paper.

Keynes, John M., 1930, Economic possibilities for our grandchildren, in John M. Keynes Essays in persuasion, New York: Norton.

Kuhnen, Camelia M., and Jeffrey Zwiebel, 2009, Executive pay, hidden compensation, and managerial entrenchment, working paper.

Kulik, Carol T., and Maureen L. Ambrose, 1992, Personal and situational determinants of referent choice, Academy of Management Review 17: 212-237.

Lambert, Richard A., David F. Larcker, and Keith Weigelt, 1993, The structure of organizational incentives, Administrative Science Quarterly 38: 438-461.

Lazear, Edward P., 1989, Pay equality and industrial politics, Journal of Political Economy 97: 561-580.

Lazear, Edward P., 1998, Personnel economics for managers, New York, John Wiley & Sons.

Lee, Raymond T., and James E. Martin, 1991, Internal and external referents as predictors of pay satisfaction, Journal of Occupational Psychology 64: 57-66.

Leary, Mark T., and Michael R. Roberts, 2009, Do peer firms affect corporate financial policy?, working paper.

Levine, David I., 1991, Cohesiveness, productivity, and wage dispersion, Journal of Economic Behavior and Organization 15: 237-255.

Lorsch, Jay W., and Elizabeth Maciver, 1989, Pawns or potentates: The reality of America's corporate boards, Harvard Business School Press, Cambridge, MA.

Luttmer, Erzo F. P., 2005, Neighbors as negatives: Relative earnings and well-being, Quarterly Journal of Economics 120: 963-1002.

Malloy, Christopher J., 2005, The geography of equity analysis, Journal of Finance 60: 719-755.

Martin, James E., and Raymond T. Lee, 1992, Pay knowledge and referents in a tiered-employment setting, Industrial Relations 47: 654-670.

Marx, Karl, 1849, Wage labour and capital, in Karl Marx and F. Engel, Selected Works, Vol.1, Moscow: Progress Publishers.

McBride, Michael, 2001, Relative-income effects on subjective well-being in the cross-section, Journal of Economic Behavior and Organization 45: 251-278.

Milbourn, Todd T., 2003, CEO reputation and stock-based compensation, Journal of Financial Economics 68: 233-262.

Murphy, Kevin J., 1999, Executive compensation, in Orley Ashenfelter and David Card (editors), Handbook of Labor Economics Vol. 3b, New York and Oxford: Elsevier Science North Holland.

Murphy, Kevin M., Andrei Shleifer, and Robert Vishny, 1993, Why is rent seeking so costly to growth?, American Economic Review 73: 409-14.

Murphy, Kevin J., and Jerold L. Zimmerman, 1993, Financial performance surrounding CEO turnover, Journal of Accounting and Economics 16: 273-315.

Nickerson, Jack A., and Todd R. Zenger, 2008, Envy, comparison costs, and the economic theory of the firm, Strategic Management Journal 29: 1429-1449.

Oldham, Greg R., Carol T. Kulik, Lee P. Stepina, and Maureen L. Ambrose, 1986, Relations between job facet comparisons and employee reactions, Organizational Behavior and Human Decision Processes 38: 28-47.

Persky, Joseph, and Mo-Yin Tam, 1990, Local status and national social welfare, Journal of Regional Science 30: 229-238.

Petersen, Mitchell A., and Raghuram G. Rajan, 2002, Does Distance Still Matter? The Information Revolution in Small Business Lending, Journal of Finance 57: 2533-2570.

Pfeffer, Jeffrey, and Alison Davis-Black, 1992, Salary dispersion, location in the salary distribution, and turnover among college administrators, Industrial & Labor Relations Review 45: 753-63.

Prendergast, Canice, 1999, The provision of incentives in firms, Journal of Economic Literature 37: 7-63.

Prendergast, Canice, 2002, The tenuous trade-off between risk and incentives, Journal of Political Economy 110: 1071-1102.

Ramakrishnan, Ram T. S., and Anjan V. Thakor, 1984, The valuation of assets under moral hazard, Journal of Finance 39: 229-238.

Richer, Stephen, 1976, Reference-group theory and ability grouping: A convergence of sociological theory and educational research, Sociology of Education 49: 65-71.

Robson, Arthur J., 2001, The biological basis of economic behavior, Journal of Economic Literature 39: 11-33.

Rosen, Sherwin, 1982, Authority, control, and the distribution of earnings, The Bell Journal of Economics 13: 311-323.

Schoeck, Helmut, 1969, Envy: A theory of social behavior, New York: Harcourt, Brace, and World.

Shue, Kelly, 2011, Executive networks and firm policies: Evidence from random assignment of MBA peers, working paper.

Smith, Adam, 1759 reprinted 1976, Theory of moral sentiments, Oxford: Clarendon Press.

Smith, Richard H., and Sung Hee Kim, 2007, Comprehending envy, Psychological Bulletin 133: 46-64.

Smith, Clifford W., and Ross L. Watts, 1992, The investment opportunity set and corporate financing, dividend, and compensation policies, Journal of Financial Economics 32: 263-292.

Solnick, Sara J., and David Hemenway, 1998, Is more always better? A survey on positional concerns, Journal of Economic Behavior and Organization 37: 373-383.

Spence, Michael A., 1976, Competition in salaries, credentials, and signaling prerequisites for jobs, Quarterly Journal of Economics 91: 51-74.

Strauss, Helen M., 1968, Reference group and social comparison processes among the totally blind, in H. H. Hyman and E. Singer (editors), Readings in reference group theory and research, New York: Free Press.

Summers, Timothy P., and Angelo S. DeNisi, 1990, In search of Adam's other: reexamination of referents used in the evaluation of pay, Human Relations 43: 497-511.

Uysal, Vahap B., Simi Kedia, and Venkatesh Panchapagesan, 2008, Geography and acquirer returns, Journal of Financial Intermediation 17: 256-275.

Veblen, Thorsten, 1899, The theory of the leisure class, New York: MacMillan.

Vietorisz, Thomas, and Bennett Harrison, 1973, Labor market segmentation: Positive feedback and divergent development, American Economic Review 63: 366-376.

Yermack, David, 1997, Good timing: CEO stock option awards and company news announcements, Journal of Finance 52: 449-476.

Yonker, Scott, 2010, Geography and the market for CEOs, working paper.

Table 1: Summary Statistics

This table provides summary statistics on the regression variables (Panel A), and the top and bottom 25 cities in average compensation of CEOs at firms headquartered within a 100-kilometer radius in 2005 (Panels B and C, respectively).

Compensation measures: Salary measures the compensation part that is fixed (non-contingent) at the beginning of the year. Cash compensation is the sum of salary and bonus. Total compensation is the sum of salary, bonus, stock and option grants.

The CEO's own compensation is *not* included in the average compensation of geographically-close CEOs and the average industry compensation. The average compensation of geographically-close CEOs is calculated using the previous year's CEO compensation at firms headquartered within a 100-kilometer radius. Average industry peer compensation is the average compensation of CEOs at similar-sized firms (i.e. in the same total assets tercile) in the same industry in the previous year.

CEO age is the CEO's age. CEO tenure is the number of years the executive has been the firm's CEO. Firm size is measured as total assets as of the prior fiscal year end. M/B ratio is the market value of equity divided by the book value of equity as of the prior fiscal year end. Stock returns are the average monthly stock returns over the prior fiscal year. Profitability is return on assets, measured as net income divided by total assets as of the prior fiscal year end. Cost of living is based on the ACCRA cost of living index. Per capita income is from the 2000 decennial Census.

Panel A: Summary Statistics on the Regression Variables

	N	mean	median	std dev
CEO compensation:				
Salary ($K)	12359	655	600	347
Cash compensation ($K)	12359	1,402	968	1,637
Total compensation ($K)	12359	4,835	2,294	22,813
Average compensation of geographically-close CEOs:				
Salary ($K)	12359	605	592	148
Cash compensation ($K)	12359	1,305	1,192	532
Total compensation ($K)	12359	4,408	3,876	2,759
Control variables:				
Avg. industry peer compensation:				
Salary ($K)	12359	608	565	226
Cash compensation ($K)	12359	1,310	1,047	850
Total compensation ($K)	12359	4,437	3,105	3,777
CEO age (years)	12359	55.91	56.00	7.45
CEO tenure (years)	12359	8.90	6.50	7.57
Firm size ($M)	12359	11,078	1,212	54,284
M/B ratio	12359	2.73	2.09	1.98
Stock returns (%)	12359	1.85	1.53	4.17
Profitability (%)	12359	3.85	4.59	9.61
Cost of living	12359	118.76	105.90	29.23
Per capita income ($K)	12359	23.36	22.51	6.40

Panel B: Top 25 Cities in Average Compensation of CEOs at Firms Headquartered within a 100-Kilometer Radius in 2005

	Salary		Cash Compensation		Total Compensation	
Rank	City	State	City	State	City	State
1	Decatur	IL	Carpinteria	CA	San Antonio	TX
2	San Antonio	TX	San Antonio	TX	Peoria	IL
3	Peoria	IL	Spring Lake	NJ	Jacksonville	FL
4	Maryville	TN	Budd Lake	NJ	Las Vegas	NV
5	Las Vegas	NV	Clinton	NJ	Wayne Heights	PA
6	Lexington-Fayette	KY	Princeton	NJ	Springfield	MA
7	Boise City	ID	White House Station	NJ	Budd Lake	NJ
8	Montgomery	AL	Plainsboro Center	NJ	New Orleans	LA
9	Budd Lake	NJ	Red Bank	NJ	Spring Lake	NJ
10	Columbia	SC	Las Vegas	NV	Clinton	NJ
11	Spring Lake	NJ	East Brunswick	NJ	Mclean	VA
12	Clinton	NJ	Mountain Lakes	NJ	Princeton	NJ
13	Red Bank	NJ	Hauppauge	NY	Plainsboro Center	NJ
14	Plainsboro Center	NJ	New Brunswick	NJ	White House Station	NJ
15	Princeton	NJ	Kenilworth	NJ	York	PA
16	White House Station	NJ	Morristown	NJ	Covington	LA
17	Mountain Lakes	NJ	Somerset	NJ	Linthicum	MD
18	Newark	NJ	New Providence	NJ	Columbia	MD
19	Morristown	NJ	Madison	NJ	Norwalk	CT
20	New Providence	NJ	Watchung	NJ	Red Bank	NJ
21	Lyndhurst	NJ	Shelton	CT	Westport	CT
22	Norwalk	CT	Bernardsville	NJ	Bridgeport	CT
23	Madison	NJ	Stamford	CT	Danbury	CT
24	Watchung	NJ	Roseland	NJ	Hauppauge	NY
25	Kenilworth	NJ	Melville	NY	Lexington-Fayette	KY

Panel C: Bottom 25 Cities in Average Compensation of CEOs at Firms Headquartered within a 100-Kilometer Radius in 2005

	Salary		Cash Compensation		Total Compensation	
Rank	City	State	City	State	City	State
25	Simpsonville	SC	Wilmington	NC	Rockford	MI
24	Watsonville	CA	Battle Creek	MI	Cedar Rapids	IA
23	Seattle	WA	San Diego	CA	Wilmington	NC
22	Omaha	GA	Benton Harbor	MI	Charlotte	MI
21	Allegan	MI	Fort Wayne	IN	St. George	UT
20	Fort Collins	CO	Exton	PA	Portland	OR
19	Battle Creek	MI	Baton rouge	LA	Greenville	SC
18	Monterey	CA	Los Gatos	CA	Exton	PA
17	Rockford	MI	Dalton	GA	Allegan	MI
16	Exton	PA	Roanoke	VA	Kalamazoo	MI
15	Fresno	CA	Coeur D'Alene	ID	Battle Creek	MI
14	Portland	OR	Greenville	SC	Montgomery	AL
13	Los Gatos	CA	Portland	OR	Coeur D'Alene	ID
12	Albuquerque	NM	Simpsonville	SC	Benton Harbor	MI
11	Coeur D'Alene	ID	Mosinee	WI	Albuquerque	NM
10	Fort Wayne	IN	Winona	MN	Simpsonville	SC
9	Tucson	AZ	Jackson	MS	Huntsville	AL
8	Roanoke	VA	Myrtle Beach	SC	Tucson	AZ
7	Huntsville	AL	Albuquerque	NM	Springfield	MO
6	Provo	UT	Huntsville	AL	Myrtle Beach	SC
5	Springfield	MO	Tucson	AZ	Jackson	MS
4	Jackson	MS	Fresno	CA	Mosinee	WI
3	Anchorage	AK	Springfield	MO	Fresno	CA
2	St. George	UT	St. George	UT	Winona	MN
1	Winona	MN	Anchorage	AK	Anchorage	AK

Table 2: Regressions to Determine the Relationship of CEO Compensation to the Average (*Robustness: Median*) Compensation of Geographically-Close CEOs

Panel A (B) reports the results of regressing CEO compensation on the average (median) compensation of geographically-close CEOs and control variables. The results show that the average (median) compensation of geographically-proximate CEOs has a positive and significant effect on CEO compensation.

Compensation measures: Salary measures the compensation part that is fixed (non-contingent) at the beginning of the year. Cash compensation is the sum of salary and bonus. Total compensation is the sum of salary, bonus, stock and option grants.

In Panel A (B), the CEO's own compensation is *not* included in the average (median) compensation of geographically-close CEOs and the average (median) industry peer compensation; the average (median) compensation of geographically-close CEOs is calculated using the previous year's CEO compensation at firms headquartered within a 100-kilometer radius. In Panel A (B), average (median) industry peer compensation is the average (median) compensation of CEOs at similar-sized firms, i.e. in the same total assets tercile, in the same industry in the previous year.

CEO age is the CEO's age. CEO tenure is the number of years the executive has been the firm's CEO. Firm size is measured as total assets as of the prior fiscal year end. M/B ratio is the market value of equity divided by the book value of equity as of the prior fiscal year end. Stock returns are the average monthly stock returns over the prior fiscal year. Profitability is return on assets, measured as net income divided by total assets as of the prior fiscal year end. Cost of living is based on the ACCRA cost of living index. Per capita income is from the 2000 decennial Census. Time and industry fixed effects are included but not reported. Industries correspond to the 17 Fama-French industry groupings.

t-statistics based on robust standard errors clustered by firm are in parentheses. Superscripts ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	Panel A: Main results			**Panel B: Robustness based on median pay**		
Dependent variable:	**log(CEO salary)**	**log(CEO cash compensation)**	**log(CEO total compensation)**	**log(CEO salary)**	**log(CEO cash compensation)**	**log(CEO total compensation)**
Compensation variables based on salary, cash compensation or total compensation depending on the table column:						
log(avg. compensation of geographically-close CEOs)	0.313	0.156	0.110			
	*(3.86)***	*(3.54)***	*(3.13)***			
log(avg. industry peer compensation)	0.202	0.096	0.112			
	*(2.38)**	*(2.05)**	*(4.26)***			
log(median compensation of geographically-close CEOs)				0.322	0.192	0.075
				*(4.41)***	*(4.60)***	*(1.84)**
log(median industry peer compensation)				0.203	0.093	0.112
				*(2.40)**	*(1.98)**	*(4.26)***
CEO age	0.009	0.008	-0.001	0.009	0.008	-0.001
	*(3.34)***	*(3.20)***	*(-0.37)*	*(3.33)***	*(3.16)***	*(-0.36)*
CEO tenure	-0.002	-0.003	-0.008	-0.002	-0.003	-0.008
	(-0.87)	*(-1.08)*	*(-2.77)***	*(-0.83)*	*(-1.10)*	*(-2.76)***
Firm size	0.140	0.248	0.360	0.139	0.249	0.361
	*(6.57)***	*(12.54)***	*(22.78)***	*(6.55)***	*(12.57)***	*(22.68)***
M/B ratio	-0.011	0.007	0.085	-0.011	0.008	0.085
	(-1.41)	*(1.02)*	*(10.22)***	*(-1.36)*	*(1.14)*	*(10.31)***
Stock returns	0.000	0.008	0.012	0.000	0.007	0.012
	(0.09)	*(2.86)***	*(3.47)***	*(0.05)*	*(2.81)***	*(3.46)***
Profitability	0.003	0.007	0.004	0.003	0.007	0.004
	*(2.78)***	*(5.74)***	*(2.89)***	*(2.65)***	*(5.62)***	*(2.82)***
Cost of living	-0.001	0.000	0.001	-0.001	0.001	0.002
	(-1.21)	*(0.69)*	*(1.63)*	*(-1.12)*	*(1.16)*	*(2.38)**
Per capita income	0.040	0.095	0.149	0.049	0.112	0.176
	(0.75)	*(1.48)*	*(1.99)**	*(0.94)*	*(1.81)**	*(2.40)**
Constant	1.552	2.161	2.601	1.483	1.895	2.911
	*(2.82)***	*(6.02)***	*(7.46)***	*(2.86)***	*(5.29)***	*(7.37)***
Nr obs	12359	12359	12359	12333	12350	12358
Adj R2	0.16	0.28	0.40	0.16	0.28	0.40

Table 3: Alternative Cost of Living Controls

This table uses two alternative cost of living controls (houses over $1 million and 3rd quartile house value) and shows that the average compensation of geographically-proximate CEOs continues to have a positive and significant effect on CEO compensation.

Compensation measures: Salary measures the compensation part that is fixed (non-contingent) at the beginning of the year. Cash compensation is the sum of salary and bonus. Total compensation is the sum of salary, bonus, stock and option grants.

The CEO's own compensation is *not* included in the average compensation of geographically-close CEOs and the average industry peer compensation. The average compensation of geographically-close CEOs is calculated using the previous year's CEO compensation at firms headquartered within a 100-kilometer radius. Average industry peer compensation is the average compensation of CEOs at similar-sized firms (i.e. in the same total assets tercile) in the same industry in the previous year.

CEO age is the CEO's age. CEO tenure is the number of years the executive has been the firm's CEO. Firm size is measured as total assets as of the prior fiscal year end. M/B ratio is the market value of equity divided by the book value of equity as of the prior fiscal year end. Stock returns are the average monthly stock returns over the prior fiscal year. Profitability is return on assets, measured as net income divided by total assets as of the prior fiscal year end. Million dollar houses is the fraction of houses over $1 million from the 2000 decennial Census. Q3 house value is the third quartile house value. Per capita income is from the 2000 decennial Census. Time and industry fixed effects are included but not reported. Industries correspond to the 17 Fama-French industry groupings.

t-statistics based on robust standard errors clustered by firm are in parentheses. Superscripts ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	Panel A: Controlling for the fraction of houses over $1 million			**Panel B: Controlling for the third quartile house price**		
Dependent variable:	**log(CEO salary)**	**log(CEO cash compensation)**	**log(CEO total compensation)**	**log(CEO salary)**	**log(CEO cash compensation)**	**log(CEO total compensation)**
Compensation variables based on salary, cash compensation or total compensation depending on the table column:						
log(avg. compensation of geographically-close CEOs)	0.274	0.125	0.146	0.292	0.126	0.144
	*(3.46)***	*(2.64)***	*(4.13)***	*(3.55)***	*(2.48)**	*(3.88)***
log(avg. industry peer compensation)	0.279	0.171	0.129	0.282	0.187	0.128
	*(3.71)***	*(3.81)***	*(4.67)***	*(3.28)***	*(3.75)***	*(4.27)***
CEO age	0.010	0.008	-0.002	0.009	0.007	-0.003
	*(3.67)***	*(3.03)***	*(-0.81)*	*(3.16)***	*(2.47)**	*(-1.00)*
CEO tenure	-0.004	-0.003	-0.008	-0.003	-0.001	-0.006
	*(-2.21)**	*(-1.33)*	*(-2.95)***	*(-1.47)*	*(-0.59)*	*(-2.09)**
Firm size	0.139	0.232	0.372	0.134	0.224	0.370
	*(5.98)***	*(11.15)***	*(25.03)***	*(4.97)***	*(9.61)***	*(23.28)***
M/B ratio	-0.006	0.007	0.086	-0.009	0.002	0.085
	(-0.74)	*(0.83)*	*(9.58)***	*(-0.94)*	*(0.17)*	*(8.50)***
Stock returns	-0.001	0.008	0.014	-0.001	0.010	0.016
	(-0.44)	*(2.56)**	*(4.10)***	*(-0.17)*	*(2.74)***	*(4.31)***
Profitability	0.002	0.007	0.005	0.002	0.006	0.004
	*(2.18)**	*(5.12)***	*(3.02)***	*(1.50)*	*(4.51)***	*(2.87)***
Million dollar houses	4.221	5.245	4.297			
	*(2.99)***	*(3.21)***	*(2.16)**			
Q3 house value				0.255	0.319	0.139
				*(2.17)**	*(2.06)**	*(0.68)*
Per capita income	-0.081	0.007	0.205	-0.063	0.033	0.228
	(-1.05)	*(0.10)*	*(2.80)***	*(-0.90)*	*(0.47)*	*(3.20)***
Constant	1.525	2.508	1.889	1.374	2.091	1.862
	*(2.56)**	*(6.95)***	*(5.43)***	*(2.02)**	*(4.98)***	*(5.18)***
Nr obs	9174	9174	9174	7883	7883	7883
Adj R2	0.20	0.28	0.43	0.17	0.25	0.42

Table 4: Controlling for CEO Skill, Agency, and Risk Aversion

This table adds proxies for CEO skill, agency, and risk aversion, and shows that the average compensation of geographically-proximate CEOs generally continues to have a positive and significant effect on CEO compensation.

Compensation measures: Salary measures the compensation part that is fixed (non-contingent) at the beginning of the year. Cash compensation is the sum of salary and bonus. Total compensation is the sum of salary, bonus, stock and option grants.

The CEO's own compensation is *not* included in the average compensation of geographically-close CEOs and the average industry peer compensation. The average compensation of geographically-close CEOs is calculated using the previous year's CEO compensation at firms headquartered within a 100-kilometer radius. Average industry peer compensation is the average compensation of CEOs at similar-sized firms (i.e. in the same total assets tercile) in the same industry in the previous year.

CEO age is the CEO's age. CEO tenure is the number of years the executive has been the firm's CEO. Firm size is measured as total assets as of the prior fiscal year end. M/B ratio is the market value of equity divided by the book value of equity as of the prior fiscal year end. Stock returns are the average monthly stock returns over the prior fiscal year. Profitability is return on assets, measured as net income divided by total assets as of the prior fiscal year end. Cost of living is based on the ACCRA cost of living index. Per capita income is from the 2000 decennial Census. External CEO dummy (skill 1), is a dummy that equals one if the CEO joined the firm less than two years prior to becoming CEO. Agency is cash flow divided by total assets as of the prior fiscal year end. Risk aversion is salary divided by total compensation as of the prior fiscal year end. Time and industry fixed effects are included in every panel but not reported. Industries correspond to the 17 Fama-French industry groupings. Panel B includes two education dummies (skill 2) that equal one if the CEO has an MBA or a law degree, respectively (not reported).

t-statistics based on robust standard errors clustered by firm are in parentheses. Superscripts ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	Panel A: Controlling for skill (one proxy), agency, and risk aversion			**Panel B: Controlling for skill (two proxies), agency, and risk aversion**		
Dependent variable:	**log(CEO salary)**	**log(CEO cash compensation)**	**log(CEO total compensation)**	**log(CEO salary)**	**log(CEO cash compensation)**	**log(CEO total compensation)**
Compensation variables based on salary, cash compensation or total compensation depending on the table column:						
log(avg. compensation of geographically-close CEOs)	0.326	0.168	0.117	0.612	0.337	0.099
	*(3.54)****	*(3.13)****	*(2.82)****	*(3.70)****	*(3.88)****	*(1.71)**
log(avg. industry peer compensation)	0.191	0.087	0.117	0.126	-0.048	0.087
	*(1.83)**	*(1.38)*	*(4.20)****	*(0.51)*	*(-0.45)*	*(1.93)**
CEO age	0.011	0.010	0.004	0.017	0.016	0.004
	*(3.75)****	*(3.26)****	*(1.48)*	*(3.53)****	*(3.15)****	*(0.91)*
CEO tenure	-0.004	-0.004	-0.007	-0.005	-0.004	-0.007
	(-1.59)	*(-1.29)*	*(-2.41)***	*(-1.92)**	*(-1.15)*	*(-2.24)***
Firm size	0.136	0.215	0.297	0.120	0.238	0.317
	*(5.15)****	*(8.65)****	*(17.83)****	*(2.30)***	*(6.06)****	*(15.23)****
M/B ratio	-0.024	-0.011	0.052	-0.045	-0.034	0.048
	*(-2.24)***	*(-1.06)*	*(5.68)****	*(-2.34)***	*(-1.73)**	*(3.37)****
Stock returns	0.003	0.006	0.009	0.009	0.014	0.016
	(0.98)	*(2.13)***	*(2.33)***	*(1.69)**	*(2.56)***	*(3.39)****
Profitability	0.001	0.002	-0.005	0.002	0.002	-0.001
	(0.29)	*(0.51)*	*(-1.08)*	*(0.50)*	*(0.43)*	*(-0.13)*
Cost of living	0.000	0.001	0.001	-0.001	-0.001	0.001
	(0.43)	*(1.44)*	*(1.67)**	*(-1.14)*	*(-1.20)*	*(0.81)*
Per capita income	0.013	0.024	0.105	-0.069	-0.062	-0.092
	(0.19)	*(0.30)*	*(1.49)*	*(-0.64)*	*(-0.49)*	*(-0.81)*
External CEO dummy (skill 1)	0.018	0.027	0.076	-0.017	-0.015	0.023
	(0.54)	*(0.84)*	*(2.50)***	*(-0.28)*	*(-0.26)*	*(0.51)*
Agency	0.189	0.425	0.834	0.267	0.582	0.636
	(0.47)	*(0.90)*	*(1.91)**	*(0.76)*	*(1.27)*	*(0.98)*
Risk aversion	-0.182	-0.729	-1.529	-0.408	-0.822	-1.690
	*(-2.55)***	*(-9.85)****	*(-17.36)****	*(-3.52)****	*(-6.69)****	*(-10.97)****
Constant	1.652	2.673	3.237	0.557	2.960	4.380
	*(2.05)***	*(5.84)****	*(8.65)****	*(0.35)*	*(3.62)****	*(7.12)****
Education dummies (skill 2)	N	N	N	Y	Y	Y
Nr obs	6924	6924	6924	2500	2500	2500
Adj R2	0.21	0.36	0.55	0.20	0.33	0.53

Table 5: Controlling for the CEO's Personal Networks

This table includes several proxies for the CEO's personal networks and shows that the average compensation of geographically-proximate CEOs continues to have a positive and significant effect on CEO compensation.

Compensation measures: Salary measures the compensation part that is fixed (non-contingent) at the beginning of the year. Cash compensation is the sum of salary and bonus. Total compensation is the sum of salary, bonus, stock and option grants.

The CEO's own compensation is *not* included in the average compensation of geographically-close CEOs and the average industry peer compensation. The average compensation of geographically-close CEOs is calculated using the previous year's CEO compensation at firms headquartered within a 100-kilometer radius. Average industry peer compensation is the average compensation of CEOs at similar-sized firms (i.e. in the same total assets tercile) in the same industry in the previous year.

CEO age is the CEO's age. CEO tenure is the number of years the executive has been the firm's CEO. Firm size is measured as total assets as of the prior fiscal year end. M/B ratio is the market value of equity divided by the book value of equity as of the prior fiscal year end. Stock returns are the average monthly stock returns over the prior fiscal year. Profitability is return on assets, measured as net income divided by total assets as of the prior fiscal year end. Per capita income is from the 2000 decennial Census. CEO rolodex is the sum of past professional connections (between executives and directors who no longer work for the same firm), social connections (active members of the same organization), and school connections (attended the same university and graduated within two years of each other). Time and industry fixed effects are included but not reported. Industries correspond to the 17 Fama-French industry groupings.

t-statistics based on robust standard errors clustered by firm are in parentheses. Superscripts ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	Panel A: Controlling for the CEO's rolodex			**Panel B: Controlling for rolodex components**		
Dependent variable:	**log(CEO salary)**	**log(CEO cash compensation)**	**log(CEO total compensation)**	**log(CEO salary)**	**log(CEO cash compensation)**	**log(CEO total compensation)**
Compensation variables based on salary, cash compensation or total compensation depending on the table column:						
log(avg. compensation of geographically-close CEOs)	0.510	0.250	0.093	0.494	0.241	0.094
	*(4.54)****	*(4.26)****	*(1.89)**	*(4.51)****	*(4.21)****	*(1.91)**
log(avg. industry peer compensation)	0.194	-0.005	0.105	0.194	-0.004	0.101
	(1.48)	*(-0.08)*	*(2.56)***	*(1.44)*	*(-0.05)*	*(2.48)***
CEO age	0.014	0.014	0.005	0.014	0.013	0.006
	*(3.76)****	*(3.90)****	*(1.28)*	*(3.68)****	*(3.88)****	*(1.46)*
CEO tenure	-0.004	-0.005	-0.012	-0.005	-0.006	-0.012
	*(-2.05)***	*(-2.01)***	*(-3.35)****	*(-2.30)***	*(-2.15)***	*(-3.36)****
Firm size	0.106	0.252	0.356	0.104	0.250	0.360
	*(2.79)****	*(8.43)****	*(13.22)****	*(2.61)****	*(8.03)****	*(13.52)****
M/B ratio	-0.018	-0.011	0.072	-0.017	-0.010	0.072
	(-1.63)	*(-0.99)*	*(6.16)****	*(-1.60)*	*(-0.92)*	*(6.12)****
Stock returns	0.002	0.012	0.017	0.002	0.012	0.017
	(0.51)	*(2.89)****	*(3.60)****	*(0.53)*	*(2.92)****	*(3.65)****
Profitability	0.003	0.008	0.007	0.003	0.008	0.007
	*(1.92)**	*(4.16)****	*(2.80)****	*(1.80)**	*(4.15)****	*(2.81)****
Cost of living	-0.003	-0.002	0.001	-0.002	-0.002	0.001
	*(-1.87)**	*(-1.82)**	*(0.74)*	*(-1.75)**	*(-1.67)**	*(0.64)*
Per capita income	-0.014	0.062	0.015	-0.013	0.066	0.014
	(-0.25)	*(0.83)*	*(0.15)*	*(-0.22)*	*(0.87)*	*(0.14)*
CEO rolodex	0.00016	0.00020	0.00036			
	(1.49)	*(2.33)***	*(3.83)****			
CEO professional connections				-0.00011	-0.00004	0.00038
				(-0.42)	*(-0.18)*	*(2.35)***
CEO social connections				0.00023	0.00027	0.00024
				*(1.68)**	*(2.33)***	*(2.08)***
CEO school connections				0.00034	0.00026	0.00073
				(1.07)	*(1.03)*	*(2.82)****
Constant	0.698	2.630	3.023	0.774	2.667	2.995
	(0.87)	*(5.73)****	*(6.07)****	*(1.02)*	*(5.96)****	*(6.01)****
Nr obs	5066	5066	5066	5056	5056	5056
Adj R2	0.15	0.28	0.39	0.15	0.28	0.39

Table 6: Controlling for Differences in Corporate Governance

This table shows that the average compensation of geographically-proximate CEOs continues to have a positive and generally significant effect on CEO compensation after controlling for differences in corporate governance. Panel A focuses on director monitoring, proxied by the fraction of outside directors and board size. Panel B controls for differences in antitakeover protection and institutional block ownership.

Compensation measures: Salary measures the compensation part that is fixed (non-contingent) at the beginning of the year. Cash compensation is the sum of salary and bonus. Total compensation is the sum of salary, bonus, stock and option grants.

The CEO's own compensation is *not* included in the average compensation of geographically-close CEOs and the average industry peer compensation. The average compensation of geographically-close CEOs is calculated using the previous year's CEO compensation at firms headquartered within a 100-kilometer radius. Average industry peer compensation is the average compensation of CEOs at similar-sized firms (i.e. in the same total assets tercile) in the same industry in the previous year.

CEO age is the CEO's age. CEO tenure is the number of years the executive has been the firm's CEO. Firm size is measured as total assets as of the prior fiscal year end. M/B ratio is the market value of equity divided by the book value of equity as of the prior fiscal year end. Stock returns are the average monthly stock returns over the prior fiscal year. Profitability is return on assets, measured as net income divided by total assets as of the prior fiscal year end. Cost of living is based on the ACCRA cost of living index. Per capita income is from the 2000 decennial Census. Fraction of outside directors is the number of outside directors divided by the total number of directors. Board size is the total number of directors. Antitakeover protection is the Gompers-Ishii-Metric (GIM) index. Institutional block ownership is the total percentage of common stock owned by institutional block owners, where a block is defined as a stake of at least five percent. Time and industry fixed effects are included but not reported. Industries correspond to the 17 Fama-French industry groupings.

t-statistics based on robust standard errors clustered by firm are in parentheses. Superscripts ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	Panel A: Director monitoring			Panel B: Anti-takeover protection and institutional block ownership		
Dependent variable:	**log(CEO salary)**	**log(CEO cash compensation)**	**log(CEO total compensation)**	**log(CEO salary)**	**log(CEO cash compensation)**	**log(CEO total compensation)**
Compensation variables based on salary, cash compensation or total compensation depending on the table column:						
log(avg. compensation of geographically-close CEOs)	0.379	0.148	0.072	0.317	0.155	0.116
	*(4.10)***	*(2.59)***	*(1.53)*	*(3.56)***	*(3.23)***	*(2.99)***
log(avg. industry peer compensation)	0.200	0.022	0.126	0.152	0.058	0.116
	(1.61)	*(0.36)*	*(3.12)***	*(1.63)*	*(1.13)*	*(2.99)***
CEO age	0.009	0.008	0.000	0.007	0.006	-0.002
	*(2.32)**	*(2.29)**	*(0.11)*	*(2.21)**	*(2.21)**	*(-0.66)*
CEO tenure	-0.001	-0.001	-0.008	-0.001	-0.001	-0.005
	(-0.24)	*(-0.45)*	*(-2.11)**	*(-0.23)*	*(-0.55)*	*(-1.70)**
Firm size	0.081	0.229	0.355	0.133	0.245	0.363
	*(2.02)**	*(6.89)***	*(11.12)***	*(5.18)***	*(10.62)***	*(19.24)***
M/B ratio	-0.013	0.001	0.074	-0.007	0.011	0.087
	(-1.03)	*(0.09)*	*(6.83)***	*(-0.77)*	*(1.32)*	*(8.88)***
Stock returns	0.000	0.009	0.015	0.003	0.013	0.017
	(0.03)	*(1.78)**	*(2.84)***	*(0.85)*	*(3.34)***	*(3.89)***
Profitability	0.002	0.007	0.006	0.003	0.008	0.005
	*(1.70)**	*(5.18)***	*(3.21)***	*(2.69)***	*(5.43)***	*(3.01)***
Cost of living	-0.002	-0.001	0.002	0.000	0.001	0.002
	(-1.64)	*(-1.14)*	*(1.84)**	*(0.68)*	*(1.63)*	*(2.09)**
Per capita income	0.092	0.151	0.140	0.034	0.088	0.150
	(1.15)	*(1.50)*	*(1.34)*	*(0.57)*	*(1.24)*	*(1.79)**
Fraction of outside directors	0.543	0.489	0.708			
	*(2.48)**	*(2.11)**	*(2.94)***			
Board size	0.027	0.017	0.009			
	*(2.54)**	*(1.83)**	*(0.96)*			
Antitakeover protection				0.019	0.020	0.022
				*(2.58)***	*(3.21)***	*(3.39)***
Institutional block ownership				0.001	-0.001	-0.001
				*(1.67)**	*(-1.11)*	*(-1.29)*
Constant	0.913	2.578	2.157	1.771	2.514	2.169
	(1.30)	*(5.74)***	*(4.76)***	*(2.76)***	*(6.83)***	*(6.29)***
Nr obs	5358	5358	5358	10130	10130	10130
Adj R2	0.12	0.23	0.35	0.13	0.25	0.40

Table 7: The Effect of Excluding Three States (NY, NJ, and CA) or the Ten Largest Cities

To ameliorate concerns that New York, New Jersey and California – whose compensation practices may differ from those of other states – or the ten largest cities are exercising a disproportionate influence on the results, the main regressions are rerun using a sample that excludes these states (Panel A) and cities (Panel B). The results suggest that the inclusion of these three states and ten cities does not drive the results.

Compensation measures: Salary measures the compensation part that is fixed (non-contingent) at the beginning of the year. Cash compensation is the sum of salary and bonus. Total compensation is the sum of salary, bonus, stock and option grants.

The CEO's own compensation is *not* included in the average compensation of geographically-close CEOs and the average industry peer compensation. The average compensation of geographically-close CEOs is calculated using the previous year's CEO compensation at firms headquartered within a 100-kilometer radius. Average industry peer compensation is the average compensation of CEOs at similar-sized firms (i.e. in the same total assets tercile) in the same industry in the previous year.

CEO age is the CEO's age. CEO tenure is the number of years the executive has been the firm's CEO. Firm size is measured as total assets as of the prior fiscal year end. M/B ratio is the market value of equity divided by the book value of equity as of the prior fiscal year end. Stock returns are the average monthly stock returns over the prior fiscal year. Profitability is return on assets, measured as net income divided by total assets as of the prior fiscal year end. Cost of living is based on the ACCRA cost of living index. Per capita income is from the 2000 decennial Census. Time fixed effects are included but not reported.

t-statistics based on robust standard errors clustered by firm are in parentheses. Superscripts ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	Panel A: Excluding NY, NJ, and CA			**Panel B: Excluding the ten largest cities**		
Dependent variable:	**log(CEO salary)**	**log(CEO cash compensation)**	**log(CEO total compensation)**	**log(CEO salary)**	**log(CEO cash compensation)**	**log(CEO total compensation)**
Compensation variables based on salary, cash compensation or total compensation depending on the table column:						
log(avg. compensation of geographically-close CEOs)	0.233	0.098	0.131	0.328	0.169	0.117
	*(2.99)***	*(2.14)**	*(3.56)***	*(3.78)***	*(3.62)***	*(3.14)***
log(avg. industry peer compensation)	0.144	0.125	0.122	0.104	0.106	0.125
	*(1.71)**	*(2.36)**	*(3.96)***	*(0.94)*	*(1.71)**	*(3.98)***
CEO age	0.006	0.006	0.001	0.009	0.008	0.000
	*(2.42)**	*(2.24)**	*(0.21)*	*(2.96)***	*(2.64)***	*(0.02)*
CEO tenure	-0.001	-0.002	-0.007	-0.003	-0.003	-0.009
	(-0.28)	*(-0.54)*	*(-2.20)**	*(-1.38)*	*(-1.31)*	*(-3.09)***
Firm size	0.183	0.249	0.362	0.150	0.231	0.354
	*(9.13)***	*(11.29)***	*(18.48)***	*(5.07)***	*(8.70)***	*(17.28)***
M/B ratio	-0.004	0.017	0.082	-0.019	0.003	0.083
	(-0.62)	*(2.21)**	*(8.34)***	*(-1.92)**	*(0.33)*	*(8.85)***
Stock returns	0.000	0.008	0.013	0.002	0.008	0.012
	(0.02)	*(3.45)***	*(3.74)***	*(0.57)*	*(2.56)**	*(3.07)***
Profitability	0.003	0.008	0.004	0.003	0.007	0.004
	*(2.44)**	*(4.67)***	*(1.66)**	*(2.35)**	*(5.28)***	*(2.38)**
Cost of living	0.002	0.002	0.003	-0.002	-0.001	0.001
	*(1.87)**	*(2.00)**	*(2.11)**	*(-1.80)**	*(-1.04)*	*(1.21)*
Per capita income	0.042	0.097	0.136	0.050	0.097	0.150
	(0.77)	*(1.39)*	*(1.67)**	*(1.04)*	*(1.57)*	*(2.05)**
Constant	1.897	2.434	1.898	2.043	2.527	2.210
	*(3.57)***	*(6.79)***	*(5.48)***	*(3.11)***	*(6.76)***	*(6.30)***
Nr obs	9208	9208	9208	9419	9419	9419
Adj R2	0.23	0.29	0.41	0.16	0.26	0.40

Table 8: Instrumental Variable Approach

This table shows that instrumental variable regressions, which use the idiosyncratic component of geographically-close firms' stock returns as an instrument for those firms' CEO compensation, confirm the main results. To isolate the idiosyncratic part of stock returns, Leary and Roberts' (2009) five-factor model is used.

$$R_{i,t} = \alpha + \beta_{i,t}^{m}\left(Rm_t - Rf_t\right) + \beta_{i,t}^{SMB} SMB_t + \beta_{i,t}^{HML} HML_t + \beta_{i,t}^{MOM} MOM_t + \beta_{i,t}^{IND}\left(Rind_{j,t} - Rf_t\right) + \eta_{i,t}$$

The first three factors are the Fama-French factors: the excess return on the market, the small minus big portfolio return, and the high minus low portfolio return. The fourth factor is the momentum factor. The fifth factor is the excess return on an equal-weighted industry portfolio. While not a priced factor, it is included to ensure that the instrument (the estimated residual) is orthogonal to industry shocks.

Panel A shows the first-stage regression results. All controls from the main regressions (see Table 2 Panel A) are included but not shown for brevity. Panel A also shows the results of Hausman endogeneity tests, which test the null hypothesis that the average compensation of geographically-close CEOs is exogenous (p-values are in parentheses). Panel B contains the second-stage regression results (t-statistics are in parentheses).

Superscripts ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A: First-stage regression results

	log(average compensation of geographically-close CEOs) based on:		
Dependent variable:	**salary**	**cash compensation**	**total compensation**
Instrument: idiosyncratic component of geographically-close firms' stock returns	0.115	0.233	0.149
	*(4.45)***	*(6.20)***	*(2.54)**
Controls	All controls from the main regression (see Table 2 Panel A) are included		
Nr obs	11352	11352	11352
Adj R2	0.32	0.45	0.56
Hausman endogeneity test	2.92	3.06	1.37
(p-value of Hausman test)	*(0.09)**	*(0.08)**	*(0.24)*

Panel B: Second-stage regression results

Dependent variable:	**log(CEO salary)**	**log(CEO cash compensation)**	**log(CEO total compensation)**
Compensation variables based on salary, cash compensation or total compensation depending on the table column:			
log(avg. compensation of geographically-close CEOs)	1.032	0.571	0.558
	*(2.19)**	*(2.23)**	*(1.26)*
log(avg. industry peer compensation)	0.205	0.102	0.108
	*(4.12)***	*(3.07)***	*(4.78)***
CEO age	0.007	0.007	-0.001
	*(5.26)***	*(4.68)***	*(-0.91)*
CEO tenure	-0.002	-0.002	-0.007
	(-1.57)	*(-2.15)**	*(-5.41)***
Firm size	0.132	0.238	0.362
	*(10.60)***	*(18.41)***	*(36.82)***
M/B ratio	-0.002	0.015	0.083
	(-0.32)	*(2.53)**	*(13.86)***
Stock returns	0.003	0.012	0.018
	(1.02)	*(4.42)***	*(5.82)***
Profitability	0.001	0.005	0.003
	(1.48)	*(5.44)***	*(3.22)***
Cost of living	-0.001	0.000	-0.002
	*(-2.35)**	*(0.65)*	*(-0.64)*
Per capita income	-0.055	-0.016	-0.017
	(-0.83)	*(-0.20)*	*(-0.09)*
Nr obs	11352	11352	11352
Adj R2	0.10	0.22	0.36

Table 9: Local Labor Market Competition for CEOs Does Not Seem to Drive the Results

This table examines whether local labor market competition for CEOs can explain the main results. The sample is restricted to companies that were part of the S&P500 in the previous year since the market for the CEOs at these firms should be global or national rather than local. Even at these firms, CEO pay is significantly related to CEO compensation at geographically-close firms, suggesting that local labor market competition for CEOs does not drive the results.

Compensation measures: Salary measures the compensation part that is fixed (non-contingent) at the beginning of the year. Cash compensation is the sum of salary and bonus. Total compensation is the sum of salary, bonus, stock and option grants.

The CEO's own compensation is *not* included in the average compensation of geographically-close CEOs and the average industry peer compensation. The average compensation of geographically-close CEOs is calculated using the previous year's CEO compensation at firms headquartered within a 100-kilometer radius. Average industry peer compensation is the average compensation of CEOs at similar-sized firms (i.e. in the same total assets tercile) in the same industry in the previous year.

CEO age is the CEO's age. CEO tenure is the number of years the executive has been the firm's CEO. Firm size is measured as total assets as of the prior fiscal year end. M/B ratio is the market value of equity divided by the book value of equity as of the prior fiscal year end. Stock returns are the average monthly stock returns over the prior fiscal year. Profitability is return on assets, measured as net income divided by total assets as of the prior fiscal year end. Cost of living is based on the ACCRA cost of living index. Per capita income is from the 2000 decennial Census. Time and industry fixed effects are included but not reported. Industries correspond to the 17 Fama-French industry groupings.

t-statistics based on robust standard errors clustered by firm are in parentheses. Superscripts ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Dependent variable:	**log(CEO salary)**	**log(CEO cash compensation)**	**log(CEO total compensation)**
Compensation variables based on salary, cash compensation or total compensation depending on the table column:			
log(avg. compensation of geographically-close CEOs)	0.513	0.259	0.160
	*(1.69)**	*(1.86)**	*(2.40)***
log(avg. industry peer compensation)	-0.099	-0.024	0.019
	(-0.43)	*(-0.22)*	*(0.34)*
CEO age	0.009	0.006	0.005
	(0.98)	*(0.82)*	*(0.69)*
CEO tenure	-0.001	0.002	-0.002
	(-0.26)	*(0.49)*	*(-0.44)*
Firm size	0.158	0.254	0.333
	*(3.18)****	*(6.31)****	*(10.81)****
M/B ratio	-0.017	-0.006	0.056
	(-0.70)	*(-0.32)*	*(3.47)****
Stock returns	-0.011	0.001	0.000
	(-1.04)	*(0.11)*	*(0.01)*
Profitability	0.004	0.013	0.013
	(1.07)	*(3.04)****	*(2.22)***
Cost of living	-0.002	0.001	0.002
	(-1.27)	*(0.55)*	*(1.31)*
Per capita income	-0.092	-0.007	0.024
	(-0.78)	*(-0.05)*	*(0.16)*
Constant	2.648	2.516	3.470
	(1.47)	*(2.37)**	*(4.47)****
Nr obs	3584	3584	3584
Adj R2	0.07	0.16	0.30

Table 10: A Leading-Firm Effect Does Not Seem to Drive the Results

This table examines whether the main results may be driven by a "leading-firm" effect. Panels A and C restrict the sample to leading firms to address whether leading-firm CEO compensation is influenced by the average compensation of geographically-close CEOs. (The leading-firm effect would say no.) Panels B and D use the entire sample to address whether the average compensation of CEOs who work at leading firms within a 100-kilometer radius have a stronger effect on CEO pay. (The leading-firm effect would say yes.) Panels A and B define leading firms as the top 3 firms based on sales growth within a 100-kilometer radius. Panels C and D use three alternative definitions based on sales, market-to-book (M/B), and profitability (ROA). The results do not seem to support a leading-firm effect.

Compensation measures: Salary measures the compensation part that is fixed (non-contingent) at the beginning of the year. Cash compensation is the sum of salary and bonus. Total compensation is the sum of salary, bonus, stock and option grants.

The CEO's own compensation is *not* included in the average compensation of geographically-close CEOs and the average industry peer compensation. The average compensation of geographically-close CEOs is calculated using the previous year's CEO compensation at firms headquartered within a 100-kilometer radius. Average industry peer compensation is the average compensation of CEOs at similar-sized firms (i.e. in the same total assets tercile) in the same industry in the previous year.

CEO age is the CEO's age. CEO tenure is the number of years the executive has been the firm's CEO. Firm size is measured as total assets as of the prior fiscal year end. M/B ratio is the market value of equity divided by the book value of equity as of the prior fiscal year end. Stock returns are the average monthly stock returns over the prior fiscal year. Profitability is return on assets, measured as net income divided by total assets as of the prior fiscal year end. Cost of living is based on the ACCRA cost of living index. Per capita income is from the 2000 decennial Census. Time and industry fixed effects are included but not reported. Industries correspond to the 17 Fama-French industry groupings.

t-statistics based on robust standard errors clustered by firm are in parentheses. Superscripts ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	Panel A: Restrict Sample to Leading Firms			**Panel B: Use Average Compensation of Geographically-Close *Leading-Firm* CEOs**		
Dependent variable:	**log(leading-firm CEO salary)**	**log(leading-firm CEO cash compensation)**	**log(leading-firm CEO total compensation)**	**log(CEO salary)**	**log(CEO cash compensation)**	**log(CEO total compensation)**
Compensation variables based on salary, cash compensation or total compensation depending on the table column:						
log(avg. compensation of geographically-close CEOs)	0.146	0.086	0.169			
	(1.61)	*(1.53)*	*(3.70)****			
log(avg. compensation of geographically-close leading-firm CEOs)				0.155	0.060	0.056
				*(2.07)***	*(2.03)***	*(2.58)****
log(avg. industry peer compensation)	-0.015	0.151	0.128	0.299	0.127	0.111
	(-0.05)	*(1.01)*	*(1.67)**	*(3.93)****	*(2.78)****	*(4.15)****
CEO age	0.002	0.004	0.002	0.010	0.010	-0.002
	(0.33)	*(0.63)*	*(0.41)*	*(4.44)****	*(4.23)****	*(-0.61)*
CEO tenure	0.000	-0.005	-0.015	-0.002	-0.002	-0.006
	(0.06)	*(-0.78)*	*(-2.21)***	*(-1.26)*	*(-1.10)*	*(-2.37)***
Firm size	0.176	0.217	0.343	0.106	0.233	0.355
	*(3.05)****	*(4.07)****	*(8.05)****	*(4.38)****	*(10.86)****	*(22.88)****
M/B ratio	-0.026	-0.003	0.058	-0.012	0.007	0.091
	(-1.34)	*(-0.21)*	*(2.68)****	*(-1.33)*	*(0.94)*	*(10.89)****
Stock returns	0.005	0.010	0.010	-0.001	0.006	0.010
	(1.03)	*(1.65)**	*(1.05)*	*(-0.49)*	*(2.15)***	*(2.77)****
Profitability	0.002	0.005	0.001	0.004	0.008	0.005
	(0.64)	*(1.49)*	*(0.17)*	*(3.52)****	*(6.16)****	*(3.05)****
Cost of living	-0.004	-0.003	0.000	-0.001	0.000	0.001
	*(-1.76)**	*(-1.36)*	*(0.23)*	*(-1.50)*	*(0.07)*	*(1.69)**
Per capita income	-0.067	-0.053	0.089	0.055	0.143	0.171
	(-0.76)	*(-0.51)*	*(0.70)*	*(0.78)*	*(1.74)**	*(1.80)**
Constant	4.635	3.590	2.152	1.978	2.528	2.701
	*(2.42)***	*(3.47)****	*(3.19)****	*(3.66)****	*(9.42)****	*(9.31)****
Nr obs	1899	1899	1899	10404	10404	10404
Adj R2	0.25	0.31	0.40	0.14	0.26	0.37

Panel C: Restrict Sample to Leading Firms (as in Panel A) – Alternative Definitions of "Leading Firms"
(Leading-firm hypothesis: should find no significance)

	Panel C-I: Leading firms = top 3 firms based on sales			**Panel C-II: Leading firms = top 3 firms based on M/B**			**Panel C-III: Leading firms = top 3 firms based on ROA**		
Dependent variable:	**log(leading-firm CEO salary)**	**log(leading-firm CEO cash comp.)**	**log(leading-firm CEO total comp.)**	**log(leading-firm CEO salary)**	**log(leading-firm CEO cash comp.)**	**log(leading-firm CEO total comp.)**	**log(leading-firm CEO salary)**	**log(leading-firm CEO cash comp.)**	**log(leading-firm CEO total comp.)**
Compensation variables based on salary, cash compensation or total compensation depending on the table column:									
log(avg. compensation of geographically-close CEOs)	0.136	0.075	0.134	0.178	0.052	0.155	0.171	0.082	0.133
	(1.57)	*(0.85)*	*(3.38)****	*(2.14)***	*(0.98)*	*(3.42)****	*(2.13)***	*(1.56)*	*(3.03)****
Nr obs	1955	1955	1955	1822	1822	1822	1825	1825	1825
Adj R2	0.32	0.38	0.60	0.24	0.27	0.46	0.26	0.27	0.45

Panel D: Use Average Compensation of Geographically-Close *Leading-Firm* CEOs (as in Panel B) – Alternative Definitions of "Leading Firms"
(Leading-firm hypothesis: should find larger coefficients and more significance than in Table 2 Panel A)

	Panel D-I: Leading firms = top 3 firms based on sales			**Panel D-II: Leading firms = top 3 firms based on M/B**			**Panel D-III: Leading firms = top 3 firms based on ROA**		
Dependent variable:	**log(CEO salary)**	**log(CEO cash comp.)**	**log(CEO total comp.)**	**log(CEO salary)**	**log(CEO cash comp.)**	**log(CEO total comp.)**	**log(CEO salary)**	**log(CEO cash comp.)**	**log(CEO total comp.)**
Compensation variables based on salary, cash compensation or total compensation depending on the table column:									
log(avg. compensation of geographically-close leading-firm CEOs)	0.065	0.021	0.004	0.204	0.046	0.021	0.052	0.052	0.020
	*(1.84)**	*(0.95)*	*(0.33)*	*(2.79)****	*(3.08)****	*(1.89)**	*(2.39)***	*(3.04)****	*(2.13)***
Nr obs	10460	10460	10460	10537	10537	10477	10532	10534	10454
Adj R2	0.15	0.27	0.41	0.15	0.28	0.40	0.15	0.28	0.39

Table 11: Envy May Explain the Results

This table examines whether envy among CEOs can explain the main results, and concludes that it can. The percentage change in CEO compensation is regressed on the CEO's "percentage compensation gap," the percentage difference between the compensation of geographically-close CEOs and the CEO's own compensation, plus control variables. Panel A (B) shows that the bigger the compensation gap, i.e. the less a CEO earns compared to his average (median) peer, the bigger the subsequent increase in compensation. This effect is the strongest based on total compensation. Panel C shows that the effect is stronger when the sample is restricted to CEOs who are likely to be the most envious (total compensation is less than that of their peers).

Compensation measures: Salary measures the compensation part that is fixed (non-contingent) at the beginning of the year. Cash compensation is the sum of salary and bonus. Total compensation is the sum of salary, bonus, stock and option grants.

In Panels A and C (B), % compensation gap avg. (median) is the difference between the average (median) compensation of geographically-close CEOs and the CEO's compensation, both as of the previous year. The average (median) compensation of geographically-close CEOs is calculated using the previous year's CEO compensation at firms headquartered within a 100-kilometer radius. % compensation gap avg. (median) between industry peers and the CEO is the difference between the average (median) industry peer compensation and the CEO's compensation, both as of the previous year. Average (median) industry peer compensation is the average (median) compensation of CEOs at similar-sized firms, i.e., in the same total assets tercile, in the same industry in the previous year. The CEO's own compensation is *not* included in the average (median) compensation of geographically-close CEOs and the average (median) industry compensation.

CEO age is the CEO's age. CEO tenure is the number of years the executive has been the firm's CEO. Firm size is measured as total assets as of the prior fiscal year end. M/B ratio is the market value of equity divided by the book value of equity as of the prior fiscal year end. Stock returns are the average monthly stock returns over the prior fiscal year. Profitability is return on assets, measured as net income divided by total assets as of the prior fiscal year end. Cost of living is based on the ACCRA cost of living index. Per capita income is from the 2000 decennial Census. Time and industry fixed effects are included but not reported. Industries correspond to the 17 Fama-French industry groupings.

t-statistics based on robust standard errors clustered by firm are in parentheses. Superscripts ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	Panel A: Main specification based on average pay Uses entire sample			Panel B: Robustness based on median pay Uses entire sample			Panel C: CEOs who are likely the most envious (positive total compensation gap)		
Dependent variable:	**Δ CEO salary**	**Δ CEO cash compensation**	**Δ CEO total compensation**	**Δ CEO salary**	**Δ CEO cash compensation**	**Δ CEO total compensation**	**Δ CEO salary**	**Δ CEO cash compensation**	**Δ CEO total compensation**
Compensation variables based on salary, cash compensation or total compensation depending on the table column:									
% compensation gap (avg.) between geographically-close CEOs and CEO	0.013	0.031	0.055				0.019	0.089	0.562
	*(3.84)****	*(5.22)****	*(5.47)****				*(3.30)****	*(6.28)****	*(7.01)****
% compensation gap (avg.) between industry peers and CEO	0.045	0.118	0.259				0.047	0.143	0.470
	*(8.58)****	*(11.30)****	*(15.65)****				*(7.21)****	*(9.60)****	*(10.56)****
% compensation gap (median) between geographically-close CEOs and CEO				0.012	0.022	0.036			
				*(4.12)****	*(4.87)****	*(5.77)****			
% compensation gap (median) between industry peers and CEO				0.045	0.118	0.250			
				*(8.65)****	*(11.29)****	*(14.91)****			
CEO age	-0.069	-0.111	-0.812	-0.069	-0.124	-0.796	-0.069	-0.067	-0.788
	*(-2.81)****	*(-1.71)**	*(-3.76)****	*(-2.82)****	*(-1.94)**	*(-3.67)****	*(-2.40)***	*(-0.85)*	*(-2.69)****
CEO tenure	-0.181	-0.051	-0.024	-0.181	-0.059	-0.039	-0.162	-0.115	-0.726
	*(-8.78)****	*(-0.77)*	*(-0.12)*	*(-8.78)****	*(-0.90)*	*(-0.19)*	*(-6.66)****	*(-1.41)*	*(-2.55)***
Δ Firm size	0.026	-0.023	0.179	0.026	-0.023	0.180	0.022	-0.037	0.173
	*(5.62)****	*(-1.73)**	*(3.44)****	*(5.62)****	*(-1.72)**	*(3.45)****	*(3.86)****	*(-2.42)***	*(2.50)***
M/B ratio	-0.026	-0.706	4.422	-0.034	-0.696	4.519	0.028	-0.779	6.802
	(-0.31)	*(-3.06)****	*(4.32)****	*(-0.41)*	*(-3.02)****	*(4.40)****	*(0.27)*	*(-2.55)***	*(4.24)****
Stock returns	0.185	-0.167	1.180	0.185	-0.176	1.153	0.199	-0.078	1.057
	*(4.66)****	*(-1.36)*	*(2.48)***	*(4.66)****	*(-1.43)*	*(2.42)***	*(4.24)****	*(-0.57)*	*(1.75)**
Δ Profitability	0.000	-0.004	0.008	0.000	-0.004	0.008	0.000	-0.003	0.008
	(0.61)	*(-2.28)***	*(1.42)*	*(0.61)*	*(-2.29)***	*(1.42)*	*(0.78)*	*(-1.44)*	*(1.18)*
Cost of living	-0.011	0.047	0.176	-0.005	0.332	10.097	-0.007	0.025	0.174
	*(-1.65)**	*(2.17)***	*(2.44)***	*(-0.01)*	*(0.16)*	*(1.66)**	*(-0.80)*	*(0.96)*	*(1.71)**
Per capita income	-0.028	0.014	9.604	-0.010	0.054	0.196	0.489	1.954	9.054
	(-0.04)	*(0.01)*	*(1.58)*	*(-1.55)*	*(2.49)***	*(2.73)****	*(0.60)*	*(0.74)*	*(1.01)*
Constant	14.242	22.493	31.266	15.016	22.106	28.736	10.948	8.857	0.155
	*(6.74)****	*(3.48)****	*(1.63)*	*(7.07)****	*(3.46)****	*(1.50)*	*(4.26)****	*(1.13)*	*(0.01)*
Nr obs	10949	10949	10949	10927	10940	10948	7415	7415	7415
Adj R2	0.07	0.12	0.07	0.07	0.12	0.07	0.07	0.11	0.07

Table 12: Envy May Explain the Results: Evidence based on the Compensation of Geographically-Close Professional Sports Players

This table revisits whether envy among CEOs can explain the main results, and concludes that it can. In the spirit of the main regressions, CEO compensation (salary) is now regressed on the compensation of geographically-close professional sports players (MLB, NBA, NFL, NHL, and the average of these), plus controls. The regressions shown below are based on the compensation of the top three players of each team.

Average industry compensation is the average compensation of CEOs at similar-sized firms (i.e. in the same total assets tercile) in the same industry in the previous year. The CEO's own compensation is *not* included in the average industry compensation.

CEO age is the CEO's age. CEO tenure is the number of years the executive has been the firm's CEO. Firm size is measured as total assets as of the prior fiscal year end. M/B ratio is the market value of equity divided by the book value of equity as of the prior fiscal year end. Stock returns are the average monthly stock returns over the prior fiscal year. Profitability is return on assets, measured as net income divided by total assets as of the prior fiscal year end. Cost of living is based on the ACCRA cost of living index. Per capita income is from the 2000 decennial Census. Time and industry fixed effects are included but not reported. Industries correspond to the 17 Fama-French industry groupings.

t-statistics based on robust standard errors clustered by firm are in parentheses. Superscripts ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Dependent variable:	**log(CEO compensation)**				
	MLB	**NBA**	**NFL**	**NHL**	**Average of MLB, NBA, NFL, NHL**
log(avg. compensation of geographically-close professional sports players identified in the table column)	0.114	0.108	0.078	0.003	0.133
	*(1.71)**	*(1.70)**	*(2.03)***	*(0.11)*	*(1.73)**
log(avg. industry peer compensation)	0.233	0.249	0.190	0.256	0.241
	*(1.87)**	*(2.07)***	*(1.62)*	*(1.83)**	*(2.13)***
CEO age	0.013	0.013	0.013	0.016	0.012
	*(3.20)****	*(3.65)****	*(3.34)****	*(4.05)****	*(3.36)****
CEO tenure	-0.005	-0.005	-0.005	-0.007	-0.004
	*(-2.10)***	*(-2.21)***	*(-2.23)***	*(-3.10)****	*(-1.80)**
Firm size	0.119	0.120	0.130	0.120	0.125
	*(3.66)****	*(3.57)****	*(4.37)****	*(3.38)****	*(4.24)****
M/B ratio	-0.011	-0.012	-0.012	-0.008	-0.011
	(-1.00)	*(-1.16)*	*(-1.10)*	*(-0.68)*	*(-1.07)*
Stock returns	-0.001	0.001	0.001	0.003	0.000
	(-0.15)	*(0.14)*	*(0.27)*	*(0.71)*	*(0.02)*
Profitability	0.003	0.003	0.003	0.004	0.003
	*(2.39)***	*(2.33)***	*(2.41)***	*(2.56)***	*(2.33)***
Cost of living	0.206	0.147	0.114	0.004	0.131
	(1.18)	*(0.96)*	*(1.04)*	*(0.05)*	*(0.93)*
Per capita income	-0.004	-0.003	-0.002	-0.002	-0.003
	*(-1.91)**	*(-1.96)**	*(-1.60)*	*(-1.78)**	*(-1.72)**
Constant	2.370	2.309	2.955	3.296	2.109
	*(3.06)****	*(3.01)****	*(4.58)****	*(4.08)****	*(2.91)****
Nr obs	5892	5064	6127	4599	6383
Adj R2	0.11	0.11	0.12	0.15	0.12

Table 13: Dynamics of CEO Pay Adjustments Seem More Consistent with Envy than Learning About Skill

The dynamics of CEO pay adjustments documented in Table 11 are consistent with geography affecting CEO pay through envy, but – if one takes geographic clustering of CEO pay as a given – could potentially also reflect undervaluation of CEO talent which is corrected over time as shareholders learn about CEO quality. If so, the results should be strongest for CEOs with tenures ≤ 3 years, since such learning should primarily take place during the initial years of a CEO's tenure. The results provide at best mixed support for this learning story, but do not shed light on why the clustering of CEO pay occurs in the first place.

Compensation measures: Salary measures the compensation part that is fixed (non-contingent) at the beginning of the year. Cash compensation is the sum of salary and bonus. Total compensation is the sum of salary, bonus, stock and option grants.

% compensation gap is the difference between the average compensation of geographically-close CEOs and the CEO's compensation, both as of the previous year. The average compensation of geographically-close CEOs is calculated using the previous year's CEO compensation at firms headquartered within a 100-kilometer radius. % compensation gap between industry and the CEO is the difference between the average industry peer compensation and the CEO's compensation, both as of the previous year. Average industry peer compensation is the average compensation of CEOs at similar-sized firms (i.e. in the same total assets tercile) in the same industry in the previous year. The CEO's own compensation is *not* included in the average compensation of geographically-close CEOs and the average industry compensation.

CEO age is the CEO's age. CEO tenure is the number of years the executive has been the firm's CEO. Firm size is measured as total assets as of the prior fiscal year end. M/B ratio is the market value of equity divided by the book value of equity as of the prior fiscal year end. Stock returns are the average monthly stock returns over the prior fiscal year. Profitability is return on assets, measured as net income divided by total assets as of the prior fiscal year end. Cost of living is based on the ACCRA cost of living index. Per capita income is from the 2000 decennial Census. Time and industry fixed effects are included but not reported. Industries correspond to the 17 Fama-French industry groupings.

t-statistics based on robust standard errors clustered by firm are in parentheses. Superscripts ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	Panel A: CEOs with tenure ≤ 3 years			**Panel B: CEOs with tenure > 3 years**		
Dependent variable:	**log(CEO salary)**	**log(CEO cash compensation)**	**log(CEO total compensation)**	**log(CEO salary)**	**log(CEO cash compensation)**	**log(CEO total compensation)**
Compensation variables based on salary, cash compensation or total compensation depending on the table column:						
% compensation gap between geographically-close CEOs and CEO	0.021	0.021	0.060	0.009	0.032	0.054
	*(2.43)***	*(1.43)*	*(3.11)****	*(2.73)****	*(5.04)****	*(4.65)****
% compensation gap between industry peers and CEO	0.123	0.208	0.278	0.025	0.103	0.254
	*(8.16)****	*(9.01)****	*(9.26)****	*(5.00)****	*(9.32)****	*(13.58)****
CEO age	-0.068	-0.194	-0.501	-0.076	-0.101	-0.895
	(-1.12)	*(-1.19)*	*(-1.21)*	*(-3.13)****	*(-1.41)*	*(-3.68)****
CEO tenure	-10.625	-8.799	14.606	-0.070	-0.004	-0.312
	*(-13.28)****	*(-3.58)****	*(2.59)****	*(-3.58)****	*(-0.05)*	*(-1.35)*
Δ Firm size	0.003	-0.020	0.163	0.035	-0.024	0.166
	(0.20)	*(-0.59)*	*(1.53)*	*(7.09)****	*(-1.61)*	*(2.82)****
M/B ratio	0.027	-0.615	4.334	0.013	-0.692	4.277
	(0.14)	*(-1.25)*	*(2.60)****	*(0.15)*	*(-2.66)****	*(3.58)****
Stock returns	0.097	0.105	1.120	0.213	-0.239	1.215
	(1.26)	*(0.48)*	*(1.28)*	*(4.74)****	*(-1.63)*	*(2.31)***
Δ Profitability	0.001	0.002	0.008	0.000	-0.006	0.008
	(0.63)	*(0.46)*	*(0.99)*	*(0.52)*	*(-2.74)****	*(1.18)*
Cost of living	-0.019	0.049	0.156	-0.011	0.047	0.187
	(-1.12)	*(0.98)*	*(1.17)*	*(-1.67)**	*(1.98)***	*(2.25)***
Per capita income	-0.725	-2.633	-5.206	0.230	0.546	12.725
	(-0.44)	*(-0.56)*	*(-0.43)*	*(0.36)*	*(0.23)*	*(1.82)**
Constant	44.277	50.177	21.768	11.761	19.528	33.525
	*(7.88)****	*(3.28)****	*(0.56)*	*(5.68)****	*(2.71)****	*(1.51)*
Nr obs	2134	2134	2134	8815	8815	8815
Adj R2	0.18	0.15	0.09	0.06	0.11	0.07