CEO Compensation: Facts.*

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Abstract

In this paper we highlight a few striking features of CEO compensation in the US from 1994 to 2020. For the purpose of measuring both the level and sensitivity of compensation, we define the latter as the year–on–year change in the portion of the executive's wealth tied to the firm. Compared to a narrower definition often adopted in the literature to measure levels, the cross-sectional distribution displays much higher skewness and variation. Each year, a sizeable fraction of chief executives lose money. During the second decade of this century, the award of options kept declining, while stock grants became more plentiful. In net, the dollar value of CEOs' position in their respective company did not keep up with the growth in capitalization. This contributes to explaining why the semi-elasticity of compensation with respect shareholder wealth has declined.

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JEL Codes: G34, J33, M52.

1. Introduction

Executive compensation has been in the spotlight for at least a century. In 1929, for example, much attention was devoted to the compensation of Eugene Grace, the president of Bethlehem Steel, who faced a huge uproar when it was revealed that he received a base salary of $12,000 and a bonus of more than $1.6 million – a $215,000 salary with a $29 million bonus in 2023 dollars.

The most important case of the 1930s involved several executives of American Tobacco Co., who had received bonuses that plaintiffs claimed were excessive. A by–law approved by shareholders in 1912 provided that the president of the company and the five vice–presidents would share 10 percent of the annual net profit exceeding $8.2 million. The case eventually went to the Supreme Court and in Rogers v. Hill (1933), the Court ruled that overall compensation must be reasonable in proportion to the value of the services rendered. The dissenting opinion of Judge Swan indicates the applicable rule: "*If a bonus payment has no relation to the value of services for which it is given, it is in reality a gift in part, and the majority stockholders have no power to give away corporate property against the protest of the minority.*"

Over the past three decades, the academic literature on the topic has flourished. Two distinct views have emerged. According to one, championed by Bebchuk and Fried (2004) among others, poor corporate governance practices allow executives, and CEOs in particular, to essentially define their own remuneration structures. The alternative approach, instead, envisions compensation as the craft of corporate boards that design executives' rewards with the purpose of maximizing shareholder value subject to a number of constraints, chiefly dictated by asymmetric information and limited commitment.

As of the time of writing, there is no real consensus on the relative role played by the two mechanisms in shaping compensation packages. In part, this is the case because of non-trivial difficulties in measuring compensation, its dependence on executives' actions, and its impact on their welfare.

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The empirical literature on executive compensation is rather large. For example, Frydman and Saks (2010) provide a comprehensive account of compensation practices in the United States from 1936 to 2005. Edmans et al. (2017) outline methodological issues scholars have been wrestling with.

In this paper we take a careful look at CEO compensation in the United States in the period 1994–2020. We investigate the cross–sectional and time–series variation in compensation, paying particular attention to the role played by the various components of compensation packages and to their implications for the risk born out by executives.

Our purpose is twofold. The first is to highlight a few features of CEO's compensation plans that have received limited attention. The second is to document important changes over the last two decades and trace some of their material implications.

Typically, empirical accounts of the *level* of compensation adopt a rather narrow definition, which includes salary, bonuses, long–term incentive plans, and the grant–date value of securities awards. We will refer to such measure as *classical*. Our main measure of compensation is instead the year–on–year change in the portion of executive's wealth that is tied to the firm, i.e. the sum of salary, bonus, the year–on–year change in the value of stock and option holdings, the net revenue from the sale of stock and exercise of options, and the value of newly awarded securities.

We favor it because it aligns most closely with the concept that emerges from the analysis of multi–period theoretical models of the relationship between managers and shareholders. To our knowledge, the first to propose this definition were Antle and Smith (1985). Versions of it are commonly adopted to characterize the sensitivity of executives' wealth to variations in shareholder wealth, along the lines of Jensen and Murphy (1990), Hall and Liebman (1998) and Himmelberg and Hubbard (2000).

With our choice, we call the reader's attention to the large skewness of the cross-sectional distribution of compensation. The AFL–CIO, the federation of 60 US and international labor unions, provides its assessment of executive compensation practices on http://www.aflcio.org/paywatch. Back in 2020, that webpage reported that "*In 2019, CEOs of S&P 500 companies received, on average, $18.8 million in total compensation*" and that "*The average S&P 500 company CEO-to-worker pay ratio was 264-to-1.* " We find that in 2019 the average compensation of CEOs of all publicly traded US companies was about $63 million. It turns out that that statistic is driven by the right tail of the distribution, consisting of a few CEOs that earn incredibly high overall compensations, mostly due to the increase in valuation of their stock and option holdings. Median CEO compensation in 2019 was *only* $7.93 million.

The extreme skewness of CEO total compensation, i.e. the fact that a few CEOs can earn enormous amounts in any given year, is potentially very relevant for the study of wealth inequality. It is well known that the wealth distribution in the United States is heavily right-skewed. Exploiting administrative tax data, Smith et al. (2021) find that in 2016 the top 1% of households held nearly as much wealth as the bottom 90%. The canonical, neoclassical consumption/saving model of precautionary savings cannot reproduce such thick right tail of the wealth distribution, unless a small set of individuals earn amounts thousands of time higher than median earnings. Our study shows that in most years some CEOs belong to that set.

Most CEOs sit on large stock and option portfolios. It is rapid rises of their companies' share prices that lead them to earn handsome financial rewards. By the same token, they suffer significant wealth losses when prices fall. Every year a substantial fraction of CEOs actually lose money.

Due mostly to the deferred portion, compensation responds strongly to innovations in shareholder wealth. A one percentage point increase in shareholders' returns is associated with a median increase in CEO compensation of about $160 thousand. We find that such sensitivity has declined over the second decade of the century. Among the proximate reasons are a generalized decline in CEOs' equity stake and the lower utilization of stock option awards.

The remainder of the paper is organized as follows. In Section 2 we describe the data and define our measurement conventions. In Section 3 we document the extent of separation between ownership and control in the population of US public corporations. Section 4 characterizes the most salient features of the distribution of compensation across executives. In Section 5 we show how compensation varies with firm size and across sectors. Section 6 is dedicated to the analysis of the time variation. The estimates of pay–performance sensitivity are illustrated in Section 7. Finally, Section 8 concludes.

2. Data and Measurement

We draw our data from the EXECUCOMP database, maintained by Standard & Poor's. EXECUCOMP gathers data from 1992 to the present on the compensation of up to nine executives of all US companies whose stocks are traded on an organized exchange. The source for the database are companies' filings with the Securities and Exchange Commission. The information about executives' securities holdings and their compensation packages is contained in

the DEF14A forms (or Schedule 14A), filed annually by corporations pursuant Section 14(a) of the Securities Exchange Act of 1934.

We confine our attention to the years 1994 through 2020. After cleaning, our sample consists of information on 8,630 CEOs and the 3,042 companies they ran, for a total of 47,283 CEO–year observations. All dollar–denominated variables are expressed in constant (2012) prices.[1]

All compensation data refers to the date of the annual shareholder meeting, which is held within three months of the end of the fiscal year. Since we don't have information about the meetings' dates, we assume that the information refers to the last day of the fiscal year.

By construction, the composition of EXECUCOMP is changing constantly. Table A.4 reports the evolution of the number of companies in our sample, while Figure 1 illustrates the growth in median asset size. We acknowledge that this is likely to create mechanical composition effects. In the remainder the paper, we will take this in due consideration when evaluating our results.

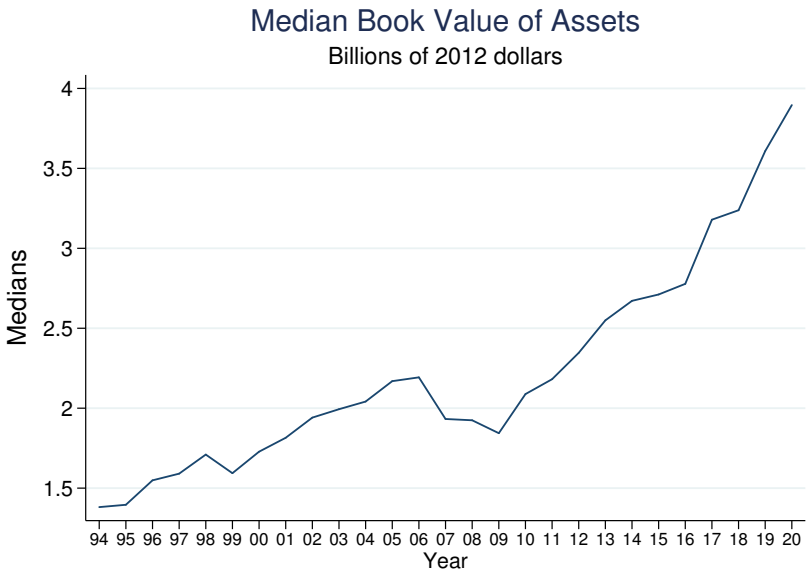

Figure 1: The evolution of firm size.

2.1. Measuring Compensation

It is well known that executives are compensated in a wide variety of ways. Murphy (1999) provides a detailed description of the main components of compensation packages. Among them are salary, bonus, stock and options grants, severance payments, 401K contributions, and life–insurance premia.

Because of the complexity that characterizes pay packages, defining summary measures of compensation is far from straightforward. In this paper, we adopt a definition suggested by Antle and Smith (1985) and later adopted in studies of pay–performance sensitivity, starting with Jensen and Murphy (1990), Hall and Liebman (1998) and Aggarwal and Samwick (1999). We will refer to it as *Total Yearly Compensation*. Roughly speaking, it is defined as the year–on–year change in *CEO's Wealth*, which in turn consists of the expected discounted value of the portion of executive's wealth whose value is tied to her company's performance. In the words of Antle and Smith (1985), Total Yearly Compensation is meant to measure "*the annual change in executive's total wealth associated with employment*".

Our ideal measure of wealth consists of the value of stock and options in the executive's portfolio plus the expected discounted value of all future handouts in form of cash and securities. Operationally we define it as the market value of securities holdings plus the expected discounted value of future salaries and bonuses. Total yearly compensation

[1]The conversion of figures at current prices is carried out using the Personal Consumption Price Index produced by the Bureau of Economic Analysis.

consists of the sum of salary, bonus, the year–on–year change in the value of stock and option holdings, the change in expected future cash payments, the net revenue from the sale of stock and exercise of options, and the value of newly awarded securities.

Throughout the paper, we will also consider the partition of compensation into Current and Deferred. Current compensation includes all claims that can be instantaneously traded for consumption goods. Deferred compensation, the residual part, consists of the expected value of all claims over future consumption. This partition is of particular interest because the theoretical analysis of executive compensation in dynamic moral hazard models implies restrictions on the relative role the two portions play in incentive provision.

Operationally, we define Current compensation as the sum of salary, bonus, dividends, and net revenues from trade in stock. Deferred compensation is the sum of the yearly changes in the value of stock and options in portfolio, retirement benefits, expected future salaries, and other deferred payments.

The precise definition of all variables can be found in Appendix A. For our purposes, the EXECUCOMP database presents two major shortcomings. To start with, EXECUCOMP only includes the value of options that are in-the-money. This greatly complicates the estimation of the year–on–year change in the value of option holdings. Furthermore, the database provides no information on purchases and sales of stock by the executives. This makes it hard to come up with an accurate measure of the net revenue from trade in stock.

We have considered two alternative definitions of option holdings. The first, which is used by Aggarwal and Samwick (1999), is simply the sum of two EXECUCOMP variables, namely the value of the un-exercisable in–the–money options and that of the exercisable in–the–money options, both computed at the money at the end of the fiscal year.[2] Since it does not take into account the value of out–of–the money options, this definition introduces an upwards bias in the absolute value of the fluctuations in options values.

The alternative definition estimates the value of out-of-the-money options by means of a simple algorithm due to Himmelberg and Hubbard (2000). We do not report the results obtained with this second method. However, the computer codes provided to the journal also implement the algorithm suggested by Himmelberg and Hubbard (2000).

By net revenue from trade in stock, we mean the difference between the revenues from sales of shares and the expense incurred in acquiring them (either by purchase or option exercise). CEOs may (i) purchase and sell common stock on the open market, (ii) purchase common stock directly from the company at prices lower than the market's, (iii) inherit stock, (iv) donate stock. Unfortunately, we do not have information on either the prices or quantities of these transactions. Furthermore, we do not know whether the shares obtained by exercising options are kept or sold.

We estimate the net revenue from trade using other variables provided by EXECUCOMP. Our algorithm, which is described in detail in Appendix A.1, requires assumptions about the prices at which CEOs sell their stock. We posit that CEOs always manage to sell at peak price for the year.

We emphasize that our methodology does not lead to double counting. The sale of a share in the CEO's portfolio leads to an increase in net revenue from stock sale – part of current compensation – and to an equivalent decrease in the value of executive's equity holdings, which in turn implies a decline in deferred compensation.

An alternative to our procedure, followed by Taylor (2013) and Remesal (2018) among others, consists in defining the net revenue from trade equal to the profit CEOs make when exercising options, a variable available in EXECUCOMP. This definition paints a rather different picture. We elaborate on this below.

2.2. The Theoretical Underpinnings of the Total Yearly Compensation Measure

Our choice of compensation is motivated by the literature on multi–period models of executive compensation inspired by the work of Spear and Srivastava (1987). In models in this class,[3] the reward a CEO receives from her association with the company in a given period depends on the change in her wealth that takes place during that period because of such association.

Think of risk–neutral shareholders that make a take–it–or–leave–it offer to a CEO with outside value $\underline{v}$. For simplicity, assume that the company's cash flows are given by a random variable z_t, distributed on the positive orthant according to the time–invariant distribution $F(z_t|a_t)$. The notation $a_t \geq 0$ indicates the effort exerted by the executive. The greater the effort, the larger the probability of more favorable outcomes. The CEO's utility function $u(w_t, a_t)$ is increasing in the wage w_t and decreasing in effort a_t.

[2] the two variables are labeled OPT_UNEX_UNEX_UNEXER_EST_VAL and OPT_UNEX_UNEX_EXER_EST_VAL, respectively.
[3] See, among others, Wang (1997), Clementi et al. (2006), He (2009), Edmans et al. (2012), and Ai and Li (2015)

The contract offered to the CEO consists of a sequence of wages $\{w_t(h^t)\}_{t=1}^T$, together with effort recommendations $\{a_t(h^{t-1})\}_{t=1}^T$. The notation reflects the fact that the contract provisions at time t depend on $h^t = \{z_s\}_{s=1}^t$, the history of revenue realizations up to that time. If we let $\mathcal{F}(h^t|\mathbf{a_t^*}(h^{t-1}))$ denote the probability distribution over the histories of length t along the path of play generated by the strategy $\mathbf{a_t^*}(h^{t-1}) = \{a_s(h^{s-1})\}_{s=1}^t$, the contract offered by the shareholders will solve the following optimization problem:

$$\max_{\{w_t(h^t),a_t^*(h^{t-1})\}_{t=1}^T} \sum_{t=0}^T \beta^t \int [z_t - w_t(h^t)] d\mathcal{F}(h^t|\mathbf{a_t^*}(h^{t-1})),$$

subject to

$$\sum_{t=0}^T \beta^t \int u[w_t(h^t), a^*(h^{t-1})] d\mathcal{F}(h^t|\mathbf{a_t^*}(h^{t-1})) \geq \sum_{t=0}^T \beta^t \int u[w_t(h^t), a(h^{t-1})] d\mathcal{F}(h^t|\mathbf{a_t}(h^{t-1})) \tag{1}$$

and

$$\sum_{t=0}^T \beta^t \int u[w_t(h^t), a^*(h^{t-1})] d\mathcal{F}(h^t|\mathbf{a_t^*}(h^{t-1})) \geq \underline{v}. \tag{2}$$

Constraint (1) is the incentive compatibility constraint. It requires that the CEO is better off by following the recommended sequence of actions rather than any other. Condition (2) simply requires that the value of the contract to the CEO is larger than her outside value.

Under mild regularity conditions,[4] the problem can be written in recursive form. The only state variable is the continuation value for the CEO, v_t. That is, the expected discounted utility offered by the contract to the CEO from time t onwards. The shareholders' problem becomes that of choosing a level of effort, a contingent wage schedule $w_t(z_t)$, and continuation values $v_{t+1}(z_t)$. At all times $t \geq 1$, their value $V_t(v_t)$ solves the following problem:

$$V_t(v_t) = \max_{w_t(z_t),a_t^*,v_{t+1}(z_t)} \int [z_t - w_t(z_t) + \beta^t V_{t+1}(v_{t+1}(z_t))] dF(z_t|a_t^*)$$

subject to

$$\int \left\{u[w_t(z_t), a_t^*)] + \beta^t v_{t+1}(z_t)\right\} dF(z_t|a_t^*) \geq \sum_{t=0}^T \beta^t \int \left\{u[w_t(z_t), a_t)] + \beta^t v_{t+1}(z_t)\right\} dF(z_t|a_t) \tag{3}$$

and

$$v_t = \int \left\{u[w_t(z_t), a_t^*)] + \beta^t v_{t+1}(z_t)\right\} dF(z_t|a_t^*). \tag{4}$$

Constraint (3) is the temporary incentive compatibility constraint. Condition (4) is known in the literature as promise–keeping constraint. It simply imposes that promised utility v_t must be delivered either by means of current or future utility.

Under standard functional form assumptions, the optimal contract is such that working harder increases the CEO's current and expected continuation utility. We envision observed compensation contracts as implementations of such scheme. Higher current utility can be delivered with higher contemporaneous payments – salary and bonus, for example. Higher continuation utility can be delivered by requiring the CEO to hold the company's stock and options. Our *Total Yearly Compensation* measure is designed to proxy for the sum of these instruments.

According to the dynamic–contract approach we have briefly illustrated, current and deferred compensation depend on past compensation. This is consistent with observed corporate policies.[5] Since most securities awards are restricted,

[4] For $T < \infty$, the transversality condition would be $V_{t+1} = 0$. For $T = \infty$, the recursive representation is valid only under appropriate boundedness conditions.

[5] According to 2006 Oracle Corporation's DEF14A, the factors considered by that company in determining the size of option grants include "*the intrinsic value of outstanding, un–vested equity awards and the degree to which such values support our retention goals for each executive.*"

the design of current and future compensation packages *must* depend on past compensation. Everything else equal, different stock and options holdings will call for different contractual provisions both in the present and in the future.

It follows that looking at these provisions in isolation, as dictated by the classical measure, would be misleading. That is, it would give an inaccurate picture of the change in current and future consumption possibilities that derive from employment at the company.

3. Separation Between Ownership and Control

In Section 2 we cast CEO compensation as the tool employed by owners of modern corporations to align the manager's goals to their own. In that framework, the separation between ownership and control and the misalignment of incentives are taken for granted.

However, even to the distracted observer it should be obvious that in reality there is an enormous variation in the degree of separation. We substantiate this claim in the left panel of Figure 2, which illustrates the cumulative distribution of CEO equity stakes among US public corporations in the years 1998, 2005, 2013, and 2019, respectively. The stake is proxied by the EXECUCOMP variable SHROWN_PCT.

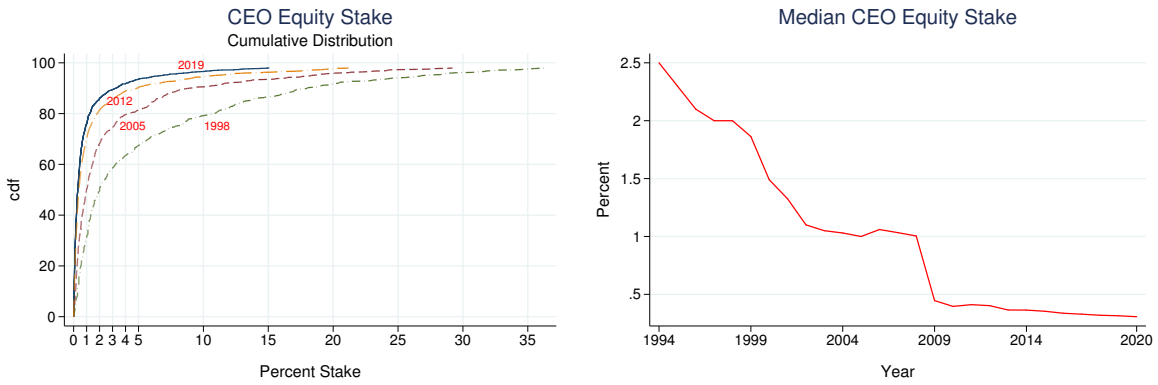

Figure 2: CEO Equity Stake.

In 2019, about 14% of CEOs held more than 2% of their companies' common stock, and about 6% held more than 5%. Since we cannot account for stock held by the executive's family members, these figures are biased downward.

CEOs with relatively low stock holding fit the Berle and Means' stereotype, in the sense that they are likely to have been hired to manage the company. This is the case, for example, of Mr Steve Bennett, who was Symantec's (now Gen Digital) CEO for about 20 months between 2012 and 2014. In 2013, Mr. Bennett held about 0.014% of the company's common stock. The CEOs with the largest equity stakes are far from the Berle and Means' ideal and are likely to be either the companies' founders or to have family ties to them. This was the case for Micky Arison, until 2013 the CEO of Carnival Corporation – the world's largest cruise operator – and son of Ted Arison, the company's founder. As he left his CEO post to Arnold Donald, Mr. Arison held about 18% of Carnival's common stock.

In the case of professional CEOs such as Mr. Bennett at Symantec, the observed equity stake is the result of the company's compensation policy. Therefore, the incentives that result can be used to assess the disciplining role of boards of directors. This is decidedly not the case for company founders such as Mr. Arison, whose large equity holdings when in charge had nothing to do with the company's compensation policy. These individuals, although disciplined by the requirements of public companies, essentially have absolute control over the source of their pecuniary incentives. Compensation committees have very little impact on them.

In light of this simple argument, in the remainder of this paper we will report certain statistics for *Professional* CEOs only, arbitrarily defined as those that hold less than 5% of their companies' common stock. Our goal is to discern the differences, if any, in the way in which professional CEOs are compensated and in the incentives they face.

We realize that our threshold is arbitrary. A 5% threshold may remove from the sub-sample of professional CEOs executives that were hired by small firms and have accumulated substantial stock ownership. Extensive sensitive

analysis suggests that the qualitative differences between the compensation of the two subgroups are the same for a wide range of the threshold.

The left panel of Figure 2 unmistakably suggests that the cdf of CEOs' equity stake has shifted up over time. The right panel illustrates the evolution of the median stake. In less than three decades, the median equity stake fell from 2.5% to 0.3%.

A feature of the EXECUCOMP dataset suggests caution in the interpretation of these statistics. The coverage of the variable SHROWN_PCT, which is meant to report the CEO equity stake, is almost complete for the post-2008 period, while it largely incomplete in the preceding years.

To investigate the extent to which the time variation illustrated above may be caused by selection, we replicated the analysis with an alternative measure of equity stake, computed as the ratio between shares held by the CEO and shares outstanding. For this alternative proxy, the coverage is complete at all times. Median and mean equity stakes are higher than those computed above, but the time variation is basically identical. The cdf of the equity stake shifts to the right over time, and the median declines.

Next, we turn next to asking what may have been the drivers behind these dynamics. Consistent with Edmans et al. (2017) and other studies, we find that the CEO equity stake is decreasing in the firm market value. Since the value of traded companies drifted upwards during the sample period, composition may have been a relevant factor.

If the increase in market cap was the whole story, we would expect the dollar values of equity stakes to have changed little. This consideration is relevant, because it has implications for the estimation of sensitivity of pay to performance discussed in Section 7.

To dig further, we ran a median regression of equity stake on year and sector fixed effects, market cap, book value, as well as CEO age and tenure. We found that even conditionally, the median equity stake still declines monotonically over the sample period. This may be the result of an unobservable characteristic that varies continuously and monotonically over time, or may signal a change in compensation practices. That is, it may be that similar CEOs of similar firms hold progressively lower equity stakes. The magnitude of the coefficients associated with the year dummies is economically significant. They imply that at the end of the sample the conditional median equity stake was 2.23 percentage points lower than at inception.

4. The Distribution of Compensation across Executives

Figure 3 depicts the cross–sectional distribution of total compensation for the population of CEOs in 2019. Striking features are the substantial variation and right skewness. Median pay was *only* 7.93 million dollars, the exorbitant average of 63.4 million being mostly the result of sky–high compensation at the very top of the distribution. Indeed, while the bottom 7% of CEOs received a negative compensation, the top 5% earned in excess of 100 million dollars.

Table A.3 (refer to the rows labeled "Gross") reports a series of statistics of the compensation distribution, for all sample years. A skewness index of 26.42, as reported for 2019, is not an outlier. Skewness has been a feature of the CEO total compensation distribution throughout the sample period. Notice, however, that the distribution is not always right–skewed. In 2002 and 2011, for example, the distribution of total CEO compensation was negatively skewed. Since CEOs of large companies have a relatively large dollar exposure to their share price via their stock and option holdings, their compensation is particularly sensitive to stock market fluctuations, of either sign.

Another salient feature of the data is that, contrary to what has become common wisdom in public discourse, CEOs do lose money. Sometimes, they lose a lot. In 2006, for example, with the S&P 500 index rising by more than 9%, our measure of compensation was negative for as many as 267 CEOs. As expected, the big losers were those at the helm of companies whose stock dropped the most in value during the year. Among them, Yahoo (–33%), Amazon (–20%), and Ebay (–30%). Conversely, the winners were the chief executives of the companies whose shareholders gained the most, such as Mc–Graw Hill (+30%), Marriott (+38%), and Comcast (+65%). Table A.3 shows that a sizeable fraction of CEOs lost money in every year. In 2002, that fraction exceeded 40%.

Refer again to Table A.3. For every year, the third row illustrates the results that obtain with the classical definition of compensation. The picture it conveys is rather different. In 2019, mean and median CEO pay were \$7 and \$5.23 million, respectively. The observation that the two measures of central density are so close suggests that the skewness of classical compensation is much lower than that of total compensation.

In fact, perusing Table A.3 reveals that over the sample period the skewness index for the classical definition is often 5-6 times lower than for total compensation. What is missing in the picture delivered by the classical measure are the gargantuan rewards earned by CEOs with large investments in stock and options whenever shareholders earn

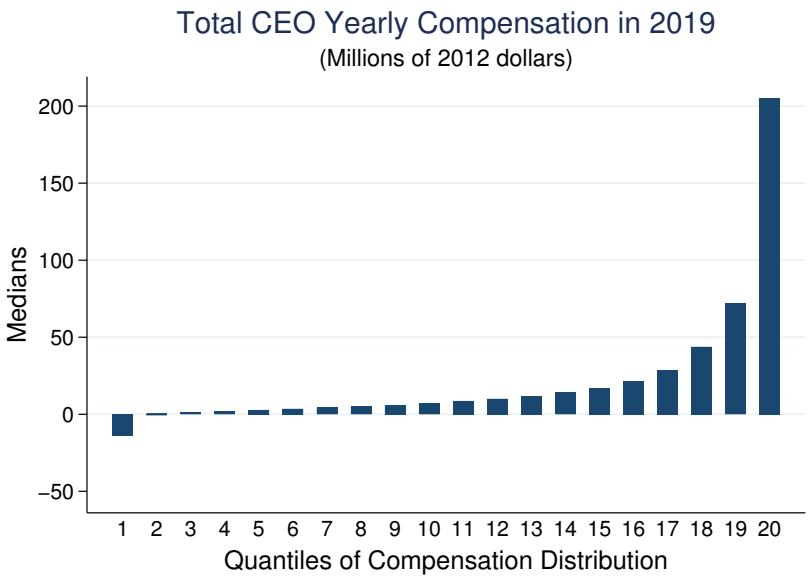

Figure 3: Total CEO Compensation in 2019.

a sizeable return. According to the classical definition, the median compensation in the top decile percentile was 22.23 million in 2019, against our estimate of about $560 million.

The classical definition also fails to document the downside of CEO compensation packages. Since it is bounded away from zero by construction, it hides the dire consequences suffered by CEOs whose stock price tumbles.

Table A.4 provides detailed information about the split of total yearly compensation between the Current and Deferred components. The variation of total compensation is chiefly driven by the deferred component. Figure 4 illustrates it effectively for 2019, year in which the ratio of median absolute deviation to the median was 1.47 for Deferred compensation, against 0.7 for Current compensation.

The comparison between the skewness of the two components does not yield clear-cut insights. This is due to the fact that Current compensation includes our estimate of the proceeds from trade in stock.

Figure 5 suggests that both skewness and variation of Current compensation are severely impacted by the net profit from trade in stock. The salary and bonus components display very limited variation. In 2019, for example, the median absolute deviation for salary and bonus was only $197 thousand (the median was $845 thousand).

The role played by the proceeds from trade in stock is much more limited if one proxies for it by using the alternative definition introduced in Section 2, i.e. the profits from option exercise as reported in EXECUCOMP. According to that measure, in 2019 the median of net profit from trade in stock was zero at all deciles except the top one, for which the median was 1.7 million, or about 1/5 of the value we find with our own definition.

Bebchuk and Fried (2004) argued that "*... much executive compensation comes in forms other than equity, such as salary and bonus.*" and that "*The evidence indicates that cash compensation – including bonuses – has been at best weakly correlated with firms' industry adjusted performance.*"[6] The evidence presented in Section 7 is definitely in agreement with the latter statement. However, our data does not support the first part of this claim. For most CEOs, salary and bonus account for a rather small portion of total compensation. See Figures 4 and 5.

Table A.5 illustrates compensation across professional CEOs. Recall that above we have defined them as those with an equity stake lower than 5%. The distribution of Current compensation is remarkably similar to that for the entire population of CEOs. At the same time, both the median and the median absolute deviation of total compensation are smaller in every single year. The main differences, however, are in the means. This should not come as a surprise. We defined non–professional CEOs as those who own large equity stakes in their companies. In turn, this implies that their total compensation will be particularly high in good times and particularly low in bad times. This immediately leads

[6] See page 7, lines 1 through 4.

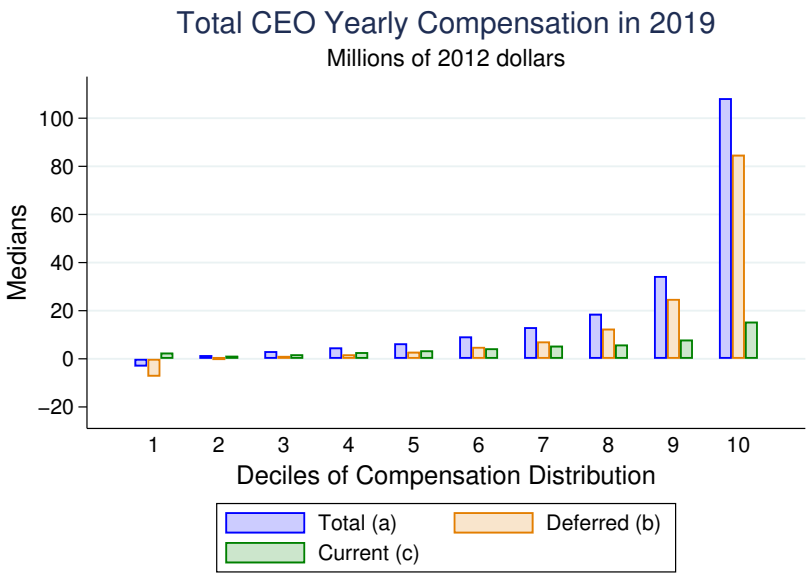

Figure 4: Split of Compensation in the Cross–Section

us to wonder about the strength of incentives faced by professional CEOs. We will address this question in Section 7.

The extreme skewness of our measure of total compensation will resonate with the readers acquainted with the evidence on U.S. wealth inequality. Benhabib et al. (2017) show that that canonical models with precautionary savings cannot reproduce the thick right tail of the wealth distribution, since empirical earning distributions have much thinner tails. They report that the ratio between the top 0.01% and the median of the earnings distribution is likely not larger than 200. However, models that generate skewness of the wealth distribution comparable to the data require that ratio to be at least five times larger.

Benhabib et al. (2019) suggest a role for stochastic idiosyncratic returns on wealth, i.e. posit that some individuals have access to investment opportunities not available to others – in the form of entrepreneurship or private equity, for example – and that those opportunities may be increasing with wealth itself. This was in fact shown to be the case for Norway by Fagereng et al. (2016).

In Benhabib et al. (2019)'s rather general framework, stochastic idiosyncratic returns are shown to be necessary in order to generate enough thickness of the tail of the wealth distribution. Due mostly to the use of options and other option-like instruments, CEO compensation packages subject CEOs to skewed distributions of returns, not readily available to the rest of the population. Our data shows that in successful years, certain CEOs can earn total compensations worth one thousand times the population's median earnings, and even more. Such outsize earnings have the potential to propel those individuals towards the right tail of the wealth distribution, increasing its thickness.

A transparent property of CEO compensation is the substantial amount of aggregate risk that is imposed on executives. As long as CEOs' outside opportunities co-vary positively with the state of the economy, this apparently inefficient feature may serve the goal of avoiding top management from being poached away. Alternatively, subjecting CEOs to systematic risk may be immaterial, simply because they hedge it.

Since the SEC does not require executives to disclose trades in securities not issued by their companies, we do not really know whether executives indeed hedge market risk or not. However, Garvey and Milbourn (2003) provides indirect evidence that this may be the case.[7]

If executives hedge systematic risk, actual median gains and losses will be much smaller (in absolute value) than our figures suggest. For this reason, we also report statistics for Net Total Yearly Compensation. The *Net* definition

[7] Garvey and Milbourn (2003) argue that if companies recognize that they should use relative performance evaluation (RPE) only for those executives that are unable to diversify systematic risk, estimates of pay–performance sensitivity should depend on market volatility only in the case of younger and poorer executives, whose chances of diversification are slimmer. This is exactly what they found in their study.

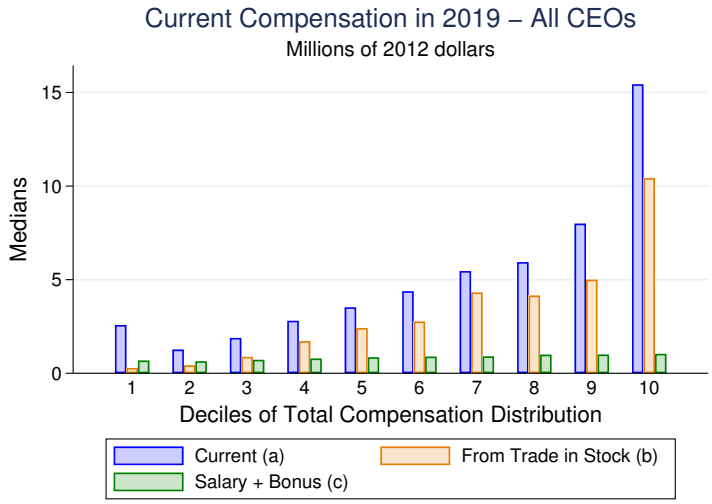

Figure 5: Current Compensation in the Cross–Section.

measures compensation accurately, under the assumption that executives hedge systematic risk by selling short the market portfolio or by building a similar position via trade on derivatives. An example of such a position is a zero–cost collar, which involves selling an out–of–the–money call option and buying an out–of–the–money put option. See the rows labeled "Net of Market" in Table A.3.

Hedging systematic risk has a large effect on the tails of the compensation distribution. It moderates losses in bad years for the stock market as well as gains in good years. As a result, median net compensation tends to be smaller than mediangross compensation in a good year, and larger in a bad year. Table A.3 shows that median net compensation ranged between –$520,000 (in 1998) and $8.03 million (in 2003). The main message we draw from this data, however, is the same as above. In every single year, both dispersion and skewness were remarkably large.

5. Compensation in The Cross–Section of Firms

In this section we document how the various measures of compensation vary with firm size and across sectors. Beginning with Kostiuk (1990), many have investigated the relationship between firm size and executive compensation. Kostiuk himself, Murphy (1999), Bebchuk and Grinstein (2005), and Gabaix and Landier (2008) among others, found evidence of a positive correlation between the two variables. The question is whether a similar pattern holds for our measure of total compensation.

Figure 6 depicts median CEO Wealth and Total Yearly Compensation for each decile in the distribution of book value of assets, in 2019. The left panel tells us that CEOs of larger firms had substantially larger wealth tied to the firms they led. In particular, they had larger stock holdings.

Current compensation is also monotonically increasing in the size of the firm. Executives' salaries tend to be higher in larger firms, but the cross–sectional variation is minimal. Most of the variation in Current compensation is accounted for by differences in the net revenues from trade in stock. The patterns just described do not change substantially when we adopt sales rather than book value as a measure of size. We are reluctant to use market value of equity as a proxy for size, given that it is mechanically linked to our measure of compensation.

Figure 7 illustrates the variation of CEO wealth and compensation across sectors. CEOs in the Services sector appear to stand out, as their median compensation in 2019 was substantially greater than their peers' in other sectors.

CEOs in Services earned more mostly because of the estimated trade in stock and the appreciation of their securities holdings. This is not surprising, given that the sector includes large and successful media and entertainment companies, such as Alphabet, Meta, Microsoft, Oracle, and Twitter.

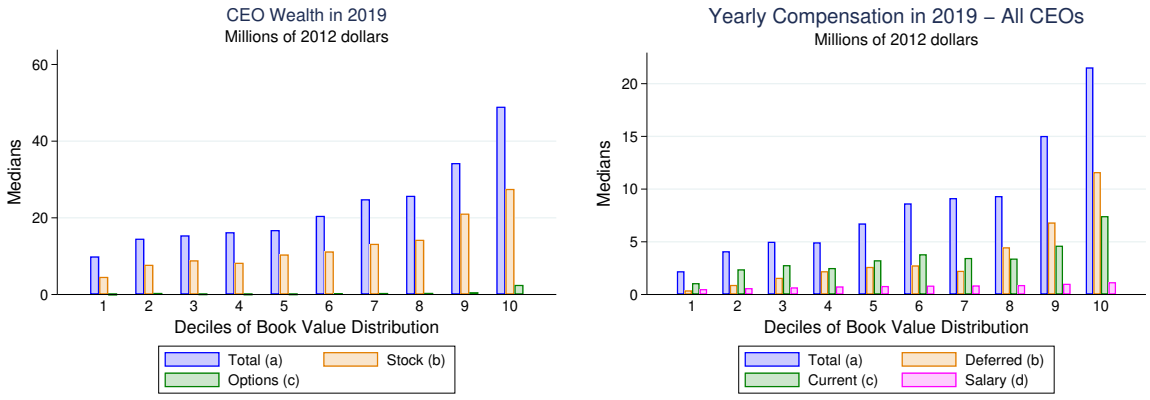

Figure 6: CEO Compensation and Firm Size.

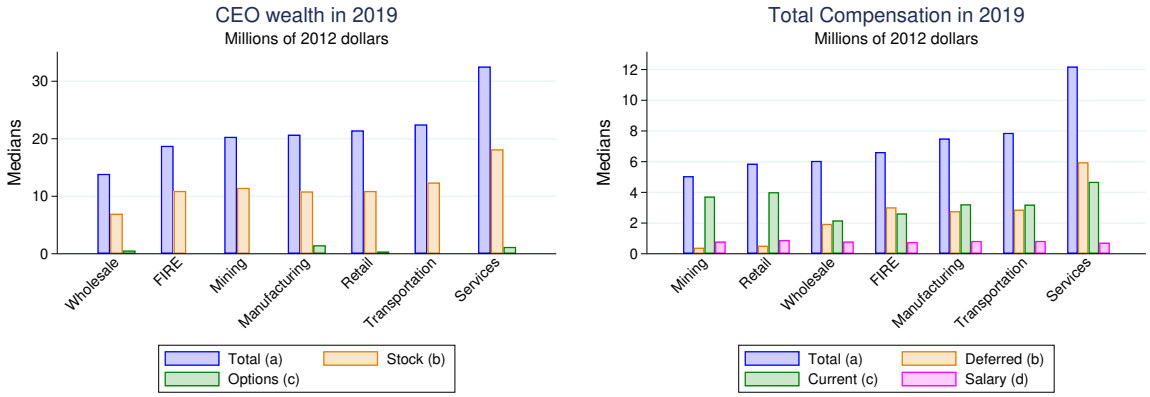

Figure 7: CEO Compensation across Sectors.

6. Compensation Over Time

In their far-reaching study, Frydman and Saks (2010) find that executive compensation declined from 1936 to 1950, grew at a slow clip over the next 25 years, and then rose faster until the end of their sample, in 2005. Bebchuk and Grinstein (2005) state that "*Among S&P 500 firms, average CEO compensation climbed from $3.7 million in 1993 to $9.1 million in 2003 (an increase of 146%).*"

More recently, Bivens and Kandra (2022) argue that "*From 1978 to 2021, CEO pay based on realized compensation grew by 1,460%, far outstripping S&P stock market growth (1,063%) and top 0.1% earnings growth (which was 385% between 1978 and 2020, according to the latest data available). In contrast, compensation of the typical worker grew by just 18.1% from 1978 to 2021.*"

The goal of this section is to trace the time-series variation of total compensation and compare it with that of alternative measures. We are also interested in discerning whether the last decade of data brought any substantial novelty in compensation practices.

Once again, given the skewness of the distribution, the mean is not the most revealing measure of central tendency. When considering its classical definition, we find that median compensation grew on average at 4% rate since 1994, or more than 3 times as fast as real non-farm hourly wages, which grew at a 1.3% annual pace.[8] See the left panel of

[8]Our wage series is hourly earnings of private-sector production and non-supervisory employees produced by the Bureau of Labor Statistics, deflated with the PCE price index.

Figure 8. We also notice that the median classical compensation displays limited variation around its increasing trend.

The right panel of Figure 8 illustrates the dynamics of real median total compensation, both gross and net of the return on the market portfolio. Interestingly, the average growth rate of both measures over the sample period was quite close to that of the classical definition. However, the two series display much greater time-series variation. Median gross compensation was negative in 2008, at -$620 thousand, when the financial crisis hit. In that year, more than half of the 1,951 continuing CEOs lost money. It reached its maximum of $10.61 millions in 2003, when the S&P500 gained about 21%. Our net definition of compensation grew at a marginally lower rate and, unsurprisingly, suffered less time–series variation than the gross measure.

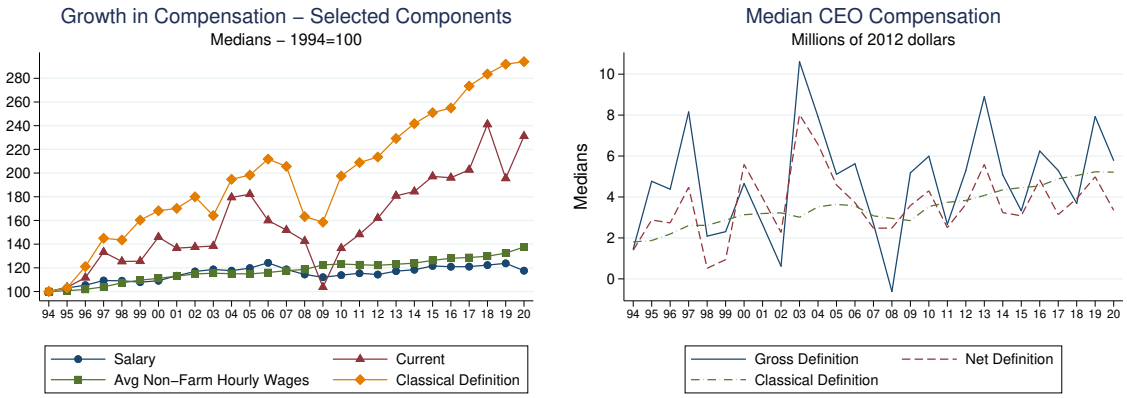

Figure 8: CEO Compensation over Time.

Let's now turn to the growth pattern of the various components of compensation. The left panel of Figure 8 shows that the Current portion has increased over most of the sample period, at a mean pace much faster than average non–farm hourly wages. The same graph suggests that the growth in salaries accounts for a small portion of the increase. Indeed, the salary of the median CEO has increased less than average wages in the non–farm sector. It turns out that most of the post–1999 increase in Current compensation is accounted for by the rise in net proceeds from trade in stock, i.e. by options exercise and stock sale.

The increased importance of the proceeds from stock trade is consistent with two other developments illustrated in Figure 9. The right panel shows that the median dollar value of securities grants has increased over pretty much the whole sample period. In spite of this, and notwithstanding the high stock market returns of the pre-Covid decade, median CEO wealth has increased at much slower pace since the Great Recession.

It appears that companies stepped up the grant of securities, perhaps with the purpose of sharpening incentives, but it looks like executives sold shares whenever they could. Our confidence in this rationalization of the facts is enhanced by the evidence provided by Ofek and Yermack (2000), that (i) executives tend to immediately relinquish the shares obtained via options' exercise and that (ii) those among them that have higher equity stakes sell stock whenever they are granted new restricted shares or new options.

The right panel in Figure 9 points to a further change in compensation practices. The relative importance of stock and options has changed. Since 2001, stock grants have become more prominent, as companies scaled down the volume of option awards. In fact, since 2013, the median CEO's compensation package does not include any options in the money.

Hall and Murphy (2003) argued that the increase in option grants over the 1995–2001 period was prompted by revisions to the tax code enacted in 1994. According to the new rules, companies were allowed to deduct compensation expenses in excess of 1 million dollars, only when the compensation was performance–based. It would be interesting to understand what prompted companies to change their compensation practices after 2001, progressively replacing options with stock grants.

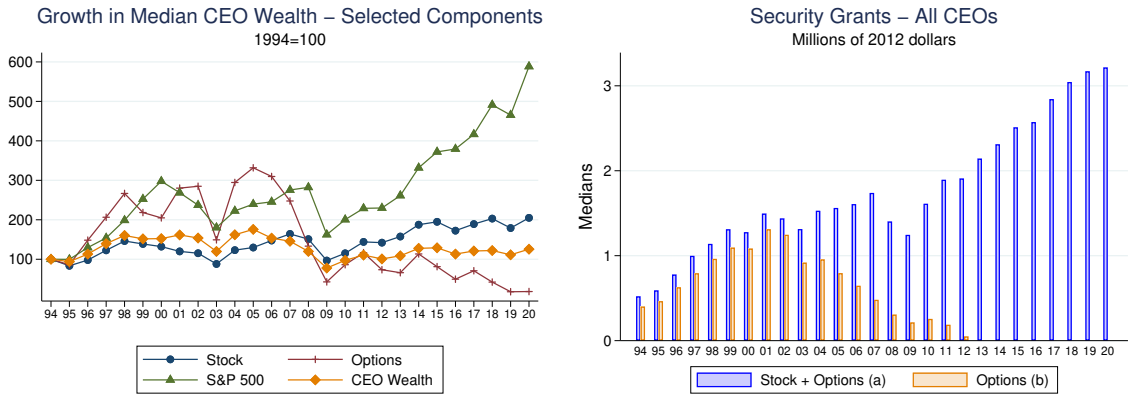

Figure 9: Dynamics of Wealth and Securities Grants.

7. The Sensitivity of Compensation

As illustrated in section 2, the premise of much literature on executive compensation is that CEO pay is designed to provide managers with incentives to align their goals to the shareholders'. Starting back in the 1980s, a literature has developed to assess the extent to which compensation packages succeed in this task. While the available data allows researchers to fairly accurately estimate the conditional correlation between measures of compensation and shareholders' outcomes, actual incentives also depend on the shape of preferences – especially the attitude towards risk – as well as the CEO's net wealth position, neither of which are known.

The conditional correlation alluded above is often referred to as the sensitivity of compensation to shareholder wealth. Beginning with Jensen and Murphy (1990), the literature has proposed a number of different definitions of it. Ultimately, what definition is most suitable to evaluate the strength of incentives depends on the particular specification of the moral hazard problem laid out in Section 2.

Edmans et al. (2017) identify two classes of definitions for the sensitivity of compensation. In one, the statistics measure the percentage stake the CEO has in a given dollar gain or loss by shareholders. The well-known measure put forward by Jensen and Murphy (1990) belongs to such class. Statistics in the other class identify the dollar gain accruing to (or the loss suffered by) the CEO when shareholders earn a given percent return.

Following Hall and Liebman (1998), we proxy for the latter with the semi–elasticity of compensation with respect to shareholder wealth, i.e. the dollar increase in executive's compensation associated with a 1% increase in shareholder wealth. In Figure 10, we illustrate the unconditional association between total compensation and shareholder return. Unsurprisingly, the two variables are positively unconditionally correlated.

In order to gain some insight into the magnitude of the conditional correlation, we estimate the following equation:

$$w_{ijt} = \gamma_0 + \gamma_1 Sh\_\%Gain_{jt} + \gamma_2 Sh\_\%Gain_{jt} \times size_{jt} + \gamma_3 size_{jt} + \lambda_t + \varepsilon_{ijt}, \tag{5}$$

where w_{ijt} is compensation, measured in thousands of 2012 dollars, $Sh\_\%Gain_{jt}$ is the percentage gain of firm j's shareholders over the fiscal year t, $size_{jt}$ is the firm's book value of asset, measured in billions of dollars, and λ_t is a year fixed effect.

We include the book value of assets as a regressor, since compensation is monotonically increasing in firm size. We also include the interaction between size and shareholder return, based on Edmans et al. (2017)'s finding that CEOs of small-cap companies have smaller dollar equity positions than their peers at S&P500 companies. Our estimate of the median dollar increase in total yearly compensation associated with a 1% increase in shareholder return is $\gamma_1 + \gamma_2 \times size_{jt}$. The results are listed in Table 1.

The coefficient of the interaction term is positive, implying that indeed the semi-elasticity is increasing in firm size. For the median CEOs of small firms, a 1% increase in shareholders' returns is associated with an increase in compensation of about \$156 thousand dollars. For the population of CEOs, the sensitivity of a \$100 billion-company is about \$145,000 larger than for the smallest companies. However, since median book value is slightly above \$2 billions, the median semi-elasticity is roughly \$160 thousand.

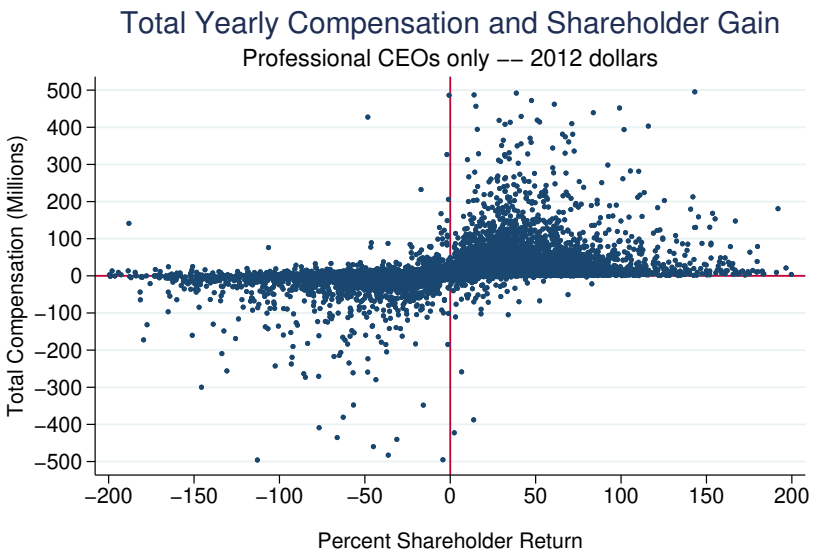

Figure 10: Compensation and Shareholder Return.

Table 1: Semi–elasticity Estimates

	All CEOs	Professional CEOs
Dependent Variables		
Shareholder Return	156.372	132.314
	(1.081)	(1.241)
Sh_Ret × Size	1.445	0.815
	(0.011)	(0.012)
Size	34.596	31.262
	(0.502)	(0.531)
No. Observations	44,268	28,484
Pseudo R^2	0.035	0.073

Note: Standard errors in parenthesis.

Turning our attention to professional CEOs, the semi-elasticity for the smallest firms drops to about $132 thousand dollars. The effect of size on the semi-elasticity is present also when we restrict our attention to professional CEOs, even though its magnitude is smaller. In Figure 11 we illustrate the frequency distribution of the estimated elasticity in our dataset. Most companies display a semi-elasticity lower than $150 thousand.

The scatter plot in Figure 10 suggests that CEOs are in part shielded from their companies' poorest results. This is a hint that the semi-elasticity may vary non-linearly with shareholders' returns.

To verify whether this is the case, we amend the regression specification (5) to allow for the semi-elasticity to positive returns to differ from that to negative returns. For the whole population of CEOs, we find the semi-elasticity to negative returns (for the smallest firms) to be only $43 thousand, while that to positive returns is $217 thousand. When restricting attention to professional CEOs, the two statistics are $35 and $163 thousand, respectively.

We now turn to the time dimension. Did the sensitivity vary significantly over time? The answer is positive. When we allow for a structural break in 2008, we find that – for the population of CEO – the median semi-elasticity declined from $192 thousands in the first sub-period to $117 thousands in the second sub-period. When focusing attention on professional CEOs, the semi-elasticity fell from $183 thousands to $101 thousands.

The increase in firm size that intervened between the two sub-period implies that the shift in the distribution of the effective semi-elasticity was a not as large as hinted at by the decline in our point estimates. Yet, the drop in sensitivity we estimate is economically significant.

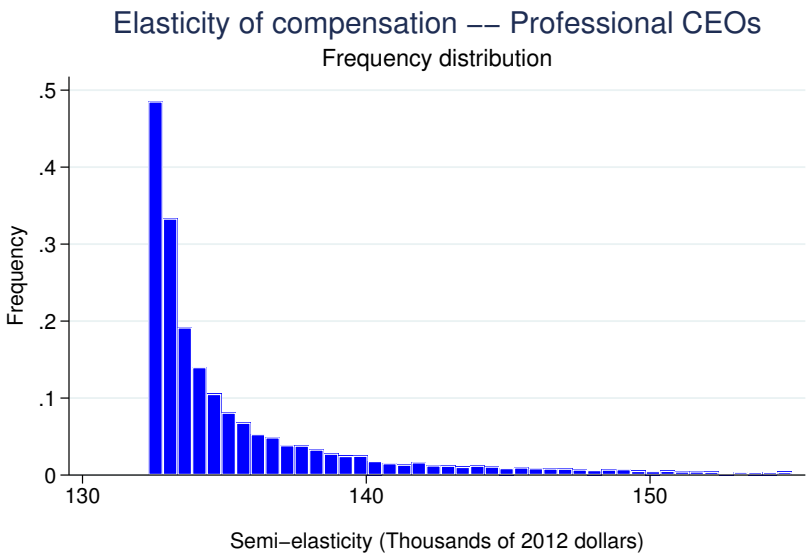

Figure 11: The Cross-section of elasticities.

We also note that the largest part of incentives are provided by deferred compensation. Table 2 reports the results obtained by implementing model (5) separately for current and deferred compensation, in the case of professional CEOs. We find that the estimated semi-elasticity for small firms is only \$5,090 for current compensation and about \$111 thousand for the deferred component. Qualitatively, the lesson is the same when we consider the whole population of CEOs. The only difference is that both estimated semi-elasticities are slightly larger.

Table 2: Semi–elasticity Estimates – Professional CEOs

	Current Comp.	Deferred Comp.
Dependent Variables		
Shareholder Return	5.090	111.271
	(0.623)	(0.780)
Sh_Ret × Size	0.118	0.742
	(0.006)	(0.008)
Size	17.328	9.054
	(0.267)	(0.334)
No. Observations	28,484	28,484
Pseudo R^2	0.017	0.060

Note: Standard errors in parenthesis.

One wonders whether the recent time variation in sensitivity is specific to the semi-elasticity. To address this question, we follow Jensen and Murphy (1990) to estimate the median dollar increase associated with a \$1,000 shareholder gain. For the whole sample, our estimate is \$15. In the language of Edmans et al. (2017), this is equivalent to a 1.5% effective percentage ownership. Allowing for a structural break in 2008, we find that the median sensitivity declined from \$17 to \$13.

The two upshots of this section are that (i) CEOs compensation packages provide executives with some protection against the downside and that (ii) incentives as measured by the semi-elasticity of with respect shareholder wealth have become weaker in recent years.

Sensitivity is driven largely by deferred compensation and therefore by the fluctuations in the value of stock and option holdings. In Section 3, we documented that the fraction of their companies' equity held by CEOs has been declining throughout our sample period. Everything else equal, lower equity stakes will imply lower sensitivity. However,

this will not be the case if market valuations have increased to keep the dollar value of CEOs holdings unchanged.

The analysis in Section 3 suggests that equity stakes have declined even when conditioning on a number of observables, among which market value. We conclude that the observed decline in the stake may be among the factors that drove sensitivity down.

In Section 6, we documented that the practice of awarding stock option grants has been waning since 2001, to the point that after 2013 the median CEO was not awarded in-the-money options. We saw that option awards were largely replaced by stock grants. This change in compensation practices may also have contributed to the decline in estimated sensitivity.

The fact that this study considers only in-the-money options is likely to bias the magnitudes of the statistics presented in this section. The bias should be upwards, since an option that is barely out-of-the-money the year before vesting and becomes in-the-money just before vesting will induce an increase in our measure of compensation that is larger than the actual one. However, we see no reason to believe that the strength of this bias has changed over time.

8. Conclusion

In the empirical literature on CEO compensation, it is common practice to use different definitions when describing levels and the sensitivity to shareholder wealth, respectively. When measuring sensitivity, scholars use the variation in CEO wealth associated with the fortunes of the company they run – what in this paper we called total compensation. However, when considering levels, most adopt a much narrower definition – referred to above as classical – that does not take into account either the appreciation of shares and options held by the executives or the proceeds from option execution and stock sale.

We showed that using total compensation to describe levels yields a rather different rendering of the cross–sectional variation of CEO compensation. While the medians are not very different, the distribution of total compensation displays much greater dispersion and skewness. Beyond being interesting in itself, this fact is relevant for the literature on wealth inequality. For modern economic models to account for the thick tail of the wealth distribution, a small portion of the population must have access to skewed distributions of returns not usually available to others. Our analysis suggests that, mostly because of options and option-like instruments, CEO compensation packages offer such distributions.

A further benefit of using total compensation is that it clearly illustrates the substantial risk CEOs are subject to. In particular, it highlights how, every single year, a large fraction of CEOs lose money. Sometimes, they lose a lot.

When considering the structure of compensation packages, we noted that the decline in the use of options that started at the beginning of the century continued over the last two decades. Options were mostly replaced by stock grants. However, median CEO wealth – the value of stock and options in the CEOs' portfolios – did not grow nearly as fast as market capitalization. This is consistent with a generalized decline in CEOs' equity stakes.

These tendencies may be among the immediate factors behind the decline in the sensitivity of compensation to shareholder wealth that we have documented. According to our analysis, the dollar change in CEO compensation associated with a 1% increase in shareholder wealth was substantially lower in the post-2008 period with respect to the 1994-2008 span.

Appendix A. Definitions of CEO Wealth and Total Yearly Compensation

As stated in the main body of the paper, our definition of CEO wealth proxies for the dollar value of the executive's wealth that is tied to the firm at the beginning of the year. It is defined as the sum of the following elements:

1. Market Value of Stock, given by the number of shares owned at the end of the previous fiscal year and the share price at the same date
2. Market Value of Stock Options, given by the sum of the values of exercisable in–the–money options and unexercisable in–the–money options, respectively
3. Salary
4. Bonus
5. Total value of Restricted Stock Granted
6. Total value of Stock Options Granted
7. Expected Discounted Value of Future Cash Payments – See Appendix Appendix A.2 below

Total Yearly Compensation is our best estimate of the net increase in CEO wealth that occurred during the fiscal year, due to her relation with the company. It is defined as the sum of the following elements:

1. Salary
2. Bonus
3. Net revenue from Trade in Stock – See Appendix Appendix A.1 below
4. Dividends
5. Long–Term Incentive Payouts (including 401K contributions and life insurance premia)
6. A miscellanea of items, among which payouts for cancellation of stock options, payment for unused vacation, tax reimbursements, and signing bonuses
7. Yearly change in the Market Value of Stock
8. Yearly change in the Market Value of Options

The first six elements define what we call Current Compensation. The sum of the remaining ones identify Deferred Compensation.

Appendix A.1. Computation of the net revenue from trade in stock

In this appendix, we briefly describe the algorithm we employ to estimate the net revenue from trade in stock. We start by estimating the cost of exercising options, i.e. VEX_t. We postulate that all options exercised had the same strike price and were exercised when the stock price was the maximum for the fiscal year. This amounts to assuming that the following relationship holds:

$$SOPTEXER = [MAX\_PRICE - STRIKE] \times SOPTEXSH,$$

where MAX_PRICE is the maximum price for the fiscal year, while SOPTEXER and SOPTEXESH are the net value realized from exercising options and the number of options exercised, respectively.[9] $STRIKE$ is our unknown, i.e. the estimated strike price for the options exercised during the year.[10] Then CEX_t, the overall expense associated with exercising the options, is given by

$$CEX_t = SOPTEXSH_t \times STRIKE_t.$$

Next, we estimate the net number of shares sold. EXECUCOMP provides us with the holdings of restricted stock, RSTKHLD. The restricted stock granted $GRNT_t$ can be estimated by dividing the value of restricted stock granted by the price at the end of the fiscal year: $GRNT_t = RSTKGRNT/PRCCF$. The law of motion for restricted stock allows us to recover the number of vested shares $VEST_t$.

$$RSTKHLD_t = RSTKHLD_{t-1} + GRNT_t - VEST_t.$$

[9] Notice that from the database it is not possible to tell whether the stock the executive acquires by exercising options was sold or held on to.

[10] According to the EXECUCOMP manual, SOPTEXER is computed using the price of the day of the exercise. This implies that our procedure over–estimates the strike price.

Abstracting from donations, the law of motion for common stock $SHROWN_t$ is given by

$$SHROWN_t = SHROWN_{t-1} + P_t + VEST_t - S_t + SOPTEXSH_t,$$

where P_t and S_t denote the stock purchased and sold, respectively. Our estimate of the net number of shares sold is

$$S_t - P_t = SHROWN_{t-1} - SHROWN_t + VEST_t + SOPTEXSH_t.$$

If $P_t - S_t > 0$, we assume that the net revenue from stock trade is identically zero. If $S_t - P_t > 0$, we assume that the net revenue from stock trade is $\max[0, MAX\_PRICE \times (S_t - P_t) - CEX_t]$. That is, we assume that the executive sold $S_t - P_t$ shares at the maximum market price for the year, but we impose that the net revenue is always non–negative.

Appendix A.2. Expected Discounted Value of Future Cash Payments

Estimating the expected discounted value of future cash payments is extremely challenging, as it entails (i) projecting the evolution of expected cash payments over time, (ii) estimating the conditional expectation of years left in office, and (iii) conjecture a discount rate.

The evidence shown in the main body of the paper indicates that the sum of salaries and bonuses has increased very little over our sample period. For this reason, we do not feel particularly uncomfortable assuming that such payments are expected to stay constant at the current value, in real terms.

We find that in our sample the hazard rate varies very little for the first ten years in office. For this reason, we make the drastic choice of assuming that the hazard rate is constant at its sample mean of 0.1754. Finally, we assume that the discount factor is 0.9615, the value commonly used in the macroeconomics literature.

Let ρ be the survival rate (1 minus the hazard rate) and let β be the discount factor. Given our assumptions, the expected discounted value of future cash payments is estimated to equal payments in the current year, multiplied by the following factor:

$$(1-\rho)\sum_{t=1}^{\infty}\rho^t\sum_{s=1}^{t}\beta^s = \frac{\rho\beta}{1-\rho\beta} \approx 3.83.$$

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Table A.3: Distribution of Total Compensation – Millions of 2012 dollars – All CEOs

Year	Obs.		Mean	Median	MAD	Skewness	Means by Decile									
							1	2	3	4	5	6	7	8	9	10
1994	1,362	Gross	6.35	1.46	2.72	16.12	-41.92	-3.72	-0.43	0.54	1.10	1.94	3.16	5.34	10.62	86.94
		Net of Mkt	5.55	1.40	2.70	15.70	-43.46	-3.85	-0.53	0.50	1.05	1.84	3.03	5.20	10.25	81.69
		Classical	3.07	1.80	1.00	4.69	0.44	0.73	0.98	1.29	1.62	2.04	2.58	3.49	5.03	12.52
1995	1,395	Gross	30.54	4.77	4.39	24.14	-14.37	0.20	1.16	2.15	3.70	5.95	9.26	15.44	28.90	253.87
		Net of Mkt	19.56	2.88	4.06	23.99	-39.01	-2.70	0.30	1.12	2.15	3.74	6.28	10.87	20.04	193.00
		Classical	3.24	1.87	1.01	8.36	0.45	0.78	1.04	1.32	1.68	2.12	2.70	3.67	5.42	13.23
1996	1,428	Gross	29.06	4.38	4.57	20.27	-26.83	-0.39	1.00	1.92	3.43	5.61	9.14	14.83	28.63	254.47
		Net of Mkt	17.64	2.73	4.55	17.12	-48.85	-3.39	0.11	1.06	2.01	3.70	6.52	11.06	21.52	182.84
		Classical	4.33	2.19	1.28	16.27	0.49	0.85	1.17	1.52	1.97	2.51	3.28	4.56	6.89	20.05
1997	1,448	Gross	56.79	8.16	7.68	32.98	-44.75	0.36	1.82	3.69	6.32	10.17	16.07	26.66	49.78	500.21
		Net of Mkt	34.90	4.48	6.76	29.64	-97.67	-3.68	0.36	1.60	3.38	6.14	10.51	18.08	33.65	378.37
		Classical	5.11	2.61	1.59	9.06	0.51	0.92	1.32	1.74	2.27	2.93	3.83	5.33	8.00	24.32
1998	1,487	Gross	73.91	2.09	7.26	26.78	-66.06	-7.94	-2.18	0.18	1.35	3.17	7.08	15.37	39.87	751.54
		Net of Mkt	47.45	0.52	8.15	24.41	-117.18	-16.99	-7.58	-2.64	-0.08	1.01	3.00	8.91	26.80	580.71
		Classical	5.98	2.62	1.60	28.82	0.48	0.95	1.33	1.79	2.31	3.00	4.03	5.65	8.66	31.79
1999	1,553	Gross	118.76	2.31	8.10	25.88	-149.18	-9.14	-2.13	0.31	1.43	3.39	8.39	17.58	46.03	1,273.26
		Net of Mkt	95.46	0.94	8.63	26.43	-197.64	-17.06	-5.67	-1.31	0.44	1.83	5.14	12.61	35.94	1,124.11
		Classical	6.65	2.87	1.82	8.64	0.48	0.99	1.38	1.86	2.50	3.30	4.53	6.57	10.34	34.65
2000	1,513	Gross	-11.03	4.66	9.77	-31.53	-570.18	-8.55	-0.55	1.31	3.41	6.89	12.98	25.15	55.66	363.44
		Net of Mkt	0.45	5.59	9.75	-29.40	-502.50	-6.42	0.04	1.66	4.03	7.91	14.80	27.92	62.18	394.46
		Classical	8.45	3.14	2.12	16.43	0.45	0.94	1.42	1.93	2.61	3.62	5.02	7.01	11.93	49.54
2001	1,436	Gross	-1.61	2.66	7.25	15.44	-364.62	-14.01	-2.31	0.64	1.86	3.71	6.98	12.72	24.53	314.36
		Net of Mkt	17.80	3.95	6.97	21.69	-255.43	-7.33	-0.17	1.51	2.95	5.43	9.41	16.41	31.54	374.14
		Classical	7.67	3.19	2.23	13.84	0.48	0.97	1.43	1.98	2.73	3.81	5.48	8.00	13.07	38.77
2002	1,466	Gross	-19.76	0.62	5.36	-24.64	-351.44	-16.43	-5.73	-1.58	0.17	1.17	2.75	5.67	11.88	155.29
		Net of Mkt	4.00	2.27	5.43	-18.74	-213.25	-6.51	-1.05	0.61	1.69	3.17	5.89	10.80	21.26	217.47
		Classical	6.07	3.22	2.11	5.51	0.52	1.03	1.50	2.06	2.80	3.74	5.08	7.04	10.89	26.10
2003	1,549	Gross	36.64	10.61	8.65	11.43	-26.46	1.75	3.66	5.99	8.80	12.91	18.82	29.04	53.06	260.13
		Net of Mkt	21.02	8.03	7.04	-7.94	-65.93	0.69	2.19	4.05	6.44	9.53	14.11	22.13	40.17	177.44
		Classical	5.51	3.01	1.88	3.85	0.53	1.03	1.49	2.02	2.63	3.48	4.56	6.46	9.75	23.23
2004	1,557	Gross	31.75	7.92	7.57	15.48	-37.39	-0.42	1.86	3.66	6.26	9.77	14.31	21.96	38.40	260.01
		Net of Mkt	24.66	6.57	6.95	14.34	-50.80	-1.58	1.17	2.90	5.13	8.18	12.26	19.14	33.46	217.21
		Classical	6.08	3.52	2.22	5.69	0.58	1.16	1.76	2.37	3.13	4.06	5.38	7.16	10.72	24.57
2005	1,572	Gross	27.71	5.11	6.20	13.88	-37.79	-2.36	0.56	1.99	3.83	6.44	10.50	17.77	32.70	243.82
		Net of Mkt	24.10	4.59	6.35	13.95	-46.62	-3.63	0.18	1.61	3.35	5.78	9.49	16.22	30.02	224.63
		Classical	6.21	3.64	2.26	4.07	0.61	1.21	1.75	2.37	3.18	4.18	5.32	7.11	10.72	25.72
2006	1,488	Gross	45.18	5.62	6.27	32.68	-49.25	-1.21	0.97	2.43	4.30	7.30	11.71	19.45	34.27	423.75
		Net of Mkt	35.16	3.72	6.05	32.31	-87.58	-4.25	-0.06	1.30	2.81	4.91	8.61	15.34	27.31	384.16
		Classical	6.04	3.57	2.22	4.06	0.61	1.17	1.64	2.26	3.09	4.08	5.29	7.22	10.76	24.23
2007	1,646	Gross	24.66	2.70	6.51	15.67	-79.49	-7.76	-1.61	0.47	1.80	4.06	7.04	12.87	28.02	282.00
		Net of Mkt	22.98	2.48	6.41	18.83	-84.93	-9.09	-2.01	0.32	1.53	3.64	6.52	12.05	26.15	276.42
		Classical	5.48	3.08	2.04	4.79	0.46	0.94	1.40	1.95	2.63	3.64	4.84	6.69	9.88	22.41
2008	1,951	Gross	-43.71	-0.62	4.91	-27.90	-434.99	-25.61	-10.64	-4.52	-1.49	0.06	1.01	2.33	5.21	31.55
		Net of Mkt	0.90	2.48	3.79	-24.69	-135.97	-4.30	-0.28	0.89	1.92	3.16	5.13	8.53	15.90	114.08
		Classical	5.21	2.95	1.91	6.99	0.46	0.96	1.38	1.89	2.57	3.49	4.68	6.36	9.03	21.28

Note: The heading *Gross* denotes Total Yearly Compensation.
Net of Mkt denotes Total Yearly Compensation, net of the return on the market portfolio.
MAD stands for Median Absolute Deviation.
Skewness is the ratio of third moment about to the mean to the standard deviation.

Table A.3: Distribution of Total Compensation – Millions of 2012 dollars – All CEOs

Year	Obs.		Mean	Median	MAD	Skewness	Means by Decile									
							1	2	3	4	5	6	7	8	9	10
2009	1,926	Gross	32.95	5.18	4.58	21.64	-22.93	0.43	1.56	2.81	4.24	6.34	9.34	14.30	25.02	289.25
		Net of Mkt	24.24	3.58	3.89	23.98	-33.04	-1.02	0.73	1.80	2.95	4.55	6.98	10.96	18.93	230.22
		Classical	4.60	2.85	1.81	4.54	0.46	0.93	1.34	1.84	2.48	3.29	4.36	5.87	8.30	17.21
2010	1,895	Gross	35.16	5.99	4.76	27.04	-15.14	1.08	2.21	3.39	4.99	7.15	10.26	15.18	25.62	297.54
		Net of Mkt	23.54	4.30	3.84	24.62	-43.91	0.18	1.28	2.35	3.56	5.22	7.63	11.70	19.82	228.01
		Classical	5.28	3.53	2.20	3.64	0.51	1.15	1.73	2.34	3.10	4.09	5.31	6.87	9.46	18.19
2011	1,857	Gross	6.44	2.67	3.67	-24.40	-92.99	-2.32	0.30	1.13	2.06	3.50	5.55	9.16	15.59	122.58
		Net of Mkt	3.61	2.51	3.70	-26.98	-99.27	-2.72	0.14	1.01	1.93	3.30	5.27	8.65	14.53	103.24
		Classical	5.48	3.74	2.32	4.29	0.53	1.17	1.78	2.48	3.28	4.26	5.52	7.21	9.98	18.65
2012	1,868	Gross	29.08	5.28	4.24	23.63	-12.84	0.82	1.87	3.03	4.44	6.29	8.92	13.61	23.67	241.95
		Net of Mkt	13.20	3.64	3.48	23.16	-36.05	-0.58	0.95	1.83	2.94	4.47	6.51	10.13	16.91	125.26
		Classical	5.51	3.83	2.34	4.74	0.56	1.20	1.81	2.50	3.38	4.35	5.56	7.07	9.71	18.99
2013	1,829	Gross	70.64	8.90	6.68	19.69	-9.16	2.15	3.68	5.46	7.72	10.59	15.38	23.11	41.82	608.50
		Net of Mkt	39.04	5.59	4.86	19.10	-41.22	0.25	1.64	2.94	4.55	6.78	9.75	15.30	27.62	364.40
		Classical	5.75	4.08	2.40	4.21	0.63	1.33	1.99	2.73	3.59	4.59	5.85	7.44	10.13	19.24
2014	1,830	Gross	0.94	5.08	4.70	-28.22	-258.45	-0.26	1.46	2.65	4.16	6.11	9.12	14.27	25.97	204.41
		Net of Mkt	-20.06	3.23	4.41	-31.43	-372.51	-3.59	0.02	1.27	2.45	4.01	6.31	10.20	18.28	132.93
		Classical	6.08	4.35	2.59	6.84	0.61	1.42	2.17	2.93	3.79	4.90	6.22	7.84	10.50	20.43
2015	1,812	Gross	32.46	3.33	4.14	31.15	-92.97	-3.06	0.31	1.52	2.65	4.13	6.27	9.92	17.28	378.96
		Net of Mkt	29.75	3.08	4.21	31.18	-101.57	-3.69	-0.01	1.30	2.39	3.82	5.85	9.24	16.35	364.22
		Classical	6.14	4.46	2.62	4.81	0.65	1.53	2.24	3.03	3.93	5.07	6.37	8.15	10.67	19.80
2016	1,764	Gross	20.96	6.25	4.57	22.81	-46.06	1.33	2.75	4.05	5.45	7.57	10.36	14.89	24.75	184.82
		Net of Mkt	6.17	4.83	4.12	1.13	-103.27	-0.17	1.68	2.84	4.13	5.81	8.17	11.54	19.33	111.71
		Classical	6.23	4.54	2.59	4.51	0.64	1.56	2.39	3.26	4.11	5.09	6.38	8.33	10.92	19.63
2017	1,742	Gross	47.68	5.30	4.80	33.79	-36.14	-0.06	1.66	3.11	4.57	6.43	9.40	14.02	24.33	450.03
		Net of Mkt	22.88	3.14	4.42	35.97	-77.54	-4.34	-0.24	1.20	2.51	3.94	5.97	9.31	15.81	272.42
		Classical	6.78	4.89	2.75	5.18	0.67	1.70	2.55	3.46	4.35	5.45	6.85	8.70	11.47	22.62
2018	1,679	Gross	9.48	3.69	4.42	17.98	-196.22	-3.10	0.32	1.64	2.91	4.50	6.65	10.61	18.31	249.50
		Net of Mkt	17.85	3.92	4.38	29.48	-166.90	-1.99	0.75	1.94	3.24	4.86	7.18	11.20	19.85	299.02
		Classical	7.05	5.05	2.87	11.13	0.68	1.73	2.70	3.65	4.56	5.66	7.12	9.12	12.32	23.05
2019	1,624	Gross	63.87	7.93	6.06	26.42	-14.29	1.57	3.17	4.73	6.53	9.37	13.08	19.35	36.63	559.90
		Net of Mkt	14.88	4.99	4.54	21.20	-102.57	-0.58	1.36	2.62	4.09	5.92	8.57	12.72	22.80	194.15
		Classical	7.00	5.23	2.90	14.33	0.69	1.82	2.82	3.77	4.75	5.80	7.15	9.05	12.01	22.23
2020	1,592	Gross	93.94	5.79	5.17	34.28	-29.64	0.22	1.82	3.35	4.92	7.06	10.39	15.87	31.04	895.52
		Net of Mkt	52.17	3.35	4.95	36.14	-104.96	-4.92	-0.45	1.13	2.57	4.10	6.28	10.58	19.98	588.06
		Classical	7.28	5.21	2.93	9.68	0.72	1.85	2.78	3.74	4.73	5.85	7.25	9.43	12.31	24.18

Note: The heading *Gross* denotes Total Yearly Compensation.
Net of Mkt denotes Total Yearly Compensation, net of the return on the market portfolio.
MAD stands for Median Absolute Deviation.
Skewness is the ratio of third moment about to the mean to the standard deviation.

Table A.4: Distribution of Yearly Compensation – Millions of 2012 dollars – All CEOs

Year	Obs.		Mean	Median	MAD	Skewness	Means by Decile of Total Compensation									
							1	2	3	4	5	6	7	8	9	10
1994	1,362	Total	6.35	1.46	2.72	16.12	-41.92	-3.72	-0.43	0.54	1.10	1.94	3.16	5.34	10.62	86.94
		Current	7.85	1.74	0.99	30.54	8.77	3.74	1.71	1.10	1.60	2.20	3.08	3.88	10.53	29.84
		Deferred	-1.76	-0.09	2.57	-13.29	-50.70	-7.46	-2.13	-0.55	-0.50	-0.26	0.08	1.46	0.10	45.72
1995	1,395	Total	30.54	4.77	4.39	24.14	-14.37	0.20	1.16	2.15	3.70	5.95	9.26	15.44	28.90	253.87
		Current	6.07	1.78	0.98	20.69	3.74	1.23	1.12	1.73	2.01	2.54	3.57	4.50	7.65	24.87
		Deferred	24.29	2.21	3.65	24.44	-18.11	-1.03	0.03	0.42	1.70	3.41	5.68	10.94	21.25	219.34
1996	1,428	Total	29.06	4.38	4.57	20.27	-26.83	-0.39	1.00	1.92	3.43	5.61	9.14	14.83	28.63	254.47
		Current	6.09	1.89	1.10	10.48	7.10	1.85	1.20	2.00	2.39	2.70	3.52	4.93	11.63	17.27
		Deferred	22.72	1.91	4.10	20.83	-33.93	-2.24	-0.20	-0.09	1.04	2.90	5.62	9.89	17.00	228.23
1997	1,448	Total	56.79	8.16	7.68	32.98	-44.75	0.36	1.82	3.69	6.32	10.17	16.07	26.66	49.78	500.21
		Current	11.35	2.27	1.39	24.31	25.52	1.26	1.63	2.46	2.93	4.93	5.76	7.80	11.32	36.59
		Deferred	44.94	4.19	6.23	31.04	-70.27	-0.90	0.19	1.23	3.40	5.24	10.31	18.87	38.46	444.85
1998	1,487	Total	73.91	2.09	7.26	26.78	-66.06	-7.94	-2.18	0.18	1.35	3.17	7.08	15.37	39.87	751.54
		Current	14.40	2.13	1.31	24.01	9.11	3.60	3.26	1.51	1.94	2.62	5.53	6.06	11.28	66.06
		Deferred	58.72	0.00	6.85	25.56	-75.18	-11.55	-5.44	-1.33	-0.59	0.54	1.55	9.31	28.59	644.04
1999	1,553	Total	118.76	2.31	8.10	25.88	-149.18	-9.14	-2.13	0.31	1.43	3.39	8.39	17.58	46.03	1,273.26
		Current	30.98	2.05	1.30	39.32	9.17	3.60	2.73	1.46	1.85	2.91	4.61	12.81	15.98	163.66
		Deferred	85.76	0.04	7.45	30.83	-158.35	-12.73	-4.87	-1.15	-0.42	0.48	3.79	4.78	30.06	997.81
2000	1,513	Total	-11.03	4.66	9.77	-31.53	-570.18	-8.55	-0.55	1.31	3.41	6.89	12.98	25.15	55.66	363.44
		Current	17.19	2.40	1.61	16.88	49.06	5.50	1.92	1.67	2.67	4.16	6.29	8.67	15.69	52.21
		Deferred	-29.19	1.72	9.17	-31.87	-619.23	-14.05	-2.48	-0.36	0.74	2.74	6.70	16.49	39.97	277.16
2001	1,436	Total	-1.61	2.66	7.25	15.44	-364.62	-14.01	-2.31	0.64	1.86	3.71	6.98	12.72	24.53	314.36
		Current	11.87	2.32	1.49	15.55	38.69	6.87	3.98	1.75	2.57	3.69	3.90	6.32	11.03	28.15
		Deferred	-14.19	0.28	6.80	15.06	-403.31	-20.88	-6.29	-1.11	-0.72	0.02	3.08	6.40	13.50	267.04
2002	1,466	Total	-19.76	0.62	5.36	-24.64	-351.44	-16.43	-5.73	-1.58	0.17	1.17	2.75	5.67	11.88	155.29
		Current	7.77	2.27	1.46	10.91	21.00	7.59	3.97	2.74	2.70	1.99	2.89	5.97	7.88	15.88
		Deferred	-27.90	-1.69	5.13	-24.41	-372.44	-24.02	-9.71	-4.32	-2.53	-0.82	-0.13	-0.30	4.00	130.49
2003	1,549	Total	36.64	10.61	8.65	11.43	-26.46	1.75	3.66	5.99	8.80	12.91	18.82	29.04	53.06	260.13
		Current	11.15	2.38	1.52	20.45	23.59	1.21	3.08	2.63	3.58	4.55	5.13	8.73	11.52	35.43
		Deferred	25.04	6.52	6.52	1.16	-50.05	0.54	0.58	3.35	5.23	8.36	13.68	20.31	41.54	207.74
2004	1,557	Total	31.75	7.92	7.57	15.48	-37.39	-0.42	1.86	3.66	6.26	9.77	14.31	21.96	38.40	260.01
		Current	13.31	2.99	1.95	15.35	9.48	3.35	2.23	2.58	4.60	4.79	6.84	10.02	16.09	51.98
		Deferred	17.84	2.90	6.25	14.42	-46.87	-3.77	-0.37	1.08	1.66	4.98	7.47	11.94	22.31	180.57
2005	1,572	Total	27.71	5.11	6.20	13.88	-37.79	-2.36	0.56	1.99	3.83	6.44	10.50	17.77	32.70	243.82
		Current	26.12	3.13	2.11	38.26	22.02	4.68	2.56	3.42	4.06	8.83	6.17	10.07	13.13	139.58
		Deferred	0.63	0.78	5.75	-31.54	-59.81	-7.05	-2.00	-1.44	-0.23	-2.39	4.32	7.71	19.57	47.69
2006	1,488	Total	45.18	5.62	6.27	32.68	-49.25	-1.21	0.97	2.43	4.30	7.30	11.71	19.45	34.27	423.75
		Current	13.43	2.05	1.45	23.22	17.16	4.23	2.09	3.23	3.27	5.76	7.98	9.66	24.80	28.22
		Deferred	29.48	1.32	5.72	32.75	-66.40	-5.44	-1.12	-0.80	1.04	1.54	3.73	9.79	9.47	344.55
2007	1,646	Total	24.66	2.70	6.51	15.67	-79.49	-7.76	-1.61	0.47	1.80	4.06	7.04	12.87	28.02	282.00
		Current	11.73	1.78	1.27	20.85	19.84	7.83	3.57	1.77	2.89	3.93	6.95	8.00	12.57	21.94
		Deferred	10.03	-0.19	5.95	16.17	-99.33	-15.59	-5.18	-1.30	-1.09	0.13	0.09	4.87	15.45	202.73
2008	1,951	Total	-43.71	-0.62	4.91	-27.90	-434.99	-25.61	-10.64	-4.52	-1.49	0.06	1.01	2.33	5.21	31.55
		Current	11.74	2.32	1.69	25.72	57.31	10.97	8.56	4.69	3.16	1.97	2.71	3.94	7.24	15.01
		Deferred	-56.07	-4.07	4.96	-25.54	-492.30	-36.59	-19.20	-9.21	-4.65	-1.91	-1.69	-1.61	-2.03	8.48

Note: *MAD* stands for Median Absolute Deviation.
Skewness is the ratio of third moment about to the mean to the standard deviation.

Table A.4: Continued

Year	Obs.		Mean	Median	MAD	Skewness	Means by Decile of Total Compensation									
							1	2	3	4	5	6	7	8	9	10
2009	1,926	Total	32.95	5.18	4.58	21.64	-22.93	0.43	1.56	2.81	4.24	6.34	9.34	14.30	25.02	289.25
		Current	13.52	1.74	1.15	19.62	11.05	1.63	1.54	1.87	2.93	3.66	6.31	6.22	13.04	63.90
		Deferred	18.85	2.01	3.72	21.56	-33.98	-1.19	0.02	0.94	1.31	2.68	3.03	8.07	11.98	196.20
2010	1,895	Total	35.16	5.99	4.76	27.04	-15.14	1.08	2.21	3.39	4.99	7.15	10.26	15.18	25.62	297.54
		Current	9.41	2.28	1.56	23.19	5.64	1.31	1.98	2.81	3.17	4.47	5.23	7.91	11.90	36.31
		Deferred	25.34	2.15	3.36	26.49	-20.78	-0.23	0.23	0.58	1.82	2.68	5.03	7.28	13.73	243.64
2011	1,857	Total	6.44	2.67	3.67	-24.40	-92.99	-2.32	0.30	1.13	2.06	3.50	5.55	9.16	15.59	122.58
		Current	10.09	2.39	1.71	23.28	21.00	3.33	2.03	2.60	2.46	3.77	4.41	6.38	10.32	32.44
		Deferred	-4.13	0.02	3.20	-28.81	-114.00	-5.65	-1.73	-1.47	-0.41	-0.27	1.15	2.78	5.27	72.91
2012	1,868	Total	29.08	5.28	4.24	23.63	-12.84	0.82	1.87	3.03	4.44	6.29	8.92	13.61	23.67	241.95
		Current	10.83	2.69	1.93	21.94	5.65	1.27	2.50	2.50	3.24	4.28	6.32	7.41	13.13	45.66
		Deferred	17.78	1.27	2.92	27.43	-18.48	-0.45	-0.63	0.53	1.20	2.01	2.61	6.20	10.54	174.94
2013	1,829	Total	70.64	8.90	6.68	19.69	-9.16	2.15	3.68	5.46	7.72	10.59	15.38	23.11	41.82	608.50
		Current	13.34	2.94	2.10	23.72	6.22	1.73	2.91	3.06	4.52	5.53	7.13	9.63	12.72	54.12
		Deferred	56.52	4.34	4.38	19.28	-15.38	0.42	0.77	2.40	3.20	5.07	8.24	13.48	29.10	520.30
2014	1,830	Total	0.94	5.08	4.70	-28.22	-258.45	-0.26	1.46	2.65	4.16	6.11	9.12	14.27	25.97	204.41
		Current	10.32	2.94	2.12	19.97	24.88	2.28	2.14	2.84	3.62	4.15	7.02	9.10	12.99	24.45
		Deferred	-9.98	0.95	3.72	-29.15	-283.34	-2.55	-0.69	-0.19	0.54	1.97	2.10	5.17	12.98	164.17
2015	1,812	Total	32.46	3.33	4.14	31.15	-92.97	-3.06	0.31	1.52	2.65	4.13	6.27	9.92	17.28	378.96
		Current	10.84	3.13	2.27	24.16	19.95	4.58	2.52	2.41	3.38	4.80	6.16	7.97	12.93	31.91
		Deferred	21.07	-0.14	3.73	31.54	-112.91	-7.65	-2.21	-0.89	-0.74	-0.67	0.11	1.95	4.35	329.64
2016	1,764	Total	20.96	6.25	4.57	22.81	-46.06	1.33	2.75	4.05	5.45	7.57	10.36	14.89	24.75	184.82
		Current	11.82	3.18	2.24	18.94	13.23	3.31	2.49	3.44	4.47	5.14	5.78	9.53	10.80	43.94
		Deferred	8.60	2.00	3.57	18.93	-59.29	-1.97	0.26	0.61	0.98	2.43	4.58	5.36	13.95	119.22
2017	1,742	Total	47.68	5.30	4.80	33.79	-36.14	-0.06	1.66	3.11	4.57	6.43	9.40	14.02	24.33	450.03
		Current	10.94	3.45	2.45	27.35	10.09	2.50	2.54	3.66	4.03	4.93	6.07	13.39	13.27	36.94
		Deferred	36.31	0.93	3.77	33.59	-46.23	-2.56	-0.88	-0.56	0.54	1.49	3.32	0.62	11.06	396.77
2018	1,679	Total	9.48	3.69	4.42	17.98	-196.22	-3.10	0.32	1.64	2.91	4.50	6.65	10.61	18.31	249.50
		Current	14.46	3.90	2.83	29.41	69.66	5.73	2.89	2.71	3.78	4.86	7.63	9.44	13.35	21.38
		Deferred	-5.68	-0.40	3.52	6.78	-265.88	-8.83	-2.57	-1.07	-0.88	-0.36	-0.98	1.17	4.96	217.39
2019	1,624	Total	63.87	7.93	6.06	26.42	-14.29	1.57	3.17	4.73	6.53	9.37	13.08	19.35	36.63	559.90
		Current	39.23	3.24	2.28	37.61	6.33	2.08	2.36	3.49	4.52	5.38	7.15	7.88	13.91	235.72
		Deferred	22.64	2.74	4.02	15.10	-20.62	-0.51	0.80	1.24	2.01	4.00	5.93	11.47	22.72	199.83
2020	1,592	Total	93.94	5.79	5.17	34.28	-29.64	0.22	1.82	3.35	4.92	7.06	10.39	15.87	31.04	895.52
		Current	29.33	3.79	2.80	36.67	157.38	2.89	2.38	3.15	4.42	5.57	7.78	10.95	17.25	62.72
		Deferred	63.00	0.82	3.66	26.25	-187.02	-2.66	-0.56	0.19	0.49	1.49	2.60	4.92	13.79	797.60

Note: *MAD* stands for Median Absolute Deviation.
Skewness is the ratio of third moment about to the mean to the standard deviation.

Table A.5: Distribution of Yearly Compensation – Millions of 2012 dollars – Professional CEOs

Year	Obs.		Mean	Median	MAD	Skewness	Means by Decile of Total Compensation									
							1	2	3	4	5	6	7	8	9	10
1994	449	Total	5.41	1.93	3.73	2.34	-31.72	-4.15	-1.20	0.25	1.34	2.47	4.09	6.77	12.72	64.28
		Current	3.68	1.66	0.92	5.11	3.75	1.99	1.77	1.16	1.95	2.40	3.06	3.95	5.55	9.52
		Deferred	1.67	-0.30	3.63	1.16	-35.47	-6.14	-2.97	-0.91	-0.60	0.08	1.03	2.83	7.18	52.39
1995	446	Total	20.67	5.78	5.35	10.14	-9.33	-0.31	1.31	2.68	4.73	6.81	9.67	15.71	26.72	150.57
		Current	5.84	1.62	0.86	19.72	2.65	1.52	1.54	1.58	2.44	2.04	2.78	3.70	6.69	29.11
		Deferred	14.75	3.40	4.70	6.70	-11.98	-1.83	-0.23	1.09	2.30	4.77	6.89	12.01	20.03	115.78
1996	474	Total	17.62	4.59	5.69	14.67	-21.74	-1.86	0.56	1.71	3.41	5.74	9.36	14.88	25.99	139.30
		Current	5.91	1.67	0.97	7.52	8.56	1.98	1.32	2.18	2.35	2.55	3.45	3.90	7.07	20.23
		Deferred	11.56	2.07	5.20	13.73	-30.30	-3.84	-0.76	-0.48	1.06	3.19	5.92	10.98	18.92	111.72
1997	490	Total	24.05	8.61	8.94	9.92	-25.47	-1.18	1.20	3.61	6.88	10.37	15.50	25.26	46.35	157.96
		Current	6.44	2.07	1.28	11.76	6.28	1.36	1.53	3.14	2.82	3.56	5.05	5.77	9.67	19.62
		Deferred	17.39	5.11	7.44	9.97	-31.75	-2.53	-0.32	0.47	4.06	6.81	10.44	19.48	36.68	130.51
1998	513	Total	16.77	1.08	7.42	8.61	-40.91	-11.03	-4.57	-1.49	0.33	2.07	5.24	11.73	23.52	184.01
		Current	12.14	1.96	1.24	17.22	6.67	3.65	2.30	3.04	1.43	2.02	3.47	5.49	8.17	62.84
		Deferred	4.22	-0.67	6.84	1.12	-47.58	-14.68	-6.87	-4.53	-1.11	0.05	1.77	6.24	15.35	94.18
1999	590	Total	36.05	2.58	8.33	9.57	-45.36	-7.55	-1.90	0.25	1.62	4.15	9.76	18.12	39.34	342.10
		Current	14.30	1.74	1.02	23.62	8.67	2.35	2.15	1.49	1.61	2.27	4.74	5.68	17.94	69.14
		Deferred	21.12	0.25	7.89	7.62	-54.03	-9.90	-4.06	-1.24	0.02	1.89	5.02	12.44	21.40	239.63
2000	641	Total	22.60	4.66	9.56	-1.15	-173.24	-6.31	-0.72	1.18	3.38	6.72	12.89	23.69	53.46	305.46
		Current	15.96	2.12	1.39	18.49	23.00	3.70	1.57	1.84	2.58	3.13	5.02	8.25	16.29	68.27
		Deferred	5.91	1.82	9.02	-3.32	-196.25	-10.01	-2.29	-0.66	0.80	3.59	7.87	15.44	37.17	203.77
2001	593	Total	25.54	2.79	7.54	22.84	-238.31	-11.51	-2.19	0.75	2.00	4.04	7.91	13.80	24.56	455.96
		Current	10.06	2.02	1.40	7.35	20.26	5.22	4.01	1.47	3.87	4.25	2.90	6.51	8.88	32.26
		Deferred	15.10	0.43	7.21	22.76	-258.56	-16.74	-6.20	-0.72	-1.87	-0.22	5.01	7.29	15.69	408.61
2002	636	Total	-49.99	0.27	5.01	-22.94	-542.78	-15.41	-5.77	-2.11	-0.32	0.73	2.11	4.77	10.07	44.54
		Current	6.72	1.88	1.20	9.16	16.50	6.69	2.99	2.16	2.41	1.98	2.67	4.44	7.07	16.31
		Deferred	-56.94	-1.86	4.79	-22.74	-559.27	-22.10	-8.75	-4.27	-2.73	-1.25	-0.55	0.33	3.00	21.75
2003	732	Total	27.47	9.48	7.93	2.97	-14.66	1.51	3.29	5.50	8.16	11.70	17.35	26.80	45.97	169.70
		Current	10.60	2.00	1.20	20.51	31.61	1.07	1.82	2.21	2.74	3.97	3.67	6.88	9.29	36.03
		Deferred	16.63	6.60	6.52	-16.76	-46.27	0.44	1.47	3.30	5.43	7.73	13.68	19.92	36.68	124.30
2004	718	Total	20.14	7.11	7.00	11.25	-22.51	-1.23	1.16	3.07	5.42	8.77	12.15	18.00	30.39	147.53
		Current	8.01	2.69	1.81	6.18	10.32	4.61	2.00	2.50	4.48	3.66	6.78	8.13	9.85	23.19
		Deferred	11.95	2.60	6.01	10.36	-32.83	-5.84	-0.84	0.57	0.94	5.11	5.37	9.87	20.54	117.58
2005	712	Total	14.10	4.03	6.63	3.71	-41.99	-3.86	-0.34	0.96	2.85	5.57	9.47	16.04	28.04	124.73
		Current	11.56	2.66	1.84	22.17	36.26	6.11	2.31	2.58	5.20	5.08	4.63	9.22	11.09	30.15
		Deferred	2.39	0.36	5.87	-11.32	-78.25	-9.96	-2.64	-1.62	-2.36	0.48	4.84	6.82	16.95	89.91
2006	669	Total	10.02	4.57	5.98	-0.58	-55.08	-2.24	0.26	1.62	3.50	5.88	10.11	16.34	27.02	93.27
		Current	8.93	1.84	1.27	15.44	16.49	4.74	1.57	2.51	3.16	4.80	6.38	5.24	15.34	16.58
		Deferred	-0.24	0.71	5.00	-4.25	-71.57	-6.98	-1.32	-0.90	0.34	1.09	3.73	11.10	11.68	50.25
2007	734	Total	15.70	1.76	6.55	16.82	-50.99	-8.59	-2.72	-0.40	1.05	3.07	6.30	11.26	23.53	175.44
		Current	8.27	1.44	0.93	10.89	13.76	7.59	4.34	2.68	2.43	3.59	7.28	7.30	10.95	11.25
		Deferred	4.67	-1.02	6.60	17.05	-64.75	-16.19	-7.07	-3.07	-1.38	-0.52	-0.99	3.96	12.58	124.75
2008	935	Total	-11.13	-0.81	4.13	-8.07	-100.57	-18.64	-8.78	-4.05	-1.59	-0.19	0.62	1.71	4.21	15.79
		Current	9.06	1.83	1.27	11.16	37.19	11.37	8.15	4.32	2.45	1.14	2.47	2.71	5.68	13.14
		Deferred	-20.60	-3.53	4.05	-7.22	-137.76	-30.01	-16.92	-8.37	-4.05	-1.34	-1.84	-1.00	-1.48	-3.61

Note: *Professional CEOs* are those whose equity stake is less than 1%
MAD stands for Median Absolute Deviation.
Skewness is the ratio of third moment about to the mean to the standard deviation.

Table A.5: Continued

Year	Obs.		Mean	Median	MAD	Skewness	Means by Decile of Total Compensation									
							1	2	3	4	5	6	7	8	9	10
2009	1,589	Total	16.82	4.92	4.07	36.87	-15.48	0.70	1.70	2.83	4.09	5.97	8.49	12.27	19.90	128.37
		Current	9.87	1.69	1.09	28.23	8.35	1.01	1.56	1.90	2.56	3.75	6.27	6.28	9.36	42.63
		Deferred	6.54	1.90	3.06	33.65	-23.83	-0.31	0.14	0.92	1.53	2.23	2.22	6.00	10.54	66.26
2010	1,662	Total	11.77	5.43	4.21	-3.13	-12.88	1.10	2.13	3.24	4.61	6.50	9.17	13.31	20.72	69.91
		Current	6.69	2.23	1.49	28.45	5.74	1.37	1.89	2.42	3.34	3.98	4.91	7.41	11.02	18.88
		Deferred	4.82	1.89	2.77	-9.32	-18.62	-0.28	0.24	0.82	1.26	2.53	4.26	5.91	9.69	42.40
2011	1,633	Total	6.72	2.81	3.20	23.38	-21.42	-1.01	0.55	1.29	2.20	3.58	5.51	8.78	14.11	53.75
		Current	7.49	2.42	1.71	37.74	8.62	3.43	1.65	2.51	2.29	4.01	4.50	6.32	10.35	22.87
		Deferred	-1.13	0.04	2.77	-7.33	-30.03	-4.44	-1.10	-1.22	-0.10	-0.43	1.01	2.46	3.77	18.83
2012	1,646	Total	12.54	5.13	3.92	21.51	-7.90	0.98	1.95	3.02	4.33	6.05	8.35	12.07	19.86	76.95
		Current	6.70	2.69	1.88	10.33	4.52	1.16	2.25	2.45	3.17	4.26	6.22	7.07	11.65	18.73
		Deferred	5.59	1.12	2.49	20.95	-12.42	-0.18	-0.31	0.57	1.16	1.79	2.14	5.00	8.21	50.03
2013	1,630	Total	20.86	8.43	6.04	14.73	-4.09	2.20	3.63	5.25	7.34	9.88	13.96	20.23	34.09	116.13
		Current	6.89	2.93	2.05	9.28	2.39	1.70	2.81	3.23	4.43	5.65	7.02	9.16	9.91	16.40
		Deferred	13.59	3.85	3.85	14.16	-6.48	0.49	0.82	2.02	2.91	4.24	6.94	11.08	24.17	89.70
2014	1,634	Total	12.66	5.10	4.33	26.50	-17.66	0.40	1.72	2.81	4.27	6.06	8.80	13.22	22.98	84.15
		Current	7.76	2.98	2.11	16.99	9.91	1.84	2.26	2.95	3.77	4.06	6.69	9.52	11.78	18.02
		Deferred	4.48	0.97	3.13	25.62	-27.57	-1.44	-0.54	-0.14	0.49	2.00	2.11	3.70	11.20	55.03
2015	1,629	Total	7.34	3.36	3.63	14.13	-24.19	-1.95	0.56	1.64	2.70	4.04	5.97	9.02	15.10	60.72
		Current	7.87	3.13	2.22	7.94	11.00	4.27	2.28	2.61	3.30	4.67	6.25	7.87	12.16	18.52
		Deferred	-0.92	-0.12	3.20	9.67	-35.19	-6.21	-1.72	-0.96	-0.60	-0.63	-0.28	1.15	2.94	32.38
2016	1,600	Total	13.96	6.12	4.23	16.90	-15.79	1.55	2.85	4.05	5.34	7.21	9.73	13.44	21.30	89.90
		Current	8.60	3.17	2.21	29.39	10.04	1.81	2.50	3.44	4.48	4.71	6.08	8.67	11.26	24.80
		Deferred	4.98	1.88	3.14	18.03	-25.83	-0.26	0.35	0.62	0.86	2.50	3.65	4.77	10.03	53.11
2017	1,593	Total	13.16	5.20	4.41	27.32	-19.17	0.29	1.78	3.17	4.56	6.21	8.81	12.84	20.30	92.96
		Current	8.38	3.38	2.36	12.55	8.87	2.24	2.86	3.71	3.80	4.82	6.04	12.62	10.84	21.60
		Deferred	4.43	0.84	3.30	27.81	-28.04	-1.96	-1.08	-0.54	0.75	1.39	2.77	0.22	9.46	61.42
2018	1,540	Total	8.07	3.71	3.94	-10.85	-34.19	-1.80	0.65	1.81	3.01	4.53	6.52	10.12	16.86	73.15
		Current	8.87	3.79	2.71	16.44	14.69	5.09	2.64	2.80	3.94	4.90	7.21	9.26	13.69	19.19
		Deferred	-1.21	-0.34	3.12	-16.23	-48.87	-6.89	-1.99	-0.99	-0.94	-0.37	-0.70	0.87	3.17	44.65
2019	1,502	Total	22.38	7.64	5.59	18.14	-6.08	1.81	3.30	4.77	6.46	9.10	12.46	17.79	31.38	143.01
		Current	14.79	3.19	2.19	39.53	5.57	2.06	2.48	3.52	4.49	5.37	6.82	8.02	12.35	68.20
		Deferred	6.85	2.67	3.53	-34.25	-11.65	-0.25	0.83	1.25	1.97	3.73	5.63	9.77	19.03	38.26
2020	1,494	Total	23.76	5.72	4.93	25.92	-16.87	0.50	1.95	3.42	4.89	6.89	9.98	14.94	26.78	185.63
		Current	25.30	3.72	2.70	39.56	165.49	2.63	2.56	3.12	4.50	5.20	8.15	10.86	14.57	32.34
		Deferred	-2.96	0.79	3.36	-34.60	-182.36	-2.13	-0.61	0.30	0.39	1.68	1.83	4.08	12.22	134.91

Note: *Professional CEOs* are those whose equity stake is less than 1%
MAD stands for Median Absolute Deviation.
Skewness is the ratio of third moment about to the mean to the standard deviation.