DIFFERENCES IN CEO COMPENSATION UNDER LARGE AND SMALL INSTITUTIONAL OWNERSHIP

ONUR KEMAL TOSUN*

Abstract

I examine the influence of large and small institutional investors on different components of chief executive officer (CEO) compensation, using U.S. data for 2006–2015. An increase in large institutional ownership reduces total pay and current incentive compensation (i.e. options, stocks, bonus pay), whereas small institutional investors lower long-term incentive pay (i.e. pension, deferred pay, stock incentive pay). These findings are consistent with managerial agency theory and the substitution of incentive pay by institutional monitoring. The effects are stronger for higher ownership levels and firms with weak governance, less financial distress, long-tenured CEOs, multiple segments, and more free cash flow.

KEYWORDS: Large institutional ownership, small institutional ownership, short-term incentive pay, long-term incentive pay, CEO compensation.

JEL CLASSIFICATION: C33, C36, G32, J33, M12

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* Onur Kemal Tosun is Assistant Professor of Finance at Cardiff Business School, Cardiff University; CF103EU, Cardiff, United Kingdom; tel. +44 29208 74517; email TosunO@cardiff.ac.uk.

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1 INTRODUCTION

Over the last 20 years, there has been an increasing trend among institutional investors to accumulate a large amount of stock. Several studies have examined the potential impact of increased institutional ownership on various firm policies (e.g. Becker, Cronqvist, & Fahlenbrach, 2011; Chichernea, Petkevich, Zykaj, 2013; Holderness, 2003; Knyazeva, Knyazeva, & Kostovetsky, 2018; Ward, Yin, & Zeng, 2019; Yan & Zhang, 2009). Some papers have analysed the possible effects on chief executive officer (CEO) compensation in general (e.g. Clifford & Lindsey, 2016; Cronqvist & Fahlenbrach, 2009). However, the literature has not reached an agreement yet on whether institutional investors influence CEO pay (e.g. Zheng, 2010) and, if so, how. It is important to analyse the relation between managerial remuneration and the ownership by big investors. Considering their high level of ownership and influence in firms, large institutional shareholders can shape a CEO's pay structure, which eventually affects the CEO's decisions on firm policies and various vital operations.

My main research questions expand the literature and focus on the components of CEO compensation that are associated with large and small institutional ownership and whether increased ownership by large institutional shareholders influences the CEO pay structure differently from small institutional shareholders. The literature has overlooked the strong influence of large institutional shareholders with at least 10% ownership. Therefore, further research questions in this paper concentrate on whether the results in the literature are driven by earlier regulatory reforms, as well as by smaller institutional investors.

I focus on firms and investors based in the United States and examine separately how large and small institutional ownership is associated with different CEO pay components in the period 2006 to 2015. I find that option pay, stock pay, equity pay,[1] bonus pay, cash pay, and total pay decrease after large institutional shareholders increase their stakes in these companies. When small institutional investors own more of these firms' shares, pension, deferred pay, stock incentive pay, and total long-term incentive

[1] The majority of the vesting period for equity compensation is less than three years in my sample. Hence, in my analyses, option pay, stock pay, and equity pay can be categorized as a CEO's current incentive pay.

compensation drop, although the CEO's salary remains unaffected. The results indicate that monitoring by large shareholders substitutes for the current proportion of incentive compensation and CEO total pay, while the long-term incentive components of pay are affected by small investors. These findings are consistent with managerial agency theory and the substitution of incentive pay by institutional monitoring. Jensen and Meckling (1976) note that managerial agency issues can be alleviated by tying the managers' interests to those of shareholders through incentive compensation. This agency problem can also be mitigated by strict monitoring. Shleifer and Vishny (1986) suggest that large institutional shareholders effectively monitor management. Monitoring by institutional investors can then substitute for the control mechanism through incentive pay.

This paper's extended analyses show that the magnitude of change in CEO pay components is greater for higher levels of large and small institutional investor ownership. The negative impact of large and small institutional ownership is more profound in cases in which greater CEO monitoring is necessary, such as in firms with weak corporate governance, strong financial security, long-tenured CEOs, multiple business segments, and high levels of free cash flow.

In further analyses, I use the total number of large and small institutional shareholders with stakes in the firm in question as the main explanatory variables. I examine how significantly the 'active monitoring' classification can explain changes in CEO pay components compared to large institutional shareholder taxonomy. I also focus in particular on excess pay and test the robustness of the findings further in a cross-sectional model setup. I acknowledge the difficulty of finding the 'perfect instrument' in considering institutional investors (Edmans & Holderness, 2017). Hence, without making any strong claims, I address potential endogeneity issues through an instrumental variable (IV) regression approach with various instruments that should provide suggestive evidence only.

This paper differs from previous research because I not only study small institutional investors, but also focus explicitly on large institutional shareholders who each individually owns at least 10% of the firm, as opposed to investors with less than 10% ownership. This approach enables the investigation of very influential large institutional investors with ultimate stand-alone power to affect board decisions

on executive compensation, in contrast with small institutional shareholders that could influence the board only collectively. Moreover, I conduct more detailed analyses on CEO pay structure by studying 11 different compensation components, rather than just salary, option, and total incentive pay in general, which could be leading to the mixed results in the literature. An examination of different proportions of CEO pay and separate analysis of large influential shareholders will clarify the conflicting findings in the literature. Earlier research explored a period during which there were several regulatory changes, such as the Sarbanes–Oxley Act (2002), the U.S. Securities and Exchange Commission (SEC) requirement of the approval of compensation plans (2003), the Financial Accounting Standards Board (FASB) rule for expensing stock options, the American Jobs Creation Act (2004), and the SEC's executive compensation disclosure rules (2006). These consecutive exogenous shocks affected corporate governance and the CEO compensation structure. Therefore, it is difficult to control for their potential influence in analyses and disentangle their impact on CEO pay from those of institutional investment, which can cause conflicting results in the literature. By focusing on the period 2006–2015, when there were no new or major regulatory changes in executive pay, I not only provide a recent and clearer study, but also naturally control for the effects of regulatory corporate governance changes on CEO pay.

I contribute to the CEO compensation and institutional investor literature by providing more insight into the possible influence of large institutional investors, as well as small institutional shareholders, on CEO compensation. I extend the literature by examining different CEO pay components in detail. This paper clarifies the mixed results in the literature by offering a detailed analysis through various established models. I also provide evidence of the more significant influence of large institutional ownership in cases in which more monitoring is needed. I use recent data to provide more up-to-date and accurate outcomes. These findings could provide guidance for firms in their financing and governance decisions. Companies and their CEOs can thus obtain a clearer understanding and expectations about the CEO pay structure as they gain more large and small institutional investors.

The remainder of the paper is organized as follows. Section 2 discusses the related literature and builds hypotheses. Section 3 describes the data selection and variable construction. Section 4 explains the

empirical methodology. Section 5 provides the main findings and further analyses. Section 6 concludes the paper.

2 RELATED LITERATURE AND HYPOTHESES

Managers can use company resources and engage in activities to extract benefits at the expense of shareholders. As Jensen and Meckling (1976) suggest, this managerial agency problem can be mitigated by aligning managers' interests with those of stockholders through performance-based pay, including option pay and stock awards. An alternative mechanism for addressing the managerial agency issue is the effective monitoring of CEOs' decisions. Demsetz and Lehn (1985) maintain that large shareholders have greater power to influence the action of the CEO. Shleifer and Vishny (1986) argue that large institutional shareholders can play a role in management decisions and provide effective monitoring of management. Subsequently, strong control of the CEO through increased institutional ownership can substitute for the former control mechanism, that is, CEO incentive pay (Mehran, 1995).

Supporting the substitution argument, Chourou, Abaoub, and Saadi (2008) document a negative relation between CEO stock options and blockholder ownership, using a Canadian sample of large publicly traded firms over the period 2001–2004. Khan, Dharwadkar, and Brandes (2005) examine how institutional ownership concentration and dispersion influence CEO compensation, the pay mix, and stock option pay sensitivity. They find that the largest owner's concentration is linked to lower levels of total pay and lower ratios of options to total compensation. Marler and Faugere (2010) study 124 U.S. technology firms over the period 1997–2001 and examine how various types of shareholder activists affect the relative use of equity incentives. Consistent with contingent agency theory, they show that large shareholders advocate less equity incentive compensation. Similarly, Bebchuk and Fried (2006) and Crane, Michenaud, and Weston (2016) argue that institutional owners lower the marginal cost of delegated monitoring, and, supporting agency theory, increased monitoring through institutional ownership should be associated with lower CEO compensation. Liljeblom, Pasternack, and Rosenberg

(2011) examine stock option contracts in particular. In line with managerial agency theory, they suggest that strong monitoring through large shareholders' ownership decreases the use of CEO stock options.

Further literature on CEO pay and institutional ownership provides mixed results. Harvey and Shrieves (2001) argue that blockholders facilitate the use of incentive pay. David, Kochhar, and Levitas (1998) categorize institutional investors as having either a business or investment relationship with firms. The authors suggest that investors in the latter group lower CEO compensation and increase the portion of long-term incentives in total pay. Hartzell and Starks (2003) investigate the relation between institutional ownership concentration and CEO pay for the period 1992–1097. They find that firms with a higher concentration of institutional investors have lower managerial compensation, but higher managerial pay–performance sensitivity. Cronqvist and Fahlenbrach (2009) consider institutional investors individually and control for blockholder fixed effects. They find that CEO total compensation and incentive pay increase with institutional blockholder ownership. Interestingly, Zheng (2010) shows no significant relation between CEO pay and institutional investors that have concentrated holdings and long-term investment horizons. Almazan, Hartzell, and Starks (2005) and Clifford and Lindsey (2016) examine institutional investors and categorize them by how active they are in monitoring management. Almazan, Hartzell, and Starks suggest that active monitoring by institutional shareholders reduces CEO salary and total pay, whereas Clifford and Lindsey find that active blockholders that invest in companies increase the equity component of CEO compensation.

There are a few potential explanations for these conflicting results. First, many previous studies focus fully or partially on the period before 2006, in which there were several regulatory changes; hence, it is difficult to disentangle their impact on CEO pay from the impact of institutional investment. Second, previous research does not particularly focus on very influential large institutional investors that have ultimate stand-alone power to affect board decisions on executive compensation, and mainly analyses small institutional shareholders. Lastly, research considers the CEO pay structure in general, without an examination of different proportions of CEO compensation.

As the substitution argument suggests, a CEO's incentive compensation can decrease when large institutional investors own a greater portion of the firm in question. While large and small institutional shareholders could generally reduce incentive compensation, their diverse agendas enable them to focus on different components of incentive pay. By definition, large institutional shareholders have a greater stake in the firm. Hence, the greater portion of the wealth the firms generates is tied to its large shareholders. To protect these large investments and ensure that the firm generates immediate high profits, large institutional shareholders prefer to engage in the firm's decisions, monitor the CEO strictly, and rapidly improve firm value. These large investors favour a rapid increase in firm value because they would like to benefit from a large wealth increase in the short term, after which they will sell their stakes. Edmans (2009) and Ekholm and Maury (2014) suggest that large institutional shareholders have incentives and resources to gather private information because they are able to trade on this information. Subsequently, these large investors rely on their private information and aim to sell their shares in the *short term* and exit. Consistent with this idea, Ekholm and Maury (2014) also show that such institutional investors with concentrated shares in one firm seek improved *short-term* firm performance for their exit plan. Strobl and Zeng (2017) also note that institutional investors usually have a *shorter-term* focus if they are more actively engaged with a firm's managerial decisions. Nagel, Qayyum, and Roskelley (2015) discuss how institutional investors actively monitor management when they own larger stakes in the firm. Marler and Faugere (2010) and Shinozaki, Moriyasu, and Uchida (2016) suggest that a firm is less likely to adopt equity incentive pay when it is largely owned by active and controlling large shareholders. In view of this, I propose the following hypothesis.

Hypothesis 1: *Monitoring by large institutional shareholders with short-term focus should substitute for the short-term incentive part of CEO pay*.

Conversely, small institutional investors have a smaller stake in the firm. Since their ownership in the firm is only a small portion of their investment portfolios and an immediate loss or gain might not be as large as that for large shareholders, small institutional investors could prefer a *long-term* perspective for greater improvement in firm value. Smaller institutional investors are more likely to suffer from time

constraints, because they cannot scale up their private information acquisition (Ekholm & Maury, 2014). Hence, they cannot exit the firm in the short run, which leads them to focus on *longer-term* firm value improvement. Subsequently, they adjust the component of CEO pay related to the long term. Consistent with this idea, Ekholm and Maury (2014) suggest that smaller institutional investors seek to increase future firm performance more than near-term performance. Moreover, the costs associated with short-term buying and selling (e.g. transaction liquidity costs) are high and could be too severe for small investors to manage. Johnson (2004) notes that short-term shareholders experience higher liquidity costs than long-term shareholders do, consistent with transaction costs arising from short-term fund flows. Keim and Madhavan (1997) argue that investors motivated by considerations of long-term fundamental value incur lower costs because of more patient investment strategies. To minimize liquidity and transaction costs and given time constraints in obtaining information, small institutional investors are more likely to adopt a *long-term* view in their investments and thus focus on monitoring CEO decisions that have *long-term* effects on firm value. I thus propose the following hypothesis.

> **Hypothesis 2:** *Due to their longer-term view of CEO monitoring, small institutional investors substitute their monitoring for the long-term incentive part of CEO compensation.*

3 DATA SELECTION AND VARIABLE CONSTRUCTION

I examine U.S.-based firms and investors. I collect the data from Compustat, the Center for Research in Security Prices (CRSP), ExecuComp, FactSet, and ISS Director Data databases from 2006 to 2015. My analyses cover a recent 10-year period starting in 2006, because I need a clean sample and, prior to 2006, there had been a series of regulatory reforms potentially affecting CEO pay structure. It is important to control for any potential exogenous effects of governance on CEO compensation, so that I can examine the influence of large institutional shareholders only. Considering the sequence of the Sarbanes–Oxley Act in 2002, the SEC's requirement of approval of compensation plans (in 2003), the FASB rule for expensing stock options, the American Jobs Creation Act of 2004 (Section 409A), and the SEC's

executive compensation disclosure rules (in 2006), companies have better corporate governance since 2006. Furthermore, the sample is more homogeneous over this period, since there have been no new or major regulatory changes in executive compensation or corporate governance since 2006. Lastly, I need recent data to provide the most relevant and applicable results. I require total assets to have a greater value than capital expenditures, and both to have positive values. I drop data where total liabilities are greater than total assets or where the sum of long- and short-term debt is greater than total assets. I exclude financial firms and utilities. I winsorize the variables with extreme values at the first and 99th percentiles. The final sample comprises 10,934 observations, with 1,628 firms.

I define the variable for large institutional ownership, *Large Institutional (LI) Ownership,* as the total fraction of outstanding shares owned by large shareholders. A large shareholder is an institutional investor with at least 10% ownership in a firm. This measure represents large institutional investors believed to have the greatest shareholder influence on governance and firm policies. The cutoff point is 10% rather than 5%, because the focus of this study is investors with ultimate stand-alone power to affect board decisions on executive compensation, rather than smaller shareholders that could influence the board only collectively. Khan, Dharwadkar, and Brandes (2005) show that, different from other investors, the largest institutional owners have a significant influence on CEO pay. For similar purposes, Chourou, Abaoub, and Saadi (2008) use a 10% cutoff point to define large shareholder (blockholder) ownership. Table IA.1 of the Internet Appendix shows the number of large institutional shareholders in firms for different cutoff points. The median for large institutional shareholders with at least 5% ownership is three, and it is two for large institutional shareholders with at least 6% or 7% ownership. These results imply that the majority of firms in my sample would still have two or three large institutional shareholders, and these investors would not have ultimate power in the firm. If I use a cutoff point of 8% or 9%, then the median is one, but the 75th percentile is still two. For cutoff points greater than 10%, there would not be a sufficient number of firms with large institutional shareholders. Only a 10% level ownership accurately

defines a large shareholder in this study.[2] The variable for small institutional ownership, *Small Institutional (SI) Ownership*, is the total fraction of outstanding shares owned by small institutional investors. Each of these investors should have less than 10% ownership in the firm. This measure includes private equity firms, venture capital, professional investors, corporate investors, hedge funds, mutual funds, pension funds, banks, trust companies, and insurance firms.

I examine CEO compensation in detail using 11 different variables. The variable *Option Pay* is the Black–Scholes value of the CEO's new options in a year, *Stock Pay* is the dollar value of new stocks paid to the CEO in a year, *Equity Pay* is the sum of *Option Pay* and *Stock Pay*, *Salary* is the dollar value of the cash salary paid to the CEO in a year, *Bonus* is the dollar value of cash bonuses paid to the CEO in a year, and *Cash Pay* is the sum of *Salary* and *Bonus*. These six measures represent the components of compensation to which the CEO has access. I thus categorize them as the current component of CEO pay. The variable *Pension* is the present dollar value of the CEO's pension benefits, *Deferred Pay* is the present dollar value of total deferred pay to the CEO (retirement plans, unvested options, and other deferred pay), *Stock Incentive* is the present dollar value of unearned unvested stock awards to the CEO, and total long-term incentive pay (LTIP), *Total Long-Term Incentive Pay (LTIP)* is the sum of *Deferred Pay* and *Stock Incentive*. These four measures represent the components of compensation that will only be accessible to the CEO in the future. Hence, I classify these as long-term components of CEO pay. The 11th variable, *Total Pay*, is the dollar value of total compensation paid to the CEO in a year.

Following previous studies on CEO compensation (e.g. Aggarwal & Samwick, 1999; Core, Holthausen & Larcker, 1999; Graham, Li, & Qiu, 2012; Harvey & Shrieves, 2001; Tosun, 2016), I use several control variables: *Firm Size* is the natural logarithm of total assets, *Growth Ratio* is capital expenditures over total assets, *Cash Ratio* is cash over total assets, *Leverage* is the sum of current liabilities and long-term debt over total assets, *M/B* is common shares outstanding multiplied by the closing price of one share over total assets, *ROA* represents the return on assets and is net cash flow from

[2] In untabulated analyses, I repeat the main tests using cutoff points of 8% and 9% for large institutional shareholders and obtain mainly robust results.

operations over total assets, *Volatility* is the standard deviation of daily stock returns, *Return* is the annual stock return, *Board Size* is the number of directors on the board, *Independence* is the fraction of outside directors on the board, *Busyness* is a dummy that equals one if 50% of the directors on the board serve on three or more other boards, *Board Ownership* is the total fraction of outstanding shares owned by board members, *CEO Ownership* is the fraction of outstanding shares owned by the CEO, *CEO Duality* is a dummy that equals one if the CEO is also the chair of the board, *CEO Age* is the age of the CEO, and *CEO Tenure* is the number of years served as the firm's CEO.

Table 1 provides summary statistics for all the variables. Although my sample includes firms with up to six large institutional shareholders, some companies do not have any. Similarly, the sample contains firms with no small institutional investors, while some are owned by up to 14 different small institutional investors. On average, in my sample, 18.9% of a firm is owned by small institutional investors, while 17.8% of its shares belong to large institutional shareholders.[3] Average CEO option pay, stock pay, and equity pay are \$1.1 million, \$2.1 million, and \$3.2 million, respectively. The right skew of these measures suggests that some firms in the sample compensate their CEOs with large stock awards and option pay. Average CEO cash pay is about \$1 million. Specifically, the average value of *Salary* is \$794,000 and that of *Bonus* is \$215,000. *Total Pay* is \$5.6 million on average. The average CEO receives \$2.2 million, \$2.5 million, \$2.8 million, and \$4.9 million as pension, deferred pay, stock incentive, and LTIP, respectively. These measures for long-term incentive compensation are extremely right skewed. The statistics for firm characteristics are similar to those of previous studies. On average, the CEO owns 2.2% of a firm, whereas ownership by board members is about 5.5%.

[Insert Table 1]

In further analyses, I examine all investors in my sample in terms of their investment horizon. Following Tosun (2019), I calculate the holding periods of the shares of large and small institutional investors. I find that 76.6% of large institutional shareholders in my sample maintain their stakes for less

[3] The correlation between *LI Ownership* and *SI Ownership* is -0.024, and it is insignificantly low.

than three years, whereas 61% of small institutional investors hold their shares in firms for more than eight years.[4] These findings imply that large institutional shareholders could have a short-term focus and hence monitor the CEO closely to increase firm value rapidly before they sell their shares. Such short-term monitoring could substitute for short-term incentive pay, that is, supporting H1. On the contrary, the small institutional investors in my sample have a long-term view and thus prefer high firm performance in the long run. Therefore, their long-term monitoring could substitute for long-term incentive components of CEO pay, that is, supporting H2.

4 EMPIRICAL METHODOLOGY

The multivariate analysis is conducted using a fixed effects panel regression model. I explain the effects of ownership by large and small institutional shareholders on different elements of CEO compensation after they increase their ownership in firms. I examine whether large and small institutional ownership provides good control over the CEO and thus substitutes for the incentive pay element of CEO compensation commonly used to mitigate the managerial agency problem. I test this claim by regressing *Option Pay*, *Stock Pay*, *Equity Pay*, *Salary*, *Bonus*, *Cash Pay*, *Total Pay*, *Pension*, *Deferred Pay*, *Stock Incentive*, and *Total LTIP* on the lagged *LI Ownership* percentage after controlling for lagged firm characteristics, namely, *Firm Size*, *Growth Ratio*, *Cash Ratio*, *Leverage*, *M/B*, *ROA*, *Volatility*, *Return*, *Board Size*, *Independence*, *Busyness*, *Board Ownership*, *CEO Ownership*, *CEO Duality*, *CEO Age*, and *CEO Tenure*. To address the potential issue of causality and determine its direction, I use one-year-lagged values for the independent and control variables. I thus show that CEO compensation is influenced by lagged institutional investor ownership, but not the other way around.

Year and firm fixed effects are added to the model. The fixed effects approach controls for omitted variables that differ between firms but are constant over time. After conducting the Hausman test,

[4] I also use the churn ratio defined by Gaspar, Massa, and Matos (2005) to identify the institutional investment horizon. I obtain similar findings, suggesting that the majority of large (small) institutional shareholders in my sample are short-term (long-term) investors.

I decided to use a fixed effects approach in the analysis. I repeat the same analysis using small institutional ownership so that I can examine the effect of smaller investors and find an explanation for the conflicting evidence in the literature. Standard errors are clustered at the firm level.[5] The model is specified as follows:

$$Y_{i,t} = \alpha + \beta * X_{i,t-1} + \sum_{k=1}^{16} \delta_k * Controls_{i,t-1,k} + \mu_{i,t} \quad (1)$$

where the measure for the CEO compensation component is *Y;* the measure for large (small) institutional ownership is *X*, for firms $i = 1, \ldots, N$ in period $t = 2006, \ldots, 2015$; the number of control variables is $k = 1, \ldots, 16$; the constant term and the coefficients of large (small) institutional ownership, the controls, and the error term are α and β, δ, and μ, respectively.

It can be argued that large and small institutional investors decide endogenously to change their levels of ownership in firms, although there is no evidence that they determine their investments in firms based on CEO pay. Nevertheless, I conduct additional analyses using an instrumental variable (IV) regression model to address this potential endogeneity issue. I acknowledge the difficulty of finding the perfect instrument regarding institutional investments (Edmans & Holderness, 2017). Thus, the results from the IV regressions should be considered only as suggestive evidence, with no strong claims. Ferreira and Matos (2008) use membership in the Morgan Stanley Capital International All Country World Index as an instrument in their research on institutional ownership. They show that investors increase their stakes in firms listed on the index. Similarly, Aghion, Reenen, and Zingales (2013) and Agarwal, Vashishtha, and Venkatachalam (2018) use inclusion to the Standard and Poor's (S&P) 500 index as an instrument. They argue that institutional investors are benchmarked against indices and, hence, have an incentive to own firms listed on these indices. The authors note that the exclusion restriction for the instrument is likely to be satisfied, because firms' stocks are added to the indices because they represent a sector well, and not because of their expected performance. Following these studies, I use a firm's

[5] In untabulated analyses, I cluster the standard errors at the CEO level and obtain similarly robust results.

addition to the Russell 2000 Index as an instrument for exogenous increases in large and small institutional ownership.[6] I choose the Russell 2000 because of its larger list of companies compared to the S&P 500, and I can thus obtain sufficient observations to run my analyses. I define *Russell 2000 Index* as a dummy variable that is equal to one if the firm is added to the Russell 2000 Index that year, and zero otherwise. In the first stage, I predict *LI Ownership* (*SI Ownership*) via *Russell 2000 Index*, including year and firm fixed effects, with standard errors clustered by firms, as follows:

$$X_{i,t} = \sigma + \gamma * Z_{i,t} + \sum_{k=1}^{16} \omega_k * Controls_{i,t-1,k} + \varepsilon_{i,t} \quad (2)$$

where the measure for large (small) institutional ownership is *X* and the measure for the Russell 2000 Index is *Z*, for firms $i = 1, \ldots, N$ in period $t = 2006, \ldots, 2015$; the number of control variables is $k = 1, \ldots, 16$; the constant term and the coefficients of the Russell 2000 Index, the controls, and the error term are σ and γ, ω, and ε, respectively.

In the second stage, I use the instrumented variable for large (small) institutional ownership from the first-stage regression as the independent variable:

$$Y_{i,t} = \alpha + \beta * \hat{X}_{i,t-1} + \sum_{k=1}^{16} \delta_k * Controls_{i,t-1,k} + \mu_{i,t} \quad (3)$$

where the measure for the CEO compensation component is *Y* and the instrumented measure for large (small) institutional ownership is $\hat{X}$, for firm $i = 1, \ldots, N$ in period $t = 2006, \ldots, 2015$; the number of control variables is $k = 1, \ldots, 16$; the constant term and the coefficients of fitted large (small) institutional ownership, the controls, and the error term are α and β, δ, and μ, respectively.

[6] The insignificantly low correlations (in the range of -0.1 and -0.2) between the IV and each dependent variable suggest that the IV fulfils the exclusion criterion.

In further analyses, I use two other sets of instruments. In one of those IV models, I use the growth in net assets of all institutional investors in the U.S. market,[7] similar to Qiu (2009). The variable *Net Asset Growth* is the difference in total net assets of institutional investors in the U.S. market between the current and the prior year, scaled by net assets in the prior year. This measure will capture the overall growth trend among institutional investors. If the average total net assets of institutional investors grow from the previous year to the next, then large and small institutional shareholders are more likely to follow this trend and increase their ownership in firms through increasing their investments. However, net asset growth should not have a direct impact on CEO compensation, because this measure is associated with only institutional investors and is unrelated to firms. Firms operate in different industries compared to those of the investors. Hence, any potential trend among institutional investors should not be directly linked to companies or CEO pay. Subsequently, the restriction exclusion in the model is satisfied.

In the last IV model, I use illiquidity measures for stocks as instruments to identify ownership by large and small institutional investors. Shareholders can only increase their ownership of a firm effectively if the shares of that company are liquid and traded in the stock market. Aggarwal, Erel, Ferreira, and Matos (2011) argue that the transaction costs for investors to rebalance their portfolio decreases as the liquidity of a stock increases. Hence, more liquid stocks should attract higher levels of ownership by institutions. Thus, a firm's stock liquidity is a factor that directly determines investors' stock ownership. However, stock liquidity should not have any direct influence on CEO compensation. It can be argued that liquid shares should have higher prices and returns in the stock market. There could be a relation between high stock returns and CEO compensation. However, that would not constitute a direct impact by stock liquidity on CEO pay. Liquid shares could have attracted investors, which could then drive up the demand for those shares. High demand increases stock prices, and high share prices can then influence CEO pay decisions in those firms. Hence, the relation between stock liquidity and CEO compensation is indirect at best, and the exclusion restriction is likely to be satisfied. Following Hartzell

[7] The data are available at http://www.icifactbook.org.

and Starks (2003) and Aggarwal, Erel, Ferreira, and Matos (2011), I use firms' stock liquidity as an instrument in my analyses. I use three illiquidity measures in the IV regression model: *Amihud*, the yearly average of the ratio of absolute daily returns to the daily trading volume of a firm's stocks; *Volume*, the natural logarithm of the total trading volume of a firm's stocks; and *Zero*, the proportion of days with zero stock returns for a firm in a year.

5 MAIN RESULTS AND FURTHER ANALYSES

5.1 Main findings

Table 2 presents the main analysis results for the impact of large and small institutional ownership on specific components of CEO compensation. For the baseline model, I follow Hartzell and Starks (2003) and include both *Large Institutional (LI) Ownership* and *Small Institutional (SI) Ownership* to examine the marginal impact of each variable controlling for the other. The results from this baseline model in Panel A are similar to those in Panel B. In Panel B, *LI Ownership* is negatively related to *Option Pay*, *Stock Pay*, *Equity Pay*, *Bonus*, *Cash Pay*, and *Total Pay*. In particular, a one standard deviation (about 11%) increase in ownership by large institutional shareholders reduces CEO option pay by 4.6% (= −0.408*0.112). Similarly, CEO stock pay and CEO equity pay drop by 3.2% (= −0.284*0.112) and 6.7% (= −0.601*0.112), respectively, as large institutional shareholders increase their ownership in the firm by 11%. In terms of cash payment, *Bonus* and *Cash Pay* decrease by 3.4% (= −0.306*0.112) and 3.8% (= −0.341*0.112), respectively, when large shareholders own 11% more of the firm. Considering total CEO pay, a one standard deviation jump in *LI Ownership* leads to a substantial reduction in *Total Pay* of 16.2% (= −1.444*0.112). These statistically significant and negative findings suggest that a firm pays the CEO less equity-based pay, lower cash bonuses, and less total CEO compensation when large institutional shareholders increase their stock in the firm. These results support H1 and indicate the substitution of incentive pay by institutional monitoring to mitigate the issue of managerial agency. In particular, the impact of large shareholders is on total pay and the current proportion of incentive pay, such as option pay, stock pay, and bonuses, rather than long-term incentive compensation. One possible explanation for

this is large institutional shareholders' intention to monitor the CEO very strictly and increase firm value immediately, so that they can benefit from a large wealth increase in the short term when they sell their stakes. Due to their short-term view, the substitution of incentive pay with close monitoring can be observed in current elements of CEO pay.

[Insert Table 2]

As shown in Panels A (baseline estimates) and C of Table 2, *SI Ownership* has a significant and negative impact on *Pension, Deferred Pay, Stock Incentive,* and *Total Long-Term Incentive Pay (LTIP).* Particularly in Panel C, a one standard deviation (10.5%) increase in ownership by small institutional shareholders reduces CEO pension by 15.7% (= −1.493*0.105). Similarly, *Deferred Pay* and *Stock Incentive* decline by 14.5% (= −1.377*0. 105) and 19.9% (= −1.894*0. 105), respectively, as small institutional investors increase their ownership in the firm by 10.5%. Overall, *Total LTIP* drops by 34.3% (= −3.270* 0. 105) when small institutional shareholders have 10.5% more of the firm's stakes. These statistically significant and negative results imply that, in increase in the firm's ownership by smaller institutional investors alters the future wealth of the CEO and compensates the CEO less with pension and LTIP. Similar to the findings for large institutional shareholders, these results provide evidence of the substitution of incentive pay by institutional monitoring. However, monitoring by small institutional investors substitutes for pension, long-term stock incentives, and deferred pay, instead of current elements of incentive compensation, as in the case with large institutional ownership. These results support H2 and suggest that investors with smaller stakes aim to reduce liquidity costs, and, due to time constraints in obtaining information, they cannot sell their shares in the short run. Hence, they focus on future firm value improvement and take a longer-term view of monitoring the CEO.[8]

[8] To provide an indicative comparison, I repeat the main analysis by replacing the independent variable with *Overall Institutional Ownership,* which is the sum of *LI Ownership* and *SI Ownership*. Table IA.2 in the Internet Appendix presents the results. Confirming the mixed results from similar analyses in the literature, I find that the estimates for the CEO pay components lose statistical and economic significance. Only *Pension* and *Total LTIP* prove to have statistically significant and negative results, but these are still weaker than my original findings using *SI Ownership*.

To control for potential dependence within industries, I repeat the analyses with industry-level clustering using four-digit Standard Industrial Classification codes. Table IA.3 of the Internet Appendix shows the robust results. In separate untabulated analyses, I drop the observations for the years 2007–2009 to check whether my original results are driven by the crisis. I adjust the CEO pay components by inflation and use the logarithm of CEO pay and compensation components. I also normalize the components of CEO compensation by total CEO pay. Furthermore, I use industry fixed effects instead of firm fixed effects. Additionally, I substitute return on assets for the net profit margin and sales growth. I also adjust the variables for components of CEO compensation via CEO turnover in my sample. In each of these analyses, my original results mainly remain robust.

Table 3 presents estimates of the IV regression model. First, I check for weak instruments in the model through Cragg–Donald's Wald *F* weak-instrument test. I obtain *F*-statistics of 24.140 and 68.021 for *LI Ownership* and *SI Ownership*, respectively. These values are above the Stock–Yogo critical values of 16.38 for one instrument, with a significance level of 5%. Hence, I conclude that the instruments are not weak. Next, I conduct Anderson's canonical correlations likelihood ratio test for underidentification. I find chi-squared values of 11.372 and 62.119 for *LI Ownership* and *SI Ownership*, respectively. These results imply that canonical correlations are different from zero and that underidentification is not issue in my analyses.

[Insert Table 3]

In Panel A of Table 3, the first column presents the results from the first-stage regression. Consistent with the literature, a positive estimate for *Russell 2000 Index* suggests that large institutional shareholders increase their ownership in firms when these are listed on the Russell 2000 Index. The remaining columns show the results from the second-stage regression. Similar to my previous findings, the CEO has lower levels of option pay, stock pay, bonuses, and total pay when large institutional investors own more stakes in these companies. Specifically, *Option Pay*, *Stock Pay*, *Equity Pay*, *Bonus*, and *Cash Pay* drop by 20.1%, 18.6%, 42.6%, 2.8%, and 4.7%, respectively, as large institutional shareholders increase their ownership in the firm by 1%. A 1% jump in *LI Ownership* leads to a decrease

of 46.1% in *Total Pay*. Consistent with the previous results, these findings support H1 and provide evidence suggestive of the association between large institutional ownership and the current components of incentive pay that are substituted by institutional monitoring.

The first column of Panel B of Table 3 presents positive estimates for *Russell 2000 Index*. As in Panel A, the result confirms that small institutional investors increase their ownership in firms listed on the Russell 2000 Index. The rest of Panel B shows results consistent with my previous findings. When small institutional shareholders increase their ownership in firms, they pay the CEO less pension, less deferred compensation, and fewer stock incentives. In particular, *Pension, Deferred Pay,* and *Stock Incentive* decrease by 11.8%, 7.8%, and 6.2%, respectively, when small institutional shareholder ownership increases by 1%. The variable *Total LTIP* drops by 14% when *SI Ownership* increases by 1%. Supporting H2, these results indicate that monitoring by small institutional investors substitutes for LTIP.

Considering the second IV model with *Net Asset Growth* and the third IV model with *Amihud, Volume,* and *Zero,* I obtain results consistent with those from the first IV model with *Russell 2000 Index.* The robust findings in Table IA.4 of the Internet Appendix support my original results.

The results from the main analyses show that increased ownership by large institutional shareholders influences the CEO pay structure differently from the increased ownership of small institutional shareholders. This is new evidence that previous research is generally driven by smaller investors and that it overlooks the influential power of large institutional shareholders. Moreover, the results indicate that previous findings in the literature could be driven by regulatory reforms that occurred over previous years. The relation between large institutional ownership and CEO pay is revealed more clearly using contemporary data without new major reforms. In further analyses, I specifically examine the noisy period 2002–2006 with exogenous regulatory changes in corporate governance. These shocks influenced corporate governance and changed the CEO compensation structure. It is therefore challenging to determine whether the reforms or institutional ownership causes the changes in CEO pay. The results in Table IA.5 of the Internet Appendix confirm that the significance of large and small institutional

shareholders' influence on CEO compensation disappears, and their impact on CEO pay cannot be observed precisely in the presence of regulatory reforms.

Companies with investments from many large institutional shareholders that are also sufficiently influential on management should experience greater institutional control and therefore a greater effect on their CEO pay structure. Hence, I repeat the main analysis using the total numbers of large and small institutional investors, respectively. The results in Table IA.6 of the Internet Appendix support my original findings. In particular, *Option Pay*, *Stock Pay*, *Equity Pay*, *Bonus*, *Cash Pay*, and *Total Pay* drop by 4.1%, 4.2%, 7.4%, 3.7%, 4%, and 15.2%, respectively, as one more large institutional investor invests in that firm. Furthermore, *Pension*, *Deferred Pay*, *Stock Incentive*, and *Total LTIP* decrease by 10.5%, 10.1%, 12.4%, and 22.5%, respectively, when the firm has one more small institutional shareholder.[9]

If the substitution of CEO incentive pay by institutional monitoring holds, then those institutional investors should decrease CEO compensation components because of their monitoring, particularly when the CEO is paid excessively. Following Faleye, Hoitash, and Hoitash (2011), I examine excess compensation in relation to large and small institutional shareholders (Tables IA.8 and IA.9 of the Internet Appendix). The results are consistent with my original findings. In particular, excess in *Option Pay*, *Stock Pay*, *Equity Pay*, *Bonus*, *Cash Pay*, and *Total Pay* decreases by 0.4%, 0.2%, 0.6%, 0.3%, 0.1%, and 1.4%, respectively, as *LI Ownership* increases by 1%. Moreover, a 1% increase in small institutional ownership reduces excess in *Pension*, *Deferred Pay*, *Stock Incentive*, and *Total LTIP* by 0.1%, 0.2%, 0.1%, and 0.2%, respectively.

[9] In separate analyses, I use the Herfindahl index of institutional ownership concentration to measure large institutional shareholders' influence, because a high level of ownership concentration could represent large institutional ownership. In particular, I construct a subsample of firms that are in the top quartile of the Herfindahl index of institutional ownership concentration, and I repeat the main analysis using *Institutional Ownership HHI* as the independent variable representing large institutional ownership. The analysis runs from 2006 to 2013 due to data availability. Table IA.7 of the Internet Appendix reports the results supporting my original findings for option pay, stock pay, equity pay, and total pay.

The majority of large (small) institutional shareholders in my sample are short-term (long-term) investors. Therefore, I check the robustness of the original findings by examining the relation between CEO pay components and short-term (long-term) investors that are large (small) institutional shareholders. I use the churn ratio defined by Gaspar, Massa, and Matos (2005) to identify the institutional investment horizon, and I repeat the main analysis using ownership by those short- and long-term investors. Consistent with the previous results, the findings in Table IA.10 of the Internet Appendix support H1 and H2.

My main results provide evidence of the "level" of decrease in a CEO's pay components associated with large and small institutions' investments in the firm. To confirm the plausibility of the findings, I need to examine whether the "likelihood" of such investors affecting CEO pay is statistically significant in the first place (e.g. Tosun, 2019). This can be achieved by a logistic regression analysis in a cross-sectional setup to mitigate potential biases due to the time series correlation for a given variable (e.g. Hu, Lin, & Tosun, 2018). I construct the average values of large (small) institutional ownership in each firm for the whole period. For each component of CEO compensation, I calculate the mean and median values for the entire period and construct a dummy variable that is equal to one if the mean is greater than the median value for CEO pay in that firm, and zero otherwise. Through this measure, I specify higher CEO compensation. The results in Table IA.11 of the Internet Appendix support my original findings and suggest that monitoring by large (small) institutional shareholders substitutes for the current (long-term) element of incentive compensation.

Almazan, Hartzell, and Starks (2005) and Clifford and Lindsey (2016) suggest that institutional investors can be grouped according to whether they engage in active monitoring. I examine how significantly "active monitoring" can explain the changes in CEO compensation components compared to the "large institutional shareholder" taxonomy. I construct *Active Investor Ownership* as the main explanatory variable, that is, the total fraction of outstanding shares owned by active investors (private equity firms, professional investors, corporate investors, hedge funds, and mutual funds). I repeat the main analysis using *Active Investor Ownership*. In Table IA.12 of the Internet Appendix, I find no

statistically significant evidence of incentive pay substitution by active monitoring. One possible explanation is that the active monitoring taxonomy is not a sufficiently accurate way of categorizing institutional investors in relation to CEO compensation, because it includes different types of investors with various levels of ownership and investment horizons.

In a separate analysis, I test the hypothesis that companies in which large (small) institutional investors have greater ownership should experience a greater reduction in CEO compensation elements. I focus on companies in the top quartile of *LI Ownership* and *SI Ownership*, separately, and repeat the main analysis. The findings in Table IA.13 of the Internet Appendix support the hypothesis.

5.2 Greater need for monitoring

In further analyses, I examine cases in which there is greater need for control over managers because of their increased power. In particular, I consider weak corporate governance as being in the bottom quartile of board independence and highly tenured CEOs as those with tenure in the top quartile. Jensen (1993) state that corporate officers who report to the CEO cannot be effective monitors. Similarly, Collins, Gong, and Li (2009) note that the CEO has greater influence over the board when the proportion of inside directors is high. Further, they suggest that CEOs with longer tenure are likely to have accumulated greater power over the directors. I also study firms with free cash flow problems, using a free cash flow ratio that is equal to net cash flow from operations minus capital expenditures over total assets. Jensen (1986) suggests that high levels of free cash flow facilitate an environment in which the CEO can engage in managerial agency issues. Moreover, I choose firms with many business segments to represent cases with a greater need for monitoring. CEOs of multisegment firms have greater power, since they manage a larger and diversified company (Jensen, 1986; Stulz, 1990). Shleifer and Vishny (1989) argue that diversification through many business segments fuels CEO power, since it makes the CEO indispensable to the firm.

Lastly, I consider financially secure companies with an Altman Z-score above 2.99 to represent firms with a powerful manager. Financial distress acts as a control mechanism for the CEO (Murphy,

1999). CEOs hesitate to seek power by engaging with managerial agency issues in financially distressed firms, since it could decrease firm performance, potentially even leading the firm to bankruptcy. Subsequently, such managers are replaced with less entrenched CEOs, and they experience difficulties finding new jobs (Evans, Luo, & Nagarajan, 2014; Gilson, 1989). Thus, lack of financial distress should exacerbate the CEO entrenchment problem. I expect stronger results for these specific cases, because I suspect that investors prefer to institute effective institutional monitoring to control potentially inflated CEO total pay and the incentive elements of compensation in particular.

Table 4 reports statistically significant and stronger results. The variable *Equity Pay* decreases by 12.9% (= −1.127*0.115) for firms with weak corporate governance when large institutional shareholders increase their ownership in those companies by one standard deviation (11.5%). Similarly, the drop in *Equity Pay* is about 23.7% (= −2.057*0.114), 12.9% (= −1.125*0.113), 8.9% (= −0.773*0.115), and 12.6% (= −1.098*0.114) for firms with a highly tenured CEO, a financially secure structure, many business segments, and high levels of free cash flow, respectively. The statistically significant decreases in *Option Pay* and *Stock Pay* as components of equity pay are also greater than the original results. An 11% increase in *LI Ownership* leads to a drop in total cash pay, including bonuses, of 4.7% (= −0.426*0.115), 17.4% (= −1.580*0.114), 4.8% (= −0.434*0.115), and 5.9% (= −0.539*0.114) for firms with weak governance, a highly tenured CEO, multiple business segments, and high levels of free cash flow, respectively. Consistent with Chang, Hayes, and Hillegeist (2016), I find that large institutional ownership does not have any significant impact on total cash pay, including the CEO's salary, when firms are financially stable and secure. The results for companies with weak corporate governance, a tenured CEO, less financial distress, multiple business segments, and more free cash flow are economically more significant than the original findings of 16.2% for *Total Pay*: 35.7% (= −3.102*0.115), 56.9% (= −4.955*0.114), 17.9% (= −1.562*0.113), 30.1% (= −2.620*0.115), and 21.4% (= −1.865*0.114), respectively.

[Insert Table 4]

In Table 4, the results for small institutional ownership are also statistically significant and stronger than my original findings. The variable *Deferred Pay* declines by 19.5% (= −1.221*0.161) for weakly governed firms when institutional ownership in these firms jumps by 16.1%. Similarly, deferred compensation decreases by 21.7% (= −1.356*0.163), 45.8% (= −2.863*0.158), 35.5% (= −2.217*0.16), and 46% (= −2.877*0.161) for firms with a highly tenured CEO, less financial distress, multiple business segments, and high levels of free cash flow, respectively. Economically more significant results are also obtained for the pension and stock incentive components of CEO compensation. After small institutional investors increase their ownership in firms with weak corporate governance, a tenured CEO, a financially secure structure, many business segments, or more free cash flow by one standard deviation, *Total LTIP* drops by more than the previous original finding (34.3%), with 50.7% (= −3.166*0.161), 39% (= −2.441*0.163), 87.4% (= −5.465*0.158), 63.9% (= −3.993* 0.16), and 77% (= −4.814*0.161), respectively.

6 CONCLUSION

This paper examines the potential influence of large and small institutional investors on different components of CEO compensation. Controlling for reverse causality and other potential effects of CEO and firm characteristics, I conduct a fixed effects panel regression analysis of the recent data from 2006 to 2015. I find that monitoring by large institutional shareholders substitutes for the current portion of incentive pay and total compensation, whereas LTIP components are associated with ownership by small institutional investors. In particular, option pay, stock pay, bonus pay, cash pay, and total pay decrease after large institutional shareholders increase their ownership in firms, whereas pension, deferred pay, stock incentive pay, and total long-term incentive compensation drop after small institutional investors acquire greater stakes in firms. Salary seems to be unaffected. Even though large and small institutional investors have different agendas and hence change different elements of the CEO compensation package, the findings are consistent with managerial agency theory and the substitution of incentive pay by shareholder monitoring. The magnitude of change in these components of compensation is greater for a

higher level of ownership by large institutional investors. The negative impact of large and small institutional ownership on total compensation and different incentive elements of CEO pay is more pronounced for cases in which there is a greater need to monitor powerful CEOs, namely, in firms with weak corporate governance, in financially secure firms, and in firms with long-tenured CEOs, many business segments, and high levels of free cash flow.

This paper contributes to the literature on CEO compensation and institutional investment by providing more detailed insight into the possible influence of large institutional shareholders on CEO pay. Departing from the literature, I investigate 11 different elements of CEO compensation and focus on large institutional investors with at least 10% ownership in a firm. Hence this study reveals important details of the relation between very large institutional shareholders and specific parts of CEO pay. Using the most recent U.S. data available, I examine the proposed relation through an extended model (cross-sectional logistic regression) and mitigate the potential endogeneity problem in the institutional investor literature with an IV regression model. Thus, this study can conduct accurate analyses and provide more precise results. The scope of this paper, together with the novel models I use, will help to clarify the conflicting findings in the literature. My findings can offer guidance for firms making financing and governance decisions. Drawing on the evidence shown in this study, companies and their CEOs can gain a clear understanding and expectations of the CEO compensation structure when large and small institutional shareholders invest in them.

The external validity of the results in this study can be tested through further research. Although this paper uses only U.S. data, a cross-country examination could bring more insight into the effect of large institutional ownership on the CEO compensation structure. Additionally, other top executives' pay structure can be analysed under large and small institutional ownership and compared to the results on CEO pay. Additional analyses focusing on different economic conditions, including financial crises, could reveal new evidence of the relation between institutional investment and CEO pay.

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APPENDIX

TABLE A.1 Variable Definitions

Variables	Description	Data Source
Large Institutional Ownership	The total fraction of outstanding shares owned by large shareholders. A large shareholder is an institutional investor with at least 10% ownership in a firm.	FactSet
Small Institutional Ownership	The total fraction of outstanding shares owned by small shareholders. A small shareholder is an institutional investor with less than 10% ownership in a firm.	FactSet
Option Pay	The Black–Scholes value of new options for the CEO in a year.	ExecuComp
Stock Pay	The dollar value of new stocks paid to the CEO in a year.	ExecuComp
Equity Pay	The sum of *Option Pay* and *Stock Pay*.	ExecuComp
Salary	The dollar value of the cash salary paid to the CEO in a year.	ExecuComp
Bonus	The dollar value of cash bonuses paid to the CEO in a year.	ExecuComp
Cash Pay	The sum of *Salary* and *Bonus*.	ExecuComp
Total Pay	The dollar value of total compensation paid to the CEO in a year.	ExecuComp
Pension	The present dollar value of the CEO's pension benefits.	ExecuComp
Deferred Pay	The present dollar value of total deferred pay to the CEO.	ExecuComp
Stock Incentive	The present dollar value of unearned unvested stock awards to the CEO.	ExecuComp
Total Long-Term Incentive	The sum of *Deferred Pay* and *Stock Incentive*.	ExecuComp
Firm Size	The natural logarithm of total assets.	Compustat
Growth Ratio	Capital expenditures over total assets.	Compustat
Cash Ratio	Cash over total assets.	Compustat
Leverage	Sum of current liabilities and long-term debt over total assets.	Compustat
M/B	Common shares outstanding multiplied by the closing price of one share over total assets.	Compustat
ROA	Net cash flow from operations over total assets.	Compustat
Volatility	The standard deviation of daily stock returns.	CRSP
Return	The annual stock return.	CRSP
Board Size	The number of directors on the board.	ISS
Independence	The fraction of outside directors on the board.	ISS
Busyness	A dummy that equals one if 50% of the directors on the board serve on three or more other boards, and zero otherwise.	ISS
Board Ownership	The fraction of outstanding shares owned by the CEO.	ISS
CEO Ownership	The total fraction of outstanding shares owned by board members.	ISS
CEO Duality	A dummy that equals one if the CEO is also the chair of the board, and zero otherwise.	ISS
CEO Age	The age of the CEO.	ISS
CEO Tenure	The number of years served as the CEO.	ISS

TABLE 1 Descriptive statistics

This table gives descriptive statistics for the mean, standard deviation, and 50th percentile of the variables in the analysis. The minima, medians, and maxima of large and small institutional shareholders are also provided. There are 1,628 firms, with 10,934 firm–year observations. The variable *LI Ownership* (*SI Ownership*) is the total fraction of outstanding shares owned by large (small) shareholders, where a large (small) shareholder is an institutional investor with at least (less than) 10% ownership in a firm; *Option Pay* is the Black–Scholes value of new options for the CEO in a year; *Stock Pay* is the dollar value of new stocks paid to the CEO in a year; *Equity Pay* is the sum of *Option Pay* and *Stock Pay*; *Salary* is the dollar value of the CEO's cash salary paid in a year; *Bonus* is the dollar value of cash bonuses paid to the CEO in a year; *Cash Pay* is the sum of *Salary* and *Bonus*; *Total Pay* is the dollar value of total compensation paid to the CEO in a year; *Pension* is the present dollar value of the CEO's pension benefits; *Deferred Pay* is the present dollar value of the CEO's total deferred pay; *Stock Incentive* is the present dollar value of unearned unvested stock awards to the CEO; *Total LTIP* is the sum of *Deferred Pay* and *Stock Incentive*; *Firm Size* is the natural logarithm of total assets; *Growth Ratio* is capital expenditures over total assets; *Cash Ratio* is cash over total assets; *Leverage* is the sum of current liabilities and long-term debt over total assets; *M/B* is common shares outstanding multiplied by the closing price of one share over total assets; *ROA* represents the return on assets and is net cash flow from operations over total assets; *Volatility* is the standard deviation of daily stock returns; *Return* is the annual stock return; *Board Size* is the number of directors on the board; *Independence* is the fraction of outside directors on the board*; Busyness* is a dummy that equals one if 50% of the directors on the board serve on three or more other boards; *Board Ownership* is the total fraction of outstanding shares owned by board members; *CEO Ownership* is the fraction of outstanding shares owned by the CEO; *CEO Duality* is a dummy that equals one if the CEO is also the chair of the board; *CEO Age* is the age of the CEO; and *CEO Tenure* is the number of years served as the CEO.

Variables	**Min**	**P50**	**Max**
Total Number of Large Inst. Shareholders	0	1	6
Total Number of Small Inst. Shareholders	0	3	14
	Mean	**Standard Deviation**	**P50**
LI Ownership	0.178	0.112	0.134
SI Ownership	0.189	0.105	0.174
Option Pay	1.111	1.816	0.385
Stock Pay	2.067	3.445	0.965
Equity Pay	3.165	3.812	1.876
Salary	0.794	0.409	0.747
Bonus	0.215	1.496	0.000
Cash Pay	1.010	1.613	0.813
Total Pay	5.645	6.895	3.774
Pension	2.189	7.224	0.000
Deferred Pay	2.480	9.086	0.000
Stock Incentive	2.770	7.492	0.000
Total Long-Term Incentive Pay	4.955	12.967	0.786
Firm Size	7.461	1.650	7.366
Total Assets	8186.790	31333.530	1580.628
Growth Ratio	0.049	0.055	0.032
Cash Ratio	0.128	0.125	0.092
Leverage	0.211	0.188	0.191
M/B	1.436	1.286	1.084
ROA	0.101	0.098	0.101
Volatility	0.111	0.071	0.095
Return	0.685	3.130	0.065
Board Size	8.891	2.160	9.000
Independence	0.782	0.116	0.800
Busyness	0.004	0.061	0.000
Board Ownership	0.055	0.118	0.015
CEO Ownership	0.022	0.061	0.004
CEO Duality	0.321	0.467	0.000
CEO Age	55.552	8.544	56.000
CEO Tenure	7.361	7.427	5.000

TABLE 2 Main analysis of the CEO compensation components for large and small institutional ownership

This table reports the results of fixed effects panel regression estimates for *LI Ownership* and *SI Ownership* along with *Firm Size*, *Growth Ratio*, *Cash Ratio*, *Leverage*, *M/B*, *ROA*, *Volatility*, *Return*, *Board Size*, *Independence*, *Busyness*, *Board Ownership*, *CEO Ownership*, *CEO Duality*, *CEO Age*, and *CEO Tenure* as control variables. All controls and independent variables are lagged by one year. In Panel A, both *LI Ownership* and *SI Ownership* are included in the main model, following Hartzell and Starks (2003), to provide baseline estimations. In Panels B and C, *LI Ownership* and *SI Ownership* are examined separately. The variable *LI Ownership* (*SI Ownership*) is the total fraction of outstanding shares owned by large (small) shareholders. A large (small) shareholder is an institutional investor with at least (less than) 10% ownership in a firm. The analysis is conducted using different components of CEO compensation. The variable *Option Pay* is the Black–Scholes value of new options for the CEO in a year; *Stock Pay* is the dollar value of new stocks paid to the CEO in a year; *Equity Pay* is the sum of *Option Pay* and *Stock Pay*; *Salary* is the dollar value of the cash salary paid to the CEO in a year; *Bonus* is the dollar value of cash bonuses paid to the CEO in a year; *Cash Pay* is the sum of *Salary* and *Bonus*; *Pension* is the present dollar value of the CEO's pension benefits; *Deferred Pay* is the present dollar value of total deferred pay to the CEO; *Stock Incentive* is the present dollar value of unearned unvested stock awards to the CEO; *Total LTIP* is the sum of *Deferred Pay* and *Stock Incentive*; and *Total Pay* is the dollar value of total compensation paid to the CEO in a year. The variable definitions are given in Table A.1 in the Appendix. Firm and year fixed effects are included. Standard errors are clustered by firms. The superscripts ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Marginal Effect of Large and Small Institutional Ownership on CEO Compensation Components (baseline estimation)

Lagged Variables	Option Pay	Stock Pay	Equity Pay	Salary	Bonus	Cash Pay	Pension	Deferred Pay	Stock Incentive	Total LTIP	Total Pay
LI Ownership	-0.409**	-0.673*	-0.738**	-0.031	-0.256*	-0.288**	-0.639	-0.262	-0.037	-0.261	-1.482*
	(0.203)	(0.401)	(0.370)	(0.023)	(0.139)	(0.140)	(0.585)	(0.529)	(0.683)	(0.882)	(0.900)
SI Ownership	-0.005	0.253	0.023	-0.037	0.312	0.275	-1.615***	-1.502*	-1.357*	-2.664**	0.659
	(0.165)	(0.340)	(0.323)	(0.027)	(0.244)	(0.247)	(0.585)	(0.906)	(0.779)	(1.236)	(0.622)
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year & Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R^2	0.031	0.040	0.062	0.198	0.008	0.009	0.087	0.025	0.049	0.052	0.040
Observation	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934

Panel B: Effect of Large Institutional Ownership on CEO Compensation

Lagged Variables	Option Pay	Stock Pay	Equity Pay	Salary	Bonus	Cash Pay	Pension	Deferred Pay	Stock Incentive	Total LTIP	Total Pay
LI Ownership	-0.408**	-0.284**	-0.601**	-0.024	-0.316*	-0.341**	-0.328	0.057	0.363	0.420	-1.444*
	(0.203)	(0.135)	(0.305)	(0.021)	(0.177)	(0.174)	(0.574)	(0.541)	(0.630)	(0.850)	(0.871)
Firm Size	0.331***	0.440***	1.163***	0.091***	-0.055	0.036	0.408**	0.446	0.793	1.239	1.069***
	(0.0685)	(0.0519)	(0.124)	(0.0103)	(0.054)	(0.055)	(0.170)	(0.576)	(0.681)	(0.954)	(0.219)
Growth Ratio	-0.516	1.107***	1.045	-0.214***	0.888	0.674	0.746	0.015	-5.165**	-5.149	-1.633
	(0.525)	(0.418)	(0.852)	(0.077)	(0.985)	(0.981)	(0.915)	(2.170)	(2.590)	(3.590)	(2.528)
Cash Ratio	-0.194	-0.046	-0.360	-0.065**	-0.070	-0.135	0.490	1.237	-1.245	-0.007	-0.362
	(0.236)	(0.169)	(0.351)	(0.032)	(0.173)	(0.174)	(0.446)	(1.386)	(2.126)	(2.688)	(0.758)
Leverage	0.163	-0.337**	-0.191	-0.002	0.172	0.170	-0.077	-1.085	-0.226	-1.311	0.350
	(0.175)	(0.165)	(0.316)	(0.025)	(0.148)	(0.147)	(0.553)	(0.878)	(0.757)	(1.197)	(0.581)

(continued)

Lagged Variables	Option Pay	Stock Pay	Equity Pay	Salary	Bonus	Cash Pay	Pension	Deferred Pay	Stock Incentive	Total LTIP	Total Pay
M/B	0.207***	0.031	0.340***	0.007***	0.003	0.011	0.009	0.0189	0.183	0.202	0.439***
	(0.034)	(0.022)	(0.063)	(0.002)	(0.007)	(0.007)	(0.049)	(0.120)	(0.113)	(0.156)	(0.140)
ROA	0.0247	0.162	-0.213	0.055*	0.125	0.181*	-0.775*	-0.225	1.670	1.445	0.476
	(0.193)	(0.189)	(0.374)	(0.031)	(0.090)	(0.096)	(0.418)	(0.681)	(1.087)	(1.216)	(0.539)
Volatility	0.457**	-0.266	-0.648	0.043	0.018	0.062	0.338	-0.441	0.510	0.069	-0.204
	(0.191)	(0.242)	(0.400)	(0.038)	(0.223)	(0.225)	(0.555)	(0.671)	(1.216)	(1.410)	(0.672)
Return	0.067*	0.292	0.442**	-0.001	-0.018*	-0.019**	-0.052*	-0.042	-0.248***	-0.291***	-0.027
	(0.040)	(0.182)	(0.213)	(0.004)	(0.011)	(0.008)	(0.031)	(0.037)	(0.065)	(0.048)	(0.043)
Board Size	-0.014	0.001	-0.001	-0.001	0.017	0.016	0.042	0.097	0.055	0.153	0.042
	(0.014)	(0.011)	(0.022)	(0.002)	(0.013)	(0.012)	(0.061)	(0.075)	(0.078)	(0.120)	(0.054)
Independence	0.103	0.048	0.235	0.007	-0.256	-0.249	-0.510	-0.599	-0.287	-0.887	-0.344
	(0.145)	(0.117)	(0.247)	(0.020)	(0.192)	(0.190)	(0.593)	(0.814)	(0.737)	(1.199)	(0.581)
Busyness	0.712*	0.249	0.704	0.099	0.212*	0.311**	-2.996*	-0.959*	-1.575	-2.534*	0.603
	(0.387)	(0.246)	(0.620)	(0.075)	(0.123)	(0.133)	(1.557)	(0.544)	(1.651)	(1.478)	(1.121)
Board Ownership	0.338	-0.210	-1.462***	-0.054*	0.112	0.058	-0.893*	-0.630	-1.280**	-1.910	-0.692
	(0.351)	(0.157)	(0.352)	(0.028)	(0.099)	(0.098)	(0.468)	(0.972)	(0.540)	(1.297)	(0.868)
CEO Ownership	-0.193	0.131	-0.349	-0.160	-0.114	-0.274	-0.829	-1.401	-0.005	-1.407	-1.316
	(0.347)	(0.508)	(0.700)	(0.110)	(0.331)	(0.358)	(1.020)	(1.766)	(1.170)	(2.436)	(1.142)
CEO Duality	-0.029	0.068*	-0.018	0.009	-0.042	-0.033	0.752***	0.204	0.281	0.485	-0.058
	(0.045)	(0.040)	(0.093)	(0.007)	(0.080)	(0.079)	(0.143)	(0.259)	(0.224)	(0.362)	(0.151)
CEO Age	-0.002**	-0.002	-0.007	0.002***	-0.002**	0.001	0.022***	0.006	0.019***	0.025**	0.001
	(0.001)	(0.003)	(0.005)	(0.000)	(0.001)	(0.001)	(0.003)	(0.008)	(0.005)	(0.011)	(0.003)
CEO Tenure	0.004	0.007	0.009	0.004***	0.019*	0.023**	0.163***	0.185***	-0.006	0.178***	0.065***
	(0.004)	(0.004)	(0.008)	(0.001)	(0.010)	(0.010)	(0.023)	(0.034)	(0.040)	(0.056)	(0.017)
Year & Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R^2	0.031	0.204	0.083	0.198	0.008	0.009	0.085	0.025	0.056	0.055	0.041
Observation	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934

Panel C: Effect of Small Institutional Ownership on CEO Compensation

Lagged Variables	Option Pay	Stock Pay	Equity Pay	Salary	Bonus	Cash Pay	Pension	Deferred Pay	Stock Incentive	Total LTIP	Total Pay
SI Ownership	0.073	-0.029	-0.006	-0.031	0.361	0.330	-1.493***	-1.377*	-1.894***	-3.270***	0.815
	(0.155)	(0.331)	(0.308)	(0.025)	(0.264)	(0.266)	(0.579)	(0.748)	(0.732)	(1.258)	(0.609)

(continued)

Lagged Variables	Option Pay	Stock Pay	Equity Pay	Salary	Bonus	Cash Pay	Pension	Deferred Pay	Stock Incentive	Total LTIP	Total Pay
Firm Size	0.332***	0.622***	0.968***	0.091***	-0.056	0.034	0.418**	0.454**	0.803	1.257	1.068***
	(0.068)	(0.116)	(0.133)	(0.010)	(0.054)	(0.055)	(0.171)	(0.228)	(0.683)	(0.957)	(0.221)
Growth Ratio	-0.537	0.083	-1.687*	-0.214***	0.860	0.646	0.793	0.074	-5.072*	-4.997	-1.728
	(0.533)	(1.909)	(0.937)	(0.077)	(0.983)	(0.980)	(0.909)	(2.230)	(2.593)	(3.603)	(2.526)
Cash Ratio	-0.177	0.419	0.168	-0.065**	-0.047	-0.112	0.458	1.195	-1.314	-0.118	-0.284
	(0.236)	(0.310)	(0.445)	(0.032)	(0.172)	(0.173)	(0.445)	(0.845)	(2.134)	(2.678)	(0.753)
Leverage	0.153	-0.133	0.037	-0.002	0.161	0.159	-0.070	-1.070	-0.198	-1.268	0.308
	(0.175)	(0.433)	(0.355)	(0.025)	(0.144)	(0.144)	(0.551)	(0.797)	(0.757)	(1.187)	(0.588)
M/B	0.209***	0.088	0.351***	0.007***	0.007	0.015*	0.002	0.010	0.170	0.181	0.451***
	(0.034)	(0.070)	(0.067)	(0.002)	(0.007)	(0.008)	(0.049)	(0.092)	(0.113)	(0.156)	(0.139)
ROA	0.041	0.073	0.098	0.055*	0.149	0.204*	-0.817*	-0.276	1.590	1.313	0.556
	(0.192)	(0.352)	(0.337)	(0.030)	(0.099)	(0.105)	(0.424)	(1.011)	(1.076)	(1.205)	(0.543)
Volatility	0.482**	-0.460	0.037	0.042	0.060	0.103	0.245	-0.544	0.355	-0.189	-0.075
	(0.193)	(0.457)	(0.479)	(0.039)	(0.210)	(0.213)	(0.567)	(1.179)	(1.202)	(1.381)	(0.688)
Return	0.067*	-0.103***	-0.034	-0.001	-0.019*	-0.019**	-0.050*	-0.041	-0.246***	-0.287***	-0.028
	(0.040)	(0.028)	(0.022)	(0.003)	(0.009)	(0.007)	(0.030)	(0.177)	(0.066)	(0.050)	(0.045)
Board Size	-0.013	0.012	-0.048*	-0.001	0.018	0.017	0.039	0.094*	0.050	0.145	0.046
	(0.014)	(0.035)	(0.025)	(0.002)	(0.013)	(0.012)	(0.060)	(0.053)	(0.078)	(0.119)	(0.055)
Independence	0.093	0.109	0.681**	0.008	-0.278	-0.269	-0.445	-0.534	-0.193	-0.726	-0.403
	(0.145)	(0.388)	(0.281)	(0.020)	(0.194)	(0.192)	(0.579)	(0.602)	(0.737)	(1.184)	(0.587)
Busyness	0.689*	-1.240*	-0.171	0.099	0.190	0.289**	-2.992*	-0.936	-1.529	-2.465*	0.515
	(0.383)	(0.705)	(0.781)	(0.076)	(0.124)	(0.134)	(1.555)	(1.129)	(1.644)	(1.474)	(1.115)
Board Ownership	0.321	-0.844***	-0.290	-0.055**	0.103	0.047	-0.925**	-0.643	-1.287**	-1.930	-0.744
	(0.351)	(0.308)	(0.709)	(0.027)	(0.097)	(0.096)	(0.465)	(0.813)	(0.534)	(1.291)	(0.864)
CEO Ownership	-0.187	-0.174	-0.601	-0.161	-0.096	-0.257	-0.890	-1.461	-0.088	-1.549	-1.271
	(0.349)	(0.548)	(0.611)	(0.110)	(0.338)	(0.366)	(1.024)	(1.692)	(1.167)	(2.453)	(1.156)
CEO Duality	-0.028	-0.002	-0.063	0.009	-0.042	-0.033	0.755***	0.206	0.284	0.490	-0.056
	(0.045)	(0.090)	(0.090)	(0.006)	(0.080)	(0.079)	(0.143)	(0.203)	(0.224)	(0.361)	(0.152)
CEO Age	-0.002**	-0.001	-0.003*	0.002***	-0.002**	0.001	0.022***	0.005	0.018***	0.024**	-0.002
	(0.001)	(0.002)	(0.002)	(0.000)	(0.001)	(0.001)	(0.003)	(0.003)	(0.005)	(0.011)	(0.003)
CEO Tenure	0.005	0.002	0.009	0.004***	0.019*	0.023**	0.163***	0.185***	-0.006	0.178***	0.066***
	(0.004)	(0.011)	(0.009)	(0.001)	(0.010)	(0.010)	(0.023)	(0.017)	(0.040)	(0.055)	(0.017)
Year & Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R^2	0.030	0.049	0.065	0.198	0.008	0.009	0.086	0.025	0.056	0.056	0.041
Observation	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934

TABLE 3 Instrumental Variable (IV) regression of CEO compensation components on large and small institutional ownership

Panels A and B reports the IV regression analysis estimates for *LI Ownership* (*fitted*) and *SI Ownership* (*fitted*), respectively, along with control variables. All controls and independent variables are lagged by one year. The estimates from the first-stage regression of *LI Ownership* and *SI Ownership* on *Russell 2000 Index* are provided in Panels A and B, respectively. The variable *Russell 2000 Index* is a dummy that is equal to one if the firm is added to the Russell 2000 Index in that year, and zero otherwise. The estimates from the second-stage regression of *Option Pay, Stock Pay, Equity Pay, Salary, Bonus, Cash Pay, Pension, Deferred Pay, Stock Incentive, Total LTIP,* and *Total Pay* on *LI Ownership* (*fitted*) are presented in Panel A and those on *SI Ownership* (*fitted*) are presented in Panel B. The variable definitions are given in Table A.1 in the Appendix. Firm and year fixed effects are included. Standard errors are clustered by firms. The superscripts ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Effect of Large Institutional Ownership on CEO Compensation, with the (Instrument: Russell 2000 Index)

Lagged Variables	First Stage	Option Pay	Stock Pay	Equity Pay	Salary	Bonus	Cash Pay	Pension	Deferred Pay	Stock Incentive	Total LTIP	Total Pay
Russell 2000 Index	0.008***											
	(0.002)											
LI Ownership (fitted)		-20.150***	-18.580**	-42.601***	1.467	-2.785*	-4.731**	-53.140	-35.030	-27.910	-62.941	-46.080***
		(6.706)	(8.565)	(14.060)	(1.587)	(1.659)	(2.355)	(35.620)	(32.341)	(25.261)	(48.620)	(16.501)
Constant	0.101***	-3.365***	-4.004**	-0.611***	-0.480**	-0.439	-5.351	-5.303	-7.766**	-13.070**	-9.282***	-1.020
	(0.009)	(0.972)	(1.592)	(0.194)	(0.214)	(0.287)	(4.257)	(3.929)	(3.531)	(6.067)	(1.922)	(0.764)
Controls, FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R^2	0.041	0.507	0.206	0.200	0.337	0.019	0.073	0.235	0.068	0.161	0.089	0.305
Observation	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934

Panel B: Effect of Small Institutional Ownership on CEO Compensation, with the (Instrument: Russell 2000 Index)

Lagged Variables	First Stage	Option Pay	Stock Pay	Equity Pay	Salary	Bonus	Cash Pay	Pension	Deferred Pay	Stock Incentive	Total LTIP	Total Pay
Russell 2000 Index	0.036***											
	(0.002)											
SI Ownership (fitted)		-1.409	5.108	-3.810	0.327	-0.621	-0.294	-11.840***	-7.803***	-6.218**	-14.020*	-6.846
		(1.537)	(3.950)	(5.194)	(0.314)	(0.780)	(0.883)	(2.358)	(2.621)	(2.634)	(8.162)	(8.133)
Constant	0.341***	-0.541*	-3.710***	-4.232***	-0.575***	-0.549	-1.123***	-6.655***	-6.163***	-8.451***	-14.610***	-2.881*
	(0.008)	(0.302)	(0.934)	(1.021)	(0.144)	(0.353)	(0.413)	(1.143)	(1.357)	(1.570)	(4.243)	(1.613)
Controls, FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R^2	0.199	0.028	0.050	0.067	0.480	0.018	0.076	0.198	0.077	0.183	0.190	0.040
Observation	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934

TABLE 4 Effect of large and small shareholders on CEO compensation components in cases with a greater need for monitoring

This table reports the fixed effects panel regression estimates for *LI Ownership* and *SI Ownership* for cases with a greater need for CEO monitoring. In Panel A, the analysis is conducted for firms with weak corporate governance (board independence in the bottom quartile). In Panel B, the test is conducted for firms with a long-tenured CEO (CEO tenure in the top quartile). In Panel C, the test is repeated for financially secure companies (with an Altman Z-score above 2.99). In Panel D, the analysis is conducted for multisegment firms (with a number of business segments in the top quartile). Lastly, in Panel E, the analysis is repeated for firms with a large free cash flow ratio, which is equal to net cash flow from operations minus capital expenditures over total assets (free cash flow ratio in the top quartile). The control variables in Table 2 are also included in the analysis. All controls and independent variables are lagged by one year. The dependent variables *Option Pay, Stock Pay, Equity Pay, Bonus, Cash Pay, Total Pay, Pension, Deferred Pay, Stock Incentive*, and *Total LTIP* are selected, because they provide significant results in the main analyses. Variable definitions are given in Table A.1 in the Appendix. Firm and year fixed effects are included. Standard errors are clustered by firms. The superscripts ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Firms with Weak Corporate Governance (Board Independence in the Bottom Quartile)

Lagged Variables	**Option Pay**	**Stock Pay**	**Equity Pay**	**Bonus**	**Cash Pay**	**Total Pay**	**Pension**	**Deferred Pay**	**Stock Incentive**	**Total LTIP**
LI Ownership	-0.715*	-1.570*	-1.127*	-0.399*	-0.426*	-3.102*				
	(0.369)	(0.904)	(0.675)	(0.219)	(0.220)	(1.873)				
SI Ownership							-0.620*	-1.221*	-1.625*	-3.166*
							(0.366)	(0.722)	(0.852)	(1.895)
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year, Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R^2	0.024	0.065	0.040	0.007	0.010	0.039	0.034	0.045	0.054	0.037
Observation	2,747	2,747	2,747	2,747	2,747	2,747	2,747	2,747	2,747	2,747

Panel B: Firms with a Long-Tenured CEO (CEO Tenure in the Top Quartile)

Lagged Variables	**Option Pay**	**Stock Pay**	**Equity Pay**	**Bonus**	**Cash Pay**	**Total Pay**	**Pension**	**Deferred Pay**	**Stock Incentive**	**Total LTIP**
LI Ownership	-1.364*	-4.736*	-2.057*	-1.890*	-1.580*	-4.955*				
	(0.705)	(2.831)	(1.211)	(1.008)	(0.910)	(2.894)				
SI Ownership							-1.652***	-1.356*	-1.946*	-2.441*
							(0.628)	(0.824)	(1.176)	(1.476)
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year, Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R^2	0.170	0.084	0.126	0.015	0.012	0.054	0.085	0.078	0.095	0.054
Observation	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529

Panel C: Financially Secure Firms (Altman Z-Score above 2.99)										
Lagged Variables	**Option Pay**	**Stock Pay**	**Equity Pay**	**Bonus**	**Cash Pay**	**Total Pay**	**Pension**	**Deferred Pay**	**Stock Incentive**	**Total LTIP**
LI Ownership	-0.586**	-0.361*	-1.125*	0.037	0.038	-1.562*				
	(0.293)	(0.211)	(0.604)	(0.059)	(0.068)	(0.862)				
SI Ownership							-1.449**	-2.863*	-3.188**	-5.465**
							(0.609)	(1.719)	(1.528)	(2.570)
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year, Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R^2	0.033	0.199	0.071	0.022	0.041	0.050	0.104	0.052	0.078	0.067
Observation	4,658	4,658	4,658	4,658	4,658	4,658	4,658	4,658	4,658	4,658
Panel D: Multisegment Firms (Number of Business Segments in the Top Quartile)										
Lagged Variables	**Option Pay**	**Stock Pay**	**Equity Pay**	**Bonus**	**Cash Pay**	**Total Pay**	**Pension**	**Deferred Pay**	**Stock Incentive**	**Total LTIP**
LI Ownership	-0.696**	-0.374*	-0.773**	-0.434***	-0.486***	-2.620**				
	(0.310)	(0.211)	(0.376)	(0.167)	(0.172)	(1.276)				
SI Ownership							-2.346***	-2.217*	-2.047**	-3.993*
							(0.845)	(1.234)	(0.922)	(2.054)
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year, Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R^2	0.035	0.205	0.109	0.023	0.024	0.034	0.131	0.039	0.105	0.056
Observation	2,556	2,556	2,556	2,556	2,556	2,556	2,556	2,556	2,556	2,556
Panel E: Firms with High Level of Free Cash Flow Problems (Free Cash Flow Ratio in the Top Quartile)										
Lagged Variables	**Option Pay**	**Stock Pay**	**Equity Pay**	**Bonus**	**Cash Pay**	**Total Pay**	**Pension**	**Deferred Pay**	**Stock Incentive**	**Total LTIP**
LI Ownership	-0.641*	-0.829*	-1.098*	-0.539*	-0.564*	-1.865*				
	(0.382)	(0.503)	(0.613)	(0.321)	(0.340)	(1.111)				
SI Ownership							-1.670***	-2.877*	-1.937**	-4.814**
							(0.549)	(1.634)	(0.982)	(1.979)
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year, Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R^2	0.048	0.053	0.084	0.015	0.014	0.060	0.106	0.027	0.064	0.055
Observation	2,558	2,558	2,558	2,558	2,558	2,558	2,558	2,558	2,558	2,558

INTERNET APPENDIX

TABLE IA.1 Descriptive Statistics of Large Shareholders for Different Cutoff Points

This table reports descriptive statistics for the number of large institutional shareholders when large institutional ownership is defined with different cutoff points. The 25th, 50th, and 75th percentile values are given, along with the minima and maxima. The cutoff points for large institutional ownership range from 5% to 15%.

	Number of Large Institutional Shareholders in a Firm				
Large Shareholders with at least	**Min**	**P25**	**P50**	**P75**	**Max**
5% Ownership	0	2	3	5	14
6% Ownership	0	2	2	3	13
7% Ownership	0	1	2	2	10
8% Ownership	0	1	1	2	9
9% Ownership	0	0	1	2	7
10% Ownership	0	0	1	1	6
11% Ownership	0	0	0	1	5
12% Ownership	0	0	0	0	5
13% Ownership	0	0	0	0	4
14% Ownership	0	0	0	0	3
15% Ownership	0	0	0	0	3

TABLE IA.2 Regression Analysis of CEO Compensation Components on Overall Institutional Ownership

This table reports the fixed effects panel regression estimates for *Overall Institutional Ownership*, where *Overall Institutional Ownership* is the sum of *LI Ownership* and *SI Ownership*. The analysis is conducted using the same components of CEO compensation. The control variables in Table 2 are also included in the analysis. All controls and independent variables are lagged by one year. Standard errors are clustered by firms. Variable definitions are given in Table A.1 in the Appendix. Year and firm fixed effects are included. The superscripts ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Lagged Variables	**Option Pay**	**Stock Pay**	**Equity Pay**	**Salary**	**Bonus**	**Cash Pay**	**Pension**	**Deferred Pay**	**Stock Incentive**	**Total LTIP**	**Total Pay**
Overall Inst.	-0.206	0.007	-0.374	-0.034	0.029	-0.005	-1.129**	-0.820	-0.952	-1.772**	-0.385
Ownership	(0.158)	(0.249)	(0.291)	(0.022)	(0.084)	(0.088)	(0.444)	(0.555)	(0.619)	(0.861)	(0.627)
Constant	-1.380***	-3.139***	-4.627***	-0.019	0.559	0.540	-2.728**	-2.582	-4.633	-7.215	-3.574**
	(0.508)	(0.859)	(0.993)	(0.071)	(0.394)	(0.396)	(1.262)	(3.981)	(4.707)	(6.574)	(1.678)
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R^2	0.030	0.049	0.065	0.198	0.007	0.008	0.086	0.025	0.056	0.056	0.040
Observation	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934

TABLE IA.3 Regression Analysis of CEO Compensation Components on Large and Small Institutional Ownership with Industry-Level Clustering

This table reports the fixed effects panel regression estimates for *LI Ownership* (Panel A) and *SI Ownership* (Panel B). The analysis is conducted using the same components of CEO compensation. The control variables in Table 2 are also included in the analysis. All controls and independent variables are lagged by one year. The main analysis is repeated using industry-level clustering for standard errors. Variable definitions are given in Table A.1 in the Appendix. Fixed effects are included. The superscripts ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Effect of Large Institutional Ownership on CEO Compensation

Lagged Variables	Option Pay	Stock Pay	Equity Pay	Salary	Bonus	Cash Pay	Pension	Deferred Pay	Stock Incentive	Total LTIP	Total Pay
LI	-0.408**	-0.201*	-0.600*	-0.024	-0.316*	-0.341**	-0.328	0.057	0.363	0.420	-1.444*
Ownership	(0.195)	(0.113)	(0.357)	(0.023)	(0.165)	(0.165)	(0.587)	(0.551)	(0.647)	(0.886)	(0.878)
Constant	-1.379***	-1.801***	-4.643***	-0.0244	0.605	0.581	-2.959**	-2.787	-4.908	-7.695	-3.487*
	(0.462)	(0.356)	(1.076)	(0.0728)	(0.423)	(0.425)	(1.393)	(4.083)	(4.693)	(6.726)	(1.976)
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Clustering	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry
Adjusted R^2	0.031	0.181	0.066	0.198	0.008	0.009	0.085	0.025	0.056	0.055	0.041
Observation	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934

Panel B: Effect of Small Institutional Ownership on CEO Compensation

Lagged Variables	Option Pay	Stock Pay	Equity Pay	Salary	Bonus	Cash Pay	Pension	Deferred Pay	Stock Incentive	Total LTIP	Total Pay
SI	0.073	-0.029	-0.006	-0.031	0.361	0.330	-1.493**	-1.377*	-1.894**	-3.270***	0.815
Ownership	(0.153)	(0.379)	(0.338)	(0.025)	(0.258)	(0.262)	(0.610)	(0.820)	(0.742)	(1.125)	(0.609)
Constant	-1.438***	-3.134***	-4.717***	-0.023	0.524	0.500	-2.826**	-2.619	-4.641	-7.261	-3.762*
	(0.471)	(1.009)	(1.078)	(0.072)	(0.398)	(0.402)	(1.379)	(3.997)	(4.652)	(6.620)	(1.957)
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Clustering	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry
Adjusted R^2	0.030	0.049	0.065	0.198	0.008	0.009	0.086	0.025	0.056	0.056	0.041
Observation	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934

TABLE IA.4 Further Instrumental Variable (IV) Regression Analyses

This table reports the IV regression analysis estimates for *LI Ownership* (*fitted*) in Panels A and C, and those of *SI Ownership* (*fitted*) in Panels B and D, along with control variables. All controls and independent variables are lagged by one year. The estimates from the first-stage regression of *LI Ownership* and *SI Ownership* on *Net Asset Growth* and on illiquidity measures (i.e. *Amihud*, *Volume*, and *Zero*) are provided in Panels A and B and Panels C and D, respectively. The variable *Net Asset Growth* is the difference in net assets (in billions of dollars) between the current and the prior year, scaled by net assets in the prior year; *Amihud* is the yearly average of the ratio of absolute daily returns to the daily trading volume of a firm's stocks; *Volume* is the natural logarithm of the total trading volume of a firm's stocks; and *Zero* is the proportion of days with zero stock returns for a firm in a year. The estimates from the second-stage regression of *Option Pay, Stock Pay, Equity Pay, Salary, Bonus, Cash Pay, Pension, Deferred Pay, Stock Incentive, Total LTIP,* and *Total Pay* on *LI Ownership* (*fitted*) are presented in Panels A and C, and those for *SI Ownership* (*fitted*) are presented in Panels B and D. Variable definitions are given in Table A.1 in the Appendix. Firm and year fixed effects are included. Standard errors are clustered by firms. The ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Effect of Large Institutional Ownership on CEO Compensation (Instrument: Net Asset Growth)

Lagged Variables	First Stage	Option Pay	Stock Pay	Equity Pay	Salary	Bonus	Cash Pay	Pension	Deferred Pay	Stock Incentive	Total LTIP	Total Pay
Net Asset Growth	0.169**											
	(0.078)											
LI Ownership (fitted)		-3.423*	-29.860**	-18.710*	-0.138	-6.653**	-6.791**	6.582	-14.960	-133.6	-189.6	-56.980**
		(2.063)	(12.810)	(10.750)	(0.503)	(3.121)	(3.185)	(8.608)	(11.390)	(86.340)	(118.1)	(22.401)
Constant	0.110***	-0.227	-2.509	-6.921***	-0.455***	0.128	-0.327	-12.290***	-7.671***	3.512	1.495	-7.968**
	(0.010)	(0.389)	(1.655)	(1.490)	(0.0974)	(0.373)	(0.400)	(1.669)	(2.056)	(10.79)	(15.06)	(3.193)
Controls, FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R^2	0.040	0.027	0.164	0.147	0.494	0.124	0.276	0.200	0.057	0.077	0.058	0.260
Observation	11,132	11,132	11,132	11,132	11,132	11,132	11,132	11,132	11,132	11,132	11,132	11,132

Panel B: Effect of Small Institutional Ownership on CEO Compensation (Instrument: Net Asset Growth)

Lagged Variables	First Stage	Option Pay	Stock Pay	Equity Pay	Salary	Bonus	Cash Pay	Pension	Deferred Pay	Stock Incentive	Total LTIP	Total Pay
Net Asset Growth	0.119*											
	(0.072)											
SI Ownership (fitted)		91.230	143.2	-94.150	-0.196	4.419	5.311	-17.120*	-52.880***	-74.560***	-127.4***	19.550
		(196.8)	(169.4)	(210.4)	(1.595)	(3.524)	(3.593)	(9.739)	(16.510)	(19.510)	(32.780)	(14.401)
Constant	0.352***	-36.110	-59.970	26.540	-0.402	-2.220	-3.010**	-4.936	10.040*	13.790*	23.830**	-22.220***
	(0.010)	(74.590)	(63.701)	(79.720)	(0.575)	(1.435)	(1.465)	(3.547)	(5.812)	(7.165)	(11.960)	(5.581)
Controls, FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R^2	0.194	0.099	0.151	0.101	0.495	0.153	0.162	0.182	0.107	0.104	0.176	0.268
Observation	11,132	11,132	11,132	11,132	11,132	11,132	11,132	11,132	11,132	11,132	11,132	11,132

Panel C: Effect of Large Institutional Ownership on CEO Compensation (Instrument: Illiquidity Measures)												
Lagged Variables	**First Stage**	**Option Pay**	**Stock Pay**	**Equity Pay**	**Salary**	**Bonus**	**Cash Pay**	**Pension**	**Deferred Pay**	**Stock Incentive**	**Total LTIP**	**Total Pay**
Amihud	-0.003*											
	(0.002)											
Volume	0.009***											
	(0.001)											
Zero	-0.079**											
	(0.036)											
LI Ownership (fitted)		-3.576**	-21.440***	-22.050**	-2.113	-2.860**	-3.286*	1.086	50.830	9.935	60.770	-33.690**
		(1.763)	(8.232)	(9.560)	(1.334)	(1.449)	(1.799)	(24.010)	(40.88)	(16.460)	(45.570)	(16.681)
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Fixed Effect	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R^2	0.042	0.189	0.104	0.027	0.177	0.209	0.032	0.208	0.135	0.161	0.158	0.074
Observation	11,132	11,132	11,132	11,132	11,132	11,132	11,132	11,132	11,132	11,132	11,132	11,132
Panel D: Effect of Small Institutional Ownership on CEO Compensation (Instrument: Illiquidity Measures)												
Lagged Variables	**First Stage**	**Option Pay**	**Stock Pay**	**Equity Pay**	**Salary**	**Bonus**	**Cash Pay**	**Pension**	**Deferred Pay**	**Stock Incentive**	**Total LTIP**	**Total Pay**
Amihud	-0.003*											
	(0.002)											
Volume	0.003***											
	(0.001)											
Zero	-0.021											
	(0.039)											
SI Ownership (fitted)		-3.795	10.480	-3.783	-5.934	-1.676	-3.987	-81.760**	-113.7**	-60.990**	-174.7**	-24.700
		(3.240)	(21.150)	(17.35)	(5.914)	(3.692)	(4.211)	(36.240)	(46.250)	(28.451)	(67.801)	(26.311)
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Fixed Effect	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R^2	0.179	0.198	0.135	0.411	0.088	0.005	0.008	0.104	0.147	0.269	0.213	0.216
Observation	11,132	11,132	11,132	11,132	11,132	11,132	11,132	11,132	11,132	11,132	11,132	11,132

TABLE IA.5 Regression Analysis of CEO Compensation Components on Large and Small Institutional Ownership for the Period 2002–2006

This table reports the fixed effects panel regression estimates for *LI Ownership* (Panel A) and *SI Ownership* (Panel B). The control variables in Table 2 are also included in the analysis. All controls and independent variables are lagged by one year. The main analysis is repeated for the period 2002–2006 to examine the effect of regulatory changes during that period on the relation between CEO compensation components and large (small) institutional ownership. The analysis is conducted using the same components of CEO compensation. Variable definitions are given in Table A.1 in the Appendix. Firm and year fixed effects are included. Standard errors are clustered by firms. The superscripts ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Effect of Large Institutional Ownership on CEO Compensation for the Period 2002–2006

Lagged Variables	Option Pay	Stock Pay	Equity Pay	Salary	Bonus	Cash Pay	Pension	Deferred Pay	Stock Incentive	Total LTIP	Total Pay
LI	0.044	-0.016	0.148	-0.013	0.094	0.081	-0.481	0.334	0.228	0.561	0.016
Ownership	(0.456)	(0.280)	(0.367)	(0.030)	(0.194)	(0.202)	(0.601)	(0.777)	(0.550)	(1.106)	(1.021)
Constant	-1.583	-0.964	-3.112***	0.213***	1.110	1.323	1.999	-2.649	-0.989	-3.640	0.283
	(1.663)	(0.866)	(1.151)	(0.082)	(1.500)	(1.518)	(1.572)	(2.136)	(1.746)	(3.184)	(5.017)
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year & Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R^2	0.034	0.191	0.376	0.176	0.088	0.080	0.154	0.065	0.108	0.098	0.017
Observation	3,907	3,907	3,907	3,907	3,907	3,907	3,907	3,907	3,907	3,907	3,907

Panel B: Effect of Small Institutional Ownership on CEO Compensation for the Period 2002–2006

Lagged Variables	Option Pay	Stock Pay	Equity Pay	Salary	Bonus	Cash Pay	Pension	Deferred Pay	Stock Incentive	Total LTIP	Total Pay
SI	0.073	-0.258	0.179	0.007	-0.024	-0.016	0.281	-1.261	-0.523	-1.292	0.771
Ownership	(0.424)	(0.314)	(0.355)	(0.027)	(0.212)	(0.217)	(0.559)	(1.028)	(0.479)	(1.372)	(1.023)
Constant	-1.599	-0.890	-9.331***	0.209**	1.126	1.336	1.868	-8.289***	-0.814	-13.190***	0.046
	(1.702)	(0.854)	(1.180)	(0.082)	(1.477)	(1.496)	(1.587)	(2.190)	(1.723)	(3.167)	(5.152)
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year & Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R^2	0.034	0.191	0.308	0.176	0.087	0.080	0.154	0.054	0.108	0.082	0.017
Observation	3,907	3,907	3,907	3,907	3,907	3,907	3,907	3,907	3,907	3,907	3,907

TABLE IA.6 Effects of Large and Small Institutional Investors on CEO Compensation Components

This table reports the fixed effects panel regression estimates for the number of large institutional investors, *LI Investor Number* (Panel A), and small institutional investors, *SI Investor Number* (Panel B). The control variables in Table 2 are also included in the analysis. All controls and independent variables are lagged by one year. The variable *LI Investor Number* (*SI Investor Number*) is the total number of large (small) institutional investors with at least (less than) 10% ownership in a firm. The analysis is conducted using different components of CEO compensation. The variable *Option Pay* is the Black–Scholes value of new options for the CEO in a year; *Stock Pay* is the dollar value of new stocks paid to the CEO in a year; *Equity Pay* is the sum of *Option Pay* and *Stock Pay*; *Salary* is the dollar value of the cash salary paid to the CEO in a year; *Bonus* is the dollar value of cash bonuses paid to the CEO in a year; *Cash Pay* is the sum of *Salary* and *Bonus*; *Pension* is the present dollar value of the CEO's pension benefits; *Deferred Pay* is the present dollar value of total deferred pay to the CEO; *Stock Incentive* is the present dollar value of unearned unvested stock awards to the CEO; *Total LTIP* is the sum of *Deferred Pay* and *Stock Incentive*; and *Total Pay* is the dollar value of total compensation paid to the CEO in a year. Variable definitions are given in Table A.1 in the Appendix. Firm and year fixed effects are included. Standard errors are clustered by firms. The superscripts ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Effect of Large Institutional Investors on CEO Compensation

Lagged Variables	Option Pay	Stock Pay	Equity Pay	Salary	Bonus	Cash Pay	Pension	Deferred Pay	Stock Incentive	Total LTIP	Total Pay
LI Investor	-0.041*	-0.042*	-0.074*	-0.003	-0.037**	-0.040***	-0.100	-0.047	0.039	-0.008	-0.152**
Number	(0.024)	(0.021)	(0.044)	(0.003)	(0.015)	(0.015)	(0.076)	(0.082)	(0.079)	(0.115)	(0.071)
Constant	-1.396**	-1.782***	-4.657***	-0.024	0.597	0.572	-2.917**	-2.741	-4.895	-7.635	-3.540**
	(0.598)	(0.413)	(0.996)	(0.071)	(0.400)	(0.401)	(1.277)	(4.056)	(4.771)	(6.681)	(1.690)
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year & Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R^2	0.030	0.182	0.066	0.198	0.008	0.009	0.086	0.025	0.056	0.055	0.041
Observation	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934

Panel B: Effect of Small Institutional Investors on CEO Compensation

Lagged Variables	Option Pay	Stock Pay	Equity Pay	Salary	Bonus	Cash Pay	Pension	Deferred Pay	Stock Incentive	Total LTIP	Total Pay
SI Investor	-0.002	0.001	-0.006	-0.002	0.024	0.022	-0.105**	-0.101**	-0.124**	-0.225***	0.050
Number	(0.010)	(0.022)	(0.021)	(0.001)	(0.019)	(0.019)	(0.042)	(0.051)	(0.052)	(0.086)	(0.042)
Constant	-1.426***	-3.140***	-4.708***	-0.023	0.528	0.504	-2.838**	-2.625	-4.671	-7.296	-3.744**
	(0.508)	(0.859)	(0.994)	(0.071)	(0.393)	(0.395)	(1.271)	(1.714)	(4.720)	(6.578)	(1.690)
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year & Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R^2	0.030	0.049	0.065	0.198	0.008	0.009	0.087	0.026	0.056	0.056	0.041
Observation	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934

TABLE IA.7 Regression Analysis of CEO Compensation Components on Large Institutional Ownership Using *Institutional Ownership HHI*

This table reports the fixed effects panel regression estimates for *Institutional Ownership HHI* using a subsample of firms that are in the top quartile of the Herfindahl index of institutional ownership concentration. This subsample contains only firms with high ownership concentration. Hence, *Institutional Ownership HHI* represents large institutional ownership in this case. The analysis runs from 2006 to 2013 due to data availability. The variable *Institutional Ownership HHI* is the independent variable and it is the Herfindahl index of institutional ownership concentration. The analysis is conducted using different components of CEO compensation. The variable *Option Pay* is the Black–Scholes value of new options for the CEO in a year; *Stock Pay* is the dollar value of new stocks paid to the CEO in a year; *Equity Pay* is the sum of *Option Pay* and *Stock Pay*; *Salary* is the dollar value of the cash salary paid to the CEO in a year; *Bonus* is the dollar value of cash bonuses paid to the CEO in a year; *Cash Pay* is the sum of *Salary* and *Bonus*; *Pension* is the present dollar value of the CEO's pension benefits; *Deferred Pay* is the present dollar value of total deferred pay to the CEO; *Stock Incentive* is the present dollar value of unearned unvested stock awards to the CEO; *Total LTIP* is the sum of *Deferred Pay* and *Stock Incentive*; and *Total Pay* is the dollar value of total compensation paid to the CEO in a year. The control variables in Table 2 are also included in the analysis. Firm and year fixed effects are included. Standard errors are clustered by firms. The superscripts ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	Option Pay	**Stock Pay**	**Equity Pay**	**Salary**	**Bonus**	**Cash Pay**	**Pension**	**Deferred Pay**	**Stock Incentive**	**Total LTIP**	**Total Pay**
Institutional	-0.629**	-1.178**	-1.693**	-0.014	0.040	0.026	-0.420	0.428	0.022	0.512	-3.650**
Ownership HHI	(0.257)	(0.556)	(0.737)	(0.048)	(0.233)	(0.247)	(0.346)	(0.265)	(0.334)	(0.450)	(1.534)
Constant	-1.344	-0.247	-2.161	0.129	1.416	1.544	-0.318	-0.434	1.159	0.715	2.241
	(0.916)	(0.831)	(1.358)	(0.100)	(1.476)	(1.481)	(1.459)	(0.897)	(1.366)	(1.521)	(2.463)
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year & Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R^2	0.038	0.025	0.035	0.137	0.007	0.005	0.100	0.047	0.026	0.049	0.017
Observation	2,564	2,564	2,564	2,564	2,564	2,564	2,564	2,564	2,564	2,564	2,564

TABLE IA.8 Effects of Large and Small Institutional Ownership on Excess CEO Compensation, First-Stage Results

This table presents the results of the first-stage baseline regressions predicting CEO pay components as a function of *Firm Size*, *Growth Ratio*, *Cash Ratio*, *Leverage*, *M/B*, *ROA*, *Volatility*, *Return*, *Board Size*, *Independence*, *Busyness*, *Board Ownership*, *CEO Ownership*, *CEO Duality*, *CEO Age*, and *CEO Tenure*. All the economic determinants in the first-stage are lagged by one year. Variable definitions are given in Table A.1 in the Appendix. Firm and year fixed effects are included. Standard errors are clustered by firms. The superscripts ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Lagged Variables	Option Pay	Stock Pay	Equity Pay	Salary	Bonus	Cash Pay	Pension	Deferred Pay	Stock Incentive	Total LTIP	Total Pay
Firm Size	0.332***	0.622***	0.968***	0.091***	-0.054	0.038	0.409**	0.446	0.792	1.238	1.073***
	(0.068)	(0.115)	(0.133)	(0.010)	(0.054)	(0.054)	(0.170)	(0.576)	(0.681)	(0.953)	(0.220)
Growth Ratio	-0.534	0.082	-1.687*	-0.215***	0.875	0.660	0.732	0.017	-5.149**	-5.131	-1.695
	(0.533)	(1.913)	(0.936)	(0.076)	(0.983)	(0.979)	(0.914)	(2.172)	(2.590)	(3.592)	(2.530)
Cash Ratio	-0.179	0.420	0.168	-0.064**	-0.058	-0.122	0.502	1.235	-1.258	-0.023	-0.308
	(0.236)	(0.311)	(0.445)	(0.032)	(0.173)	(0.174)	(0.445)	(1.379)	(2.125)	(2.682)	(0.755)
Leverage	0.154	-0.133	0.037	-0.002	0.165	0.162	-0.085	-1.084	-0.217	-1.301	0.316
	(0.174)	(0.434)	(0.355)	(0.025)	(0.145)	(0.145)	(0.551)	(0.872)	(0.759)	(1.193)	(0.588)
M/B	0.209***	0.088	0.351***	0.007***	0.005	0.012	0.010	0.018	0.181	0.199	0.447***
	(0.034)	(0.071)	(0.067)	(0.002)	(0.007)	(0.008)	(0.049)	(0.121)	(0.113)	(0.156)	(0.139)
ROA	0.039	0.074	0.098	0.056*	0.137	0.193*	-0.764*	-0.227	1.657	1.430	0.527
	(0.193)	(0.348)	(0.337)	(0.031)	(0.093)	(0.099)	(0.419)	(0.678)	(1.087)	(1.214)	(0.535)
Volatility	0.477**	-0.458	0.037	0.045	0.033	0.078	0.353	-0.444	0.493	0.049	-0.134
	(0.192)	(0.456)	(0.478)	(0.038)	(0.218)	(0.220)	(0.550)	(0.662)	(1.211)	(1.399)	(0.688)
Return	0.062*	-0.103***	-0.034	-0.001	-0.018*	-0.018**	-0.052*	-0.042	-0.248***	-0.291***	-0.028
	(0.040)	(0.028)	(0.022)	(0.003)	(0.010)	(0.007)	(0.031)	(0.036)	(0.065)	(0.048)	(0.044)
Board Size	-0.013	0.012	-0.048*	-0.001	0.018	0.016	0.042	0.097	0.055	0.152	0.044
	(0.014)	(0.034)	(0.025)	(0.002)	(0.013)	(0.012)	(0.060)	(0.075)	(0.078)	(0.120)	(0.054)
Independence	0.097	0.108	0.681**	0.006	-0.261	-0.254	-0.515	-0.599	-0.282	-0.880	-0.365
	(0.145)	(0.383)	(0.282)	(0.020)	(0.193)	(0.191)	(0.591)	(0.814)	(0.734)	(1.197)	(0.580)
Busyness	0.690*	-1.240*	-0.171	0.098	0.195	0.293**	-3.013*	-0.956*	-1.556	-2.512*	0.526
	(0.384)	(0.704)	(0.781)	(0.075)	(0.123)	(0.134)	(1.554)	(0.544)	(1.646)	(1.474)	(1.113)
Board	0.321	-0.843***	-0.290	-0.055**	0.098	0.043	-0.907*	-0.628	-1.265**	-1.892	-0.753
Ownership	(0.351)	(0.308)	(0.708)	(0.028)	(0.096)	(0.095)	(0.468)	(0.969)	(0.536)	(1.292)	(0.868)
CEO Ownership	-0.190	-0.173	-0.600	-0.160	-0.111	-0.271	-0.826	-1.402	-0.007	-1.410	-1.305
	(0.348)	(0.547)	(0.610)	(0.110)	(0.331)	(0.360)	(1.022)	(1.766)	(1.168)	(2.434)	(1.152)
CEO Duality	-0.028	-0.002	-0.063	0.008	-0.041	-0.032	0.753***	0.204	0.280	0.484	-0.055
	(0.045)	(0.090)	(0.090)	(0.006)	(0.080)	(0.079)	(0.143)	(0.260)	(0.224)	(0.362)	(0.152)

(continued)

Lagged Variables	Option Pay	Stock Pay	Equity Pay	Salary	Bonus	Cash Pay	Pension	Deferred Pay	Stock Incentive	Total LTIP	Total Pay
CEO Age	-0.002**	-0.001	-0.003*	0.002***	-0.002**	0.001	0.022***	0.005	0.019***	0.025**	-0.001
	(0.001)	(0.001)	(0.002)	(0.000)	(0.001)	(0.001)	(0.003)	(0.008)	(0.005)	(0.011)	(0.002)
CEO Tenure	0.005	0.002	0.009	0.003***	0.020*	0.025**	0.163***	0.185***	-0.006	0.178***	0.066***
	(0.004)	(0.011)	(0.009)	(0.001)	(0.011)	(0.010)	(0.023)	(0.034)	(0.040)	(0.055)	(0.017)
Constant	-1.430***	-3.138***	-4.717***	-0.027	0.566	0.538	-3.000**	-2.780	-4.863	-7.642	-3.666**
	(0.509)	(0.865)	(0.998)	(0.071)	(0.402)	(0.403)	(1.286)	(4.031)	(4.774)	(6.664)	(1.701)
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R^2	0.030	0.049	0.065	0.197	0.007	0.008	0.085	0.025	0.056	0.055	0.040
Observation	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934

TABLE IA.9 Effects of Large and Small Institutional Ownership on Excess CEO Compensation—Second Stage Results

This table reports the fixed effects panel regression estimates. In the first-stage (see Table IA.8 in the Internet Appendix), baseline regressions predict CEO pay components as a function of *Firm Size*, *Growth Ratio*, *Cash Ratio*, *Leverage*, *M/B*, *ROA*, *Volatility*, *Return*, *Board Size*, *Independence*, *Busyness*, *Board Ownership*, *CEO Ownership*, *CEO Duality*, *CEO Age*, and *CEO Tenure*. Panels A and B present the results of the regressions explaining excess CEO pay components, defined as residuals from the respective baseline regressions. The independent variables are *LI Ownership* (Panel A) and *SI Ownership* (Panel B). All the economic determinants in the first-stage regression and the independent variables in the second-stage regression are lagged by one year. Variable definitions are given in Table A.1 in the Appendix. Firm and year fixed effects are included. Standard errors are clustered by firms. The superscripts ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Effect of Large Institutional Ownership on Excess CEO Compensation

Lagged Variables	Option Pay	Stock Pay	Equity Pay	Salary	Bonus	Cash Pay	Pension	Deferred Pay	Stock Incentive	Total LTIP	Total Pay
LI Ownership	-0.397**	-0.203*	-0.587*	-0.023	-0.308**	-0.077**	0.006	0.022	-0.036	0.025	-1.416*
	(0.198)	(0.115)	(0.347)	(0.021)	(0.152)	(0.038)	(0.036)	(0.050)	(0.052)	(0.053)	(0.854)
Constant	0.028*	-0.367***	0.041	0.002	0.021	0.327***	0.235***	0.266***	0.265***	0.256***	0.105
	(0.015)	(0.017)	(0.044)	(0.005)	(0.018)	(0.010)	(0.003)	(0.010)	(0.012)	(0.011)	(0.109)
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R^2	0.003	0.063	0.003	0.003	0.003	0.002	0.001	0.028	0.009	0.008	0.001
Observation	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934

Panel B: Effect of Small Institutional Ownership on Excess CEO Compensation

Lagged Variables	Option Pay	Stock Pay	Equity Pay	Salary	Bonus	Cash Pay	Pension	Deferred Pay	Stock Incentive	Total LTIP	Total Pay
SI Ownership	-0.145	0.001	-0.375	-0.023	0.335	-0.030	-0.082**	-0.150***	-0.098*	-0.161***	-0.557
	(0.144)	(0.137)	(0.262)	(0.026)	(0.397)	(0.042)	(0.038)	(0.044)	(0.051)	(0.048)	(0.639)
Constant	0.023	-0.289***	0.059	0.003	-0.053	0.266***	0.250***	0.282***	0.277***	0.332***	0.089
	(0.046)	(0.040)	(0.083)	(0.005)	(0.082)	(0.011)	(0.007)	(0.012)	(0.013)	(0.010)	(0.157)
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R^2	0.002	0.003	0.003	0.003	0.001	0.025	0.001	0.030	0.009	0.006	0.003
Observation	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934

TABLE IA.10 Effects of Short-Term and Long-Term Institutional Ownership on CEO Compensation Components

This table reports the fixed effects panel regression estimates for *Short-Term (ST) Institutional Ownership* (Panel A) and *Long-Term (LT) Institutional Ownership* (Panel B). The control variables in Table 2 are also included in the analysis. All controls and independent variables are lagged by one year. I use the churn ratio defined by Gaspar, Massa, and Matos (2005) to identify institutional investment horizons. The variable *Short-Term Institutional Ownership* (*Long-Term Institutional Ownership*) is the total fraction of outstanding shares owned only by short-term (long-term) investors that are large (small) institutional shareholders. The analysis is conducted using different components of CEO compensation. The variable *Option Pay* is the Black–Scholes value of new options for the CEO in a year; *Stock Pay* is the dollar value of new stocks paid to the CEO in a year; *Equity Pay* is the sum of *Option Pay* and *Stock Pay*; *Salary* is the dollar value of the cash salary paid to the CEO in a year; *Bonus* is the dollar value of cash bonuses paid to the CEO in a year; *Cash Pay* is the sum of *Salary* and *Bonus*; *Pension* is the present dollar value of the CEO's pension benefits; *Deferred Pay* is the present dollar value of total deferred pay to the CEO; *Stock Incentive* is the present dollar value of unearned unvested stock awards to the CEO; *Total LTIP* is the sum of *Deferred Pay* and *Stock Incentive*; and *Total Pay* is the dollar value of total compensation paid to the CEO in a year. Variable definitions are given in Table A.1 in the Appendix. Firm and year fixed effects are included. Standard errors are clustered by firms. The superscripts ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Effect of Short-Term Institutional Ownership on CEO Compensation

Lagged Variables	**Option Pay**	**Stock Pay**	**Equity Pay**	**Salary**	**Bonus**	**Cash Pay**	**Pension**	**Deferred Pay**	**Stock Incentive**	**Total LTIP**	**Total Pay**
ST Institutional	-0.048*	-0.055*	-0.065*	-0.001	-0.019*	-0.020*	-0.105	-0.083	0.132	0.048	-0.134*
Ownership	(0.026)	(0.031)	(0.036)	(0.003)	(0.011)	(0.012)	(0.180)	(0.103)	(0.232)	(0.253)	(0.077)
Constant	-2.286**	-3.024***	-4.820***	-0.080	0.532	0.486	-4.242	1.756	-12.330	-10.580	-14.820***
	(1.049)	(1.132)	(0.981)	(0.139)	(0.835)	(0.850)	(3.493)	(1.783)	(7.907)	(7.518)	(1.258)
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year & Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R^2	0.049	0.189	0.096	0.259	0.012	0.013	0.061	0.026	0.095	0.054	0.023
Observation	7,072	7,072	7,072	7,072	7,072	7,072	7,072	7,072	7,072	7,072	7,072

Panel B: Effect of Long-Term Institutional Ownership on CEO Compensation

Lagged Variables	**Option Pay**	**Stock Pay**	**Equity Pay**	**Salary**	**Bonus**	**Cash Pay**	**Pension**	**Deferred Pay**	**Stock Incentive**	**Total LTIP**	**Total Pay**
LT Institutional	0.190	0.082	0.271	-0.037	0.001	-0.036	-1.215*	-1.664*	-2.870**	-4.533***	0.774
Ownership	(0.266)	(0.635)	(0.338)	(0.043)	(0.106)	(0.115)	(0.673)	(0.886)	(1.349)	(1.713)	(1.000)
Constant	-1.128**	-4.265***	-3.044***	-0.032	-0.103	-0.136	-4.332***	1.076	-0.336	0.740	-4.522**
	(0.522)	(1.292)	(0.620)	(0.072)	(0.199)	(0.217)	(1.446)	(1.713)	(2.737)	(3.181)	(2.209)
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year & Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R^2	0.037	0.054	0.134	0.235	0.018	0.019	0.093	0.041	0.079	0.081	0.048
Observation	4,274	4,274	4,274	4,274	4,274	4,274	4,274	4,274	4,274	4,274	4,274

TABLE IA.11 Cross-Sectional Logit and Logistic Regressions of CEO Pay Components on Large and Small Institutional Ownership

This table reports the cross-sectional logit and logistic regression estimates for the average value of *LI Ownership* (Panel A) and *SI Ownership* (Panel B). Dummies for *Option Pay*, *Stock Pay*, *Equity Pay*, *Salary*, *Bonus*, *Cash Pay*, *Pension*, *Deferred Pay*, *Stock Incentive*, *Total LTIP*, and *Total Pay* are constructed as dependent variables. Each dummy variable is equal to one if the mean is greater than the median value for that CEO compensation measure for a firm between 2006 and 2015, and zero otherwise. This represents whether that CEO compensation component has a relatively higher value in the sample period. The control variables in Table 2 as the entire period averages are also included in the analysis. Variable definitions are given in Table A.1 in the Appendix. Standard errors are clustered by firms. The betas, odds ratios (exponential of betas), and standard errors of the betas are reported. The superscripts ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Estimates from Logit (Beta) and Logistic (Odds Ratio) Regressions with Average *LI Ownership*

		Dummy Variables for the Mean–Median Differences of CEO Compensation Components										
	Average Values	**Option Pay**	**Stock Pay**	**Equity Pay**	**Salary**	**Bonus**	**Cash Pay**	**Pension**	**Deferred Pay**	**Stock Incentive**	**Total LTIP**	**Total Pay**
Betas	LI	-2.380***	-1.277*	-1.742*	-1.433	-2.526*	-1.448*	0.042	-1.466	-0.286	-0.799	-2.896*
	Ownership	(0.912)	(0.740)	(0.994)	(1.123)	(1.505)	(0.858)	(0.937)	(1.247)	(0.604)	(0.604)	(1.626)
Odds Ratios	LI Ownership	0.093***	0.279*	0.175*	0.239	0.080*	0.235*	1.043	0.231	0.751	0.450	0.055*
	Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
	Pseudo-R^2	0.161	0.130	0.161	0.105	0.244	0.080	0.137	0.215	0.120	0.090	0.240
	Observation	1,747	1,747	1,747	1,747	1,747	1,747	1,747	1,747	1,747	1,747	1,747

Panel B: Estimates from Logit (Beta) and Logistic (Odds Ratio) Regressions with Average *SI Ownership*

		Dummy Variables for the Mean–Median Differences of CEO Compensation Components										
	Average Values	**Option Pay**	**Stock Pay**	**Equity Pay**	**Salary**	**Bonus**	**Cash Pay**	**Pension**	**Deferred Pay**	**Stock Incentive**	**Total LTIP**	**Total Pay**
Betas	SI	1.582	-0.236	1.018	-1.575	-1.623	-0.743	-1.671*	-2.785*	-1.211*	-1.081*	-0.757
	Ownership	(1.401)	(1.069)	(1.485)	(1.750)	(2.850)	(1.139)	(1.016)	(1.471)	(0.633)	(0.626)	(2.864)
Odds Ratios	SI Ownership	4.865	0.790	2.768	0.207	0.197	0.476	0.188*	0.062*	0.298*	0.339*	0.469
	Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
	Pseudo-R^2	0.157	0.128	0.158	0.104	0.238	0.078	0.133	0.216	0.079	0.061	0.232
	Observation	1,747	1,747	1,747	1,747	1,747	1,747	1,747	1,747	1,747	1,747	1,747

TABLE IA.12 Regression Analysis of CEO Compensation Components on Active Investor Ownership

This table reports the fixed effects panel regression estimates for *Active Investor Ownership*, along with control variables. All controls and independent variable are lagged by one year. The variable *Active Investor Ownership* is the total fraction of outstanding shares owned by active investors, described by Clifford and Lindsey (2016). The analysis is conducted using different components of CEO compensation: *Option Pay, Stock Pay, Equity Pay, Salary, Bonus, Cash Pay, Pension, Deferred Pay, Stock Incentive*, *Total LTIP,* and *Total Pay.* Variable definitions are given in Table A.1 in the Appendix. Firm and year fixed effects are included. Standard errors are clustered by firms. The superscripts ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Lagged Variables	Option Pay	Stock Pay	Equity Pay	Salary	Bonus	Cash Pay	Pension	Deferred Pay	Stock Incentive	Total LTIP	Total Pay
Active Investor	-0.772	-0.417	-2.108	-0.078	-0.709	-0.788	1.646	-8.581	-0.877	-9.457	-0.975
Ownership	(1.230)	(2.321)	(2.518)	(0.206)	(1.215)	(1.199)	(3.904)	(5.279)	(5.180)	(8.001)	(4.118)
Firm Size	0.335***	0.623***	0.975***	0.091***	-0.051	0.039	0.404**	0.475	0.795	1.270	1.076***
	(0.069)	(0.116)	(0.134)	(0.010)	(0.054)	(0.054)	(0.168)	(0.582)	(0.689)	(0.964)	(0.223)
Growth Ratio	-0.533	0.082	-1.685*	-0.215***	0.876	0.660	0.730	0.0271	-5.148**	-5.121	-1.694
	(0.533)	(1.913)	(0.936)	(0.076)	(0.983)	(0.980)	(0.914)	(2.173)	(2.590)	(3.591)	(2.529)
Cash Ratio	-0.179	0.420	0.168	-0.064**	-0.058	-0.122	0.502	1.236	-1.258	-0.022	-0.307
	(0.236)	(0.311)	(0.445)	(0.032)	(0.173)	(0.174)	(0.445)	(1.379)	(2.125)	(2.681)	(0.755)
Leverage	0.152	-0.134	0.032	-0.002	0.163	0.160	-0.081	-1.105	-0.219	-1.324	0.314
	(0.174)	(0.436)	(0.355)	(0.025)	(0.144)	(0.143)	(0.551)	(0.874)	(0.760)	(1.196)	(0.590)
M/B	0.209***	0.088	0.351***	0.007***	0.005	0.012	0.011	0.017	0.181	0.198	0.447***
	(0.034)	(0.071)	(0.066)	(0.002)	(0.007)	(0.008)	(0.049)	(0.121)	(0.113)	(0.156)	(0.139)
ROA	0.043	0.076	0.111	0.056*	0.141	0.197*	-0.774*	-0.175	1.662	1.487	0.533
	(0.193)	(0.347)	(0.336)	(0.031)	(0.096)	(0.102)	(0.423)	(0.671)	(1.093)	(1.216)	(0.533)
Volatility	0.470**	-0.462	0.018	0.044	0.027	0.071	0.368	-0.521	0.485	-0.036	-0.143
	(0.191)	(0.453)	(0.475)	(0.038)	(0.223)	(0.225)	(0.549)	(0.657)	(1.200)	(1.385)	(0.678)
Return	0.067*	-0.103***	-0.034	-0.001	-0.018*	-0.019**	-0.052*	-0.043	-0.248***	-0.292***	-0.028
	(0.040)	(0.028)	(0.022)	(0.003)	(0.010)	(0.007)	(0.031)	(0.036)	(0.065)	(0.049)	(0.044)
Board Size	-0.013	0.012	-0.048*	-0.086	0.017	0.017	0.042	0.098	0.055	0.153	0.044
	(0.014)	(0.034)	(0.025)	(0.002)	(0.013)	(0.012)	(0.060)	(0.075)	(0.077)	(0.120)	(0.054)
Independence	0.103	0.111	0.696**	0.007	-0.255	-0.248	-0.527	-0.538	-0.276	-0.813	-0.358
	(0.146)	(0.386)	(0.282)	(0.020)	(0.190)	(0.188)	(0.598)	(0.802)	(0.737)	(1.192)	(0.586)
Busyness	0.691*	-1.240*	-0.169	0.098	0.195	0.294**	-3.015*	-0.948*	-1.555	-2.503*	0.527
	(0.383)	(0.704)	(0.781)	(0.075)	(0.123)	(0.134)	(1.554)	(0.542)	(1.645)	(1.474)	(1.112)
Board	0.322	-0.843***	-0.286	-0.055**	0.100	0.045	-0.911*	-0.610	-1.263**	-1.873	-0.751
Ownership	(0.351)	(0.308)	(0.709)	(0.027)	(0.096)	(0.095)	(0.467)	(0.965)	(0.537)	(1.289)	(0.870)

(continued)

Lagged Variables	Option Pay	Stock Pay	Equity Pay	Salary	Bonus	Cash Pay	Pension	Deferred Pay	Stock Incentive	Total LTIP	Total Pay
CEO Ownership	-0.198	-0.177	-0.620	-0.161	-0.118	-0.279	-0.811	-1.481	-0.0157	-1.496	-1.314
	(0.350)	(0.547)	(0.611)	(0.111)	(0.329)	(0.358)	(1.018)	(1.783)	(1.166)	(2.451)	(1.148)
CEO Duality	-0.028	-0.002	-0.063	0.008	-0.041	-0.032	0.753***	0.203	0.280	0.484	-0.055
	(0.045)	(0.090)	(0.090)	(0.006)	(0.080)	(0.079)	(0.143)	(0.260)	(0.224)	(0.362)	(0.152)
CEO Age	-0.002**	-0.001	-0.003*	0.002***	-0.002**	0.001	0.022***	0.005	0.019***	0.025**	-0.001
	(0.001)	(0.002)	(0.002)	(0.000)	(0.001)	(0.001)	(0.003)	(0.008)	(0.005)	(0.011)	(0.002)
CEO Tenure	0.005	0.002	0.009	0.003***	0.020*	0.024**	0.163***	0.185***	-0.006	0.178***	0.066***
	(0.004)	(0.011)	(0.009)	(0.001)	(0.010)	(0.010)	(0.023)	(0.034)	(0.040)	(0.055)	(0.017)
Constant	-1.427***	-3.136***	-4.710***	-0.027	0.569	0.541	-3.006**	-2.748	-4.859	-7.607	-3.663**
	(0.509)	(0.864)	(0.996)	(0.071)	(0.402)	(0.404)	(1.289)	(4.023)	(4.766)	(6.651)	(1.699)
Year & Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R^2	0.030	0.049	0.065	0.197	0.007	0.008	0.085	0.025	0.056	0.055	0.040
Observation	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934	10,934

TABLE IA.13 Effects of Large and Small Institutional Shareholders' High Ownership Levels on CEO Compensation Components

This table reports the fixed effects panel regression estimates for the top quartile of *LI Ownership* (Panel A) and *SI Ownership* (Panel B). The control variables in Table 2 are also included in the analysis. All controls and independent variables are lagged by one year. The dependent variables *Option Pay, Stock Pay, Equity Pay, Bonus, Cash Pay, Total Pay, Pension, Deferred Pay, Stock Incentive*, and *Total LTIP* are selected because they provide significant results in the main analyses. Variable definitions are given in Table A.1 in the Appendix. Firm and year fixed effects are included. Standard errors are clustered by firms. The superscripts ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Effect of a High Level of Large Institutional Ownership on CEO Compensation

Lagged Variables	**Option Pay**	**Stock Pay**	**Equity Pay**	**Bonus**	**Cash Pay**	**Total Pay**
LI	-0.750*	-0.582*	-1.017*	-0.394*	-0.433*	-2.555*
Ownership	(0.423)	(0.353)	(0.562)	(0.233)	(0.254)	(1.507)
Constant	-2.747**	-4.491***	-8.719***	0.579	0.441	-5.965
	(1.183)	(1.047)	(1.735)	(0.790)	(0.794)	(3.840)
Controls	YES	YES	YES	YES	YES	YES
Year & Firm FE	YES	YES	YES	YES	YES	YES
Adjusted R^2	0.049	0.070	0.082	0.007	0.006	0.031
Observation	2,790	2,790	2,790	2,790	2,790	2,790

Panel B: Effect of a High Level of Small Institutional Ownership on CEO Compensation

Lagged Variables	**Pension**	**Deferred Pay**	**Stock Incentive**	**Total LTIP**
SI	-1.693**	-1.468***	-1.538***	-3.009***
Ownership	(0.741)	(0.563)	(0.545)	(0.837)
Constant	-7.868***	-5.103***	-8.782***	-13.790***
	(0.892)	(0.842)	(0.988)	(1.340)
Controls	YES	YES	YES	YES
Year & Firm FE	YES	YES	YES	YES
Adjusted R^2	0.137	0.060	0.183	0.166
Observation	2,790	2,790	2,790	2,790