Why And How U.S. Executive Pay Should Change

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The conventional wisdom in U.S. executive pay is that maintaining a target pay percentile with a high percent of pay at risk achieves the three basic objectives of executive pay. Not letting target pay fall below the median retains key talent, not letting target pay rise above the median limits shareholder cost and a high percent of pay at risk ensures a strong incentive. The new Pay Versus Performance (PvP) data provides the data – "mark to market" pay – to test the conventional wisdom. Individual company regressions relating relative mark to market pay to relative TSR quantify incentive strength (slope), alignment (correlation) and performance adjusted cost (the intercept). These regressions show that the conventional wisdom only works for about 15% of companies. To help understand the weaknesses of the conventional wisdom, I show that that there is a simple pay plan with annual grants of performance shares that provides a perfect correlation of relative pay and relative TSR and that this perfect correlation pay plan differs from conventional practice in two ways. First, it says that target pay should be market pay adjusted for trailing relative performance, not market pay regardless of past performance. Second, it says that vesting should take out the industry component of the stock return, not use company performance to leverage industry performance as plans with relative TSR vesting do. The perfect correlation plan shows that mark to market pay should be equal to the expected future value of cumulative market pay plus a fixed and symmetric share of the excess return. It shows how to improve executive pay by combining fixed sharing – the guiding concept of executive pay before World War II – with competitive pay levels – the guiding concept of executive pay since World War II.

Keywords: CEO compensation, target dollar pay, peer benchmarked compensation, competitive pay policy, Pay Versus Performance disclosure, incentive strength, performance adjusted cost, front loaded pay, corporate governance, proxy advisors

JEL: G34, G38, J33, J38, M12, M41, M52

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In this e-book, I explain the origins of U.S. executive pay practices, highlight the shortcomings of the measures commonly used to guide pay design, propose better measures of pay dimensions, and show how these better measures can improve benchmarking, pay design, and Say-on-Pay voting.

U.S. executive pay has shifted from value sharing to target dollar pay

The objectives of executive pay have been the same since the rise of large companies in the late nineteenth century. Shareholders want to provide strong incentives for managers to increase shareholder value while retaining key talent and limiting shareholder cost. What's changed is how companies try to achieve these objectives. In the first half of the twentieth century, executive pay was based on value sharing in economic profit. Since then, executive pay has shifted from sharing formulas to target pay values based on labor market analysis.

In 1922, General Motors adopted an executive pay plan that made the total bonus pool equal to 10% of economic profit, that is, profit in excess of a 7% return on capital. This formula covered stock and cash incentive compensation for everyone at GM who got a bonus. GM used this formula for 25 years without any change in the sharing percentage or the required return. It used the same basic concept, with slight changes in the sharing percentage and required return, for 66 years (1918 through 1983). In 1936, a study by John Baker of Harvard Business School found that 18 of 22 companies studied had similar plans.

The GM type plan does a good job of providing strong incentives and controlling shareholder cost but can make retaining key talent challenging. The plan provides strong incentives because the sharing percentage is held constant. If employees double economic profit, they get double the bonus. It limits shareholder cost because the sharing percentage doesn't rise above 10%. It can have a more difficult time retaining key talent because the bonus formula can be zero due to market and industry factors beyond management's control. GM improved its ability to limit retention risk by creating a bonus reserve. The bonus reserve was created by paying out less than the formula amount in good years to provide additional funds for bonuses in years with poor performance due to market and industry factors.

Since the 1950s, U.S. executive pay has shifted from target sharing to target dollar pay. Target dollar pay is expressed in terms of industry or peer group pay, e.g., target pay is the 50th percentile of peer group pay. The conventional wisdom is the 50th percentile target pay with a high percentage of pay at risk will achieve the three basic objectives of executive pay. The company will retain key talent because it doesn't allow target pay to fall below the 50th percentile. It will limit shareholder cost because it doesn't allow target pay to rise above the 50th percentile and it will provide strong incentives as long as the percent of pay at risk is high.

There is a flaw in the conventional wisdom of providing target dollar pay: It creates a "performance penalty" that undermines management incentives

There is a flaw in the conventional wisdom. A high percentage of pay at risk doesn't ensure a strong incentive. Target dollar pay creates a fundamental "performance penalty" that reduces management's incentive and undermines the alignment of cumulative pay and cumulative performance. We can see this if we compare the consequences of target dollar pay for two scenarios with the same cumulative performance. In "Good Early Performance" in Figure 1 the stock starts at $10, then rises to $33.04 at the end of year 3 before dropping to $20.91 at the end of year 5. In "Bad Early Performance" the stock starts at $10, then falls to $5.55 at the end of year 2 before recovering to $20.91 at the end of year 5.

In each scenario, we provide a stock grant equal to market pay ($1,000) based on the stock price at the start of the year. In year one, our CEO gets the same number of shares (100) in each scenario. But, in year two, our CEO gets only 47.4 shares in Good Early Performance because the stock price at the start of year two is $21.12, so only 47.4 shares are needed to provide $1,000 of pay. By contrast, our CEO gets 135.9 shares in Bad Early Performance because the stock price at the start of year two is $7.36 and 135.9 shares are needed to provide $1,000 of pay. When we continue through the five years of each scenario, we find that our CEO receives a total of 253.8 shares in Good Early Performance, but gets 680.2 shares in Bad Early Performance.

Figure 1

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Market pay		1,000	1,000	1,000	1,000	1,000
Beginning stock x (1 + industry return)	10.00	10.26	9.16	10.67	14.62	20.07
GOOD EARLY PERFORMANCE						
Stock price	10.00	21.12	22.52	33.04	31.53	20.91
Shares (= market pay / BOY stock price)		100.0	47.4	44.4	30.3	31.7
Cumulative shares		100.0	147.4	191.8	222.0	253.8
Year end wealth		2,112	3,318	6,335	7,000	**5,305**
BAD EARLY PERFORMANCE						
Stock price	10.00	7.36	5.55	6.27	9.54	20.91
Shares (= market pay / BOY stock price)		100.0	135.9	180.1	159.4	104.9
Cumulative shares		100.0	235.9	416.0	575.4	680.2
Year end wealth		736	1,310	2,610	5,487	**14,221**

"Year end wealth" shows the calculation of cumulative "mark to market" pay at the end of each year. Cumulative mark to market pay is the value of cumulative pay based on the stock price at the end of the year. Our Bad Early Performance CEO gets five year cumulative mark to market pay of $14,221. This is 2.7x more than the $5,305 that our Good Early Performance CEO gets for the same cumulative performance. Let's now compare the relative pay and relative performance for our two CEOs. Relative pay is mark to market pay divided by cumulative market pay, $5,000. Our Bad Early Performance CEO has cumulative relative pay of 2.84 at the end of five years, while our Good Early Performance CEO has cumulative relative pay of 1.06. Relative performance is the ending shareholder wealth per share, $20.91, divided by shareholder wealth per share assuming industry average performance, $20.07, a ratio of 1.04. This shows that our Bad Early Performance CEO is paid far more than his relative performance warrants.

The conventional wisdom is that the percent of pay at risk is a good proxy for incentive strength. We can see in this example that both CEOs have 100% of their pay at risk but that the Bad Early Performance CEO receives a lot more money for the same performance. This suggests that percent of pay at risk is not a great measure of incentive strength. A better measure of incentive strength is the ratio of relative cumulative pay to relative cumulative performance. For Bad Early Performance, the ratio is 2.73 (= 2.84/1.04) at the end of five years, but it varied from 1.03 to 2.10 in the four years before that. For the Good Early Performance, the ratio is 1.02 (= 1.06/1.04) at the end of five years, but it varied from 0.67 to 1.03 in the four years before that.

Given that the sensitivity of relative pay to relative performance varies over time, we need a reasonable method to determine the average sensitivity over time. One useful way to do this is to calculate the regression trendline relating relative cumulative pay to relative cumulative performance for the five years. We get a more accurate measure of the relationship if we calculate the regression trendline using the logarithms of relative pay and relative performance. When we use logarithms, we're assuming that the prediction errors are proportional to the relative performance ratio, not a constant ratio amount. Using logarithms, we find that the slope of the trendline is 0.61 for Good Early Performance and 2.18 for Bad Early Performance. This means that a 1% increase in relative performance increases relative pay by 0.6% for Good Early Performance, but by 2.2% for Bad Early Performance. This says that Bad Early Performance gives our CEO an incentive that is 3.6x greater than that he would have with Good Early Performance.

It's important to recognize that our measure of incentive strength depends on our ability to calculate mark to market pay. If we limit ourselves to grant date pay, we see no difference between Good Early Perfomrance and Bad Early Performance. Both CEOs receive $1,000 of pay each year. Prior to 2023, investors in U.S. public companies had to estimate mark to market pay from the grant data reported in prior year proxies. This is an arduous task (I've done it!), so investors and their proxy advisors made no effort to calculate mark to market pay or to measure pay dimensions based on mark to market pay. In 2023, pursuant to regulations adopted in 2022 to implement a requirement, created by the Dodd-Frank Act of 2011, to disclose "Pay Versus Performance" including "Compensation Actually Paid", companies were required to report mark to market pay for the prior three years. In 2024, a four year history was required, and, in 2025 and subsequent years, a five year history is required.

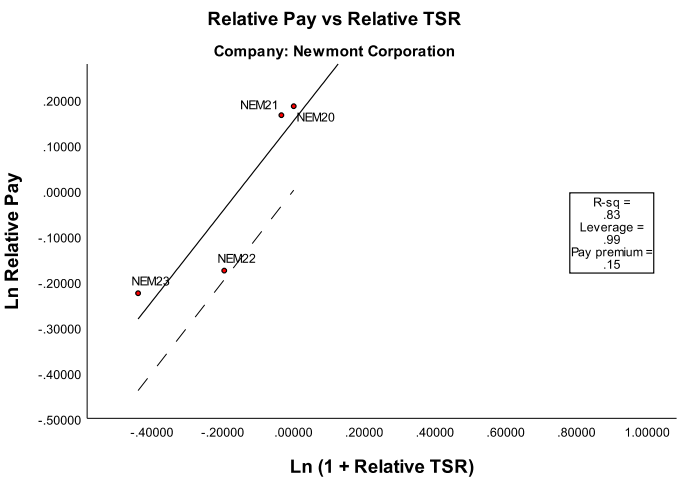
The newly required disclosure of "Compensation Actually Paid" leads to a simple and highly informative analysis that measures incentive strength, alignment and performance adjusted cost

The new "Pay Versus Performance" disclosures give us the ability to measure key pay dimensions for public companies. In this report, we limit our analysis to 1,097 companies with the same CEO for the past four years. We measure pay dimensions by calculating relative pay and relative TSR and then calculating the regression trendline relating the natural log of relative pay to the natural log of relative TSR. This regression gives us measures of four pay dimensions. The slope of the trendline gives us a measure of incentive strength, what we call "pay leverage". Pay leverage tells us the percent change in relative pay associated with a one percent change in relative shareholder wealth. The correlation gives us a measure of pay alignment. The intercept gives a measure of performance adjusted cost, i.e., the pay premium at peer group average performance. The ratio of pay leverage to pay alignment (i.e., slope divided by correlation) gives us a measure of relative pay risk.

Let's look at two examples. Figure 2 shows the trendline for the Newmont Corporation CEO Thomas Palmer while Figure 3 shows the trendline for Travelers CEO Alan Schnitzer. The peer group used to compute relative TSR for Newmont is a group of seven mining companies selected by Newmont. The peer group used to compute relative TSR for Travelers is 13 insurance and related companies selected by Travelers. The solid line is the regression trendline. The dashed line is a line with a slope of 1.0 and an intercept of 0.0. It's included in the graph to show how the subject company differs from a Perfect Correlation Pay Plan (discussed below) that makes relative pay equal to relative performance.

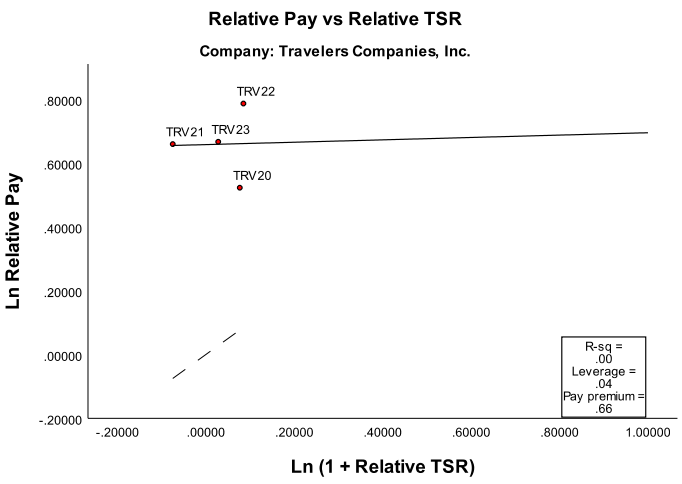
Relative pay is cumulative mark to market pay divided by cumulative market pay. Market pay is not reported in the new disclosures of "Pay Versus

Figure 2



Solid line is the company trendline. Dashed line is leverage = 1.0 with pay premium of zero

Figure 3



Solid line is the company trendline. Dashed line is leverage = 1.0 with pay premium of zero

Performance". We have to estimate market pay using industry trendlines relating the log of CEO pay to the log of company revenue. Since market pay is a present value number, we adjust it upward to reflect the expected difference between future value (i.e., mark to market pay) and present value. We also adjust Compensation Actually Paid to take out pay attributable to unvested grants made prior to the four year performance measurement period.

The measures we get from regressing log relative pay on log relative performance provide measures of a company's success in achieving the three basic objectives of executive pay: providing strong incentives to increase shareholder value while retaining key talent and limiting shareholder cost. The slope of the trendline for Newmont CEO Tom Palmer is 0.99. This means that a 1% increase in relative shareholder wealth increases the CEO's relative pay by almost 1%, 0.99%. This provides a strong incentive to increase shareholder value. By contrast, the slope of the trendline for Travelers CEO Alan Schnitzer is only 0.04. This means that a 1% increase in shareholder wealth increases the CEO's relative pay by only 0.04%. This provides a very weak incentive to increase shareholder value.

The intercept of the trendline is the pay premium at peer group average performance. It provides a negative measure of retention risk and a positive measure of shareholder cost. The pay premium for Newmont is 0.15. It's stated in natural logarithms. We can convert it to a percentage premium by taking the anti-log. The percentage premium is 16% (= 100*(exp(0.15) – 1)). This says that Newmont pays 16% above average for average performance. That limits retention risk because Newmont pays above average for average performance. It raises shareholder cost for the same reason. The pay premium shows that Newmont draws the balance between limiting retention risk and limiting shareholder cost slightly in favor of limiting retention risk. The natural log pay premium for Travelers is 0.66. The percentage pay premium is 93% (= 100*(exp(0.66)-1)). This pay premium shows that Travelers draws the balance between limiting retention risk and limiting shareholder cost very heavily in favor of limiting retention risk.

Calculating pay dimensions for 1,097 CEOs shows that many have pay problems: Weak incentives, high cost, low alignment or high risk

We have used the new disclosures to calculate pay dimensions for 1,097 U.S. public company CEOs. We limit the sample to companies with the same CEO for all four years.

Figure 4 shows that the median CEO has pay leverage of 0.65. This means that a 1% increase in relative shareholder wealth increases relative pay by 0.65%. Below the median, pay leverage falls to 0.15 at the 25th percentile and to -0.40 at the 10th percentile. Only 15% of the companies below the median have pay leverage that is statistically

Figure 4

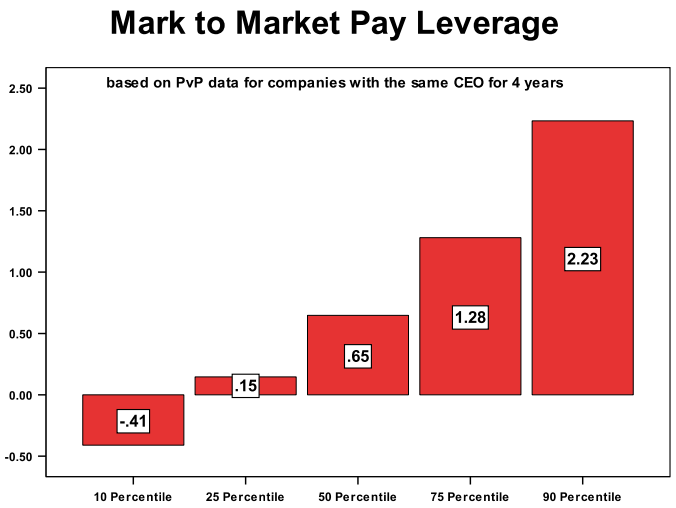


Figure 5

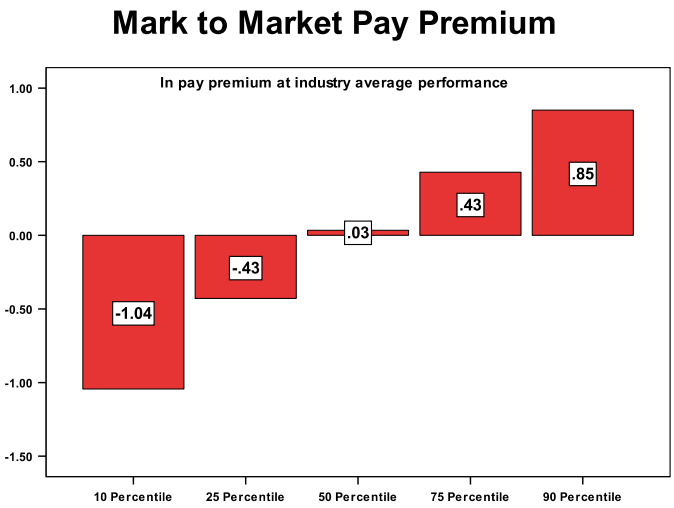


Figure 6

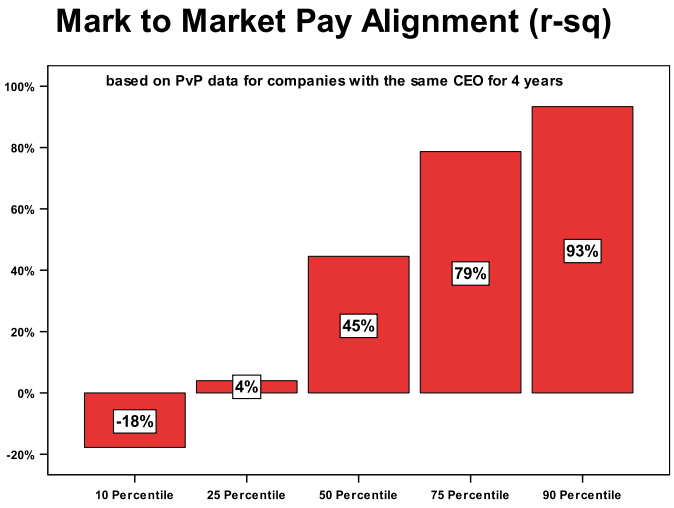
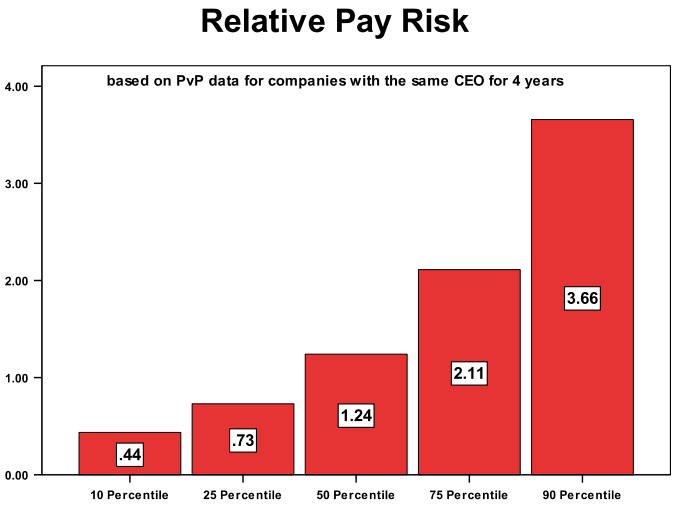


Figure 7



significant at the conventional 5% level. Pay leverage above the median gets up to 2.23 at the 90th percentile and 55% of the companies above the median have pay leverage that is statistically significant. More companies should have statistically significant pay leverage next year when the PvP disclosure expands to five years.

The conventional wisdom says that percent of pay at risk is a good proxy for incentive strength, but our sample of 1,097 CEOs does not support the conventional wisdom. Four year average percent of pay in equity explains only 0.9% of the variation in pay leverage and four year average percent of pay at risk explains only 0.4% of the variation in pay leverage. In other words, both these percent at risk measures explain less than one percent of the variation in pay leverage. The data also shows companies don't need high pay to support high pay leverage. The pay premium at industry average performance explains less than 1% of the variation in pay leverage and the difference between 75th percentile (1.28) and median pay leverage (0.65) is associated with a pay premium of only 3%.

Figure 5 shows percentiles for the pay premium at industry average performance. The values shown are in natural logarithms and can be converted to percentage pay premiums by taking the anti-log. The 90th percentile pay premium of 0.85 implies a percentage pay premium of +134% (since 100 * (exp(0.85) – 1) = 134%) and the 10th percentile pay premium of -1.04 implies a pay "premium" of -65% (since 100 * (exp(-1.04) – 1) = -65%). The conventional measure of compensation cost, i.e., four year average relative grant date pay, explains 48% of the variation in the mark to market pay premium at industry average performance for our sample of 1,097 companies.

The new disclosures provide compelling evidence that most companies don't do a good job managing CEO pay

The bar charts help us think about a basic question: how many companies do a good job achieving the three basic objectives of executive pay? In other words, how many provide a strong incentive with a reasonable balance between retention risk and shareholder cost? Incentive strength, or pay leverage, is the product of pay alignment and relative pay risk. Since companies have different perspectives about appropriate risk levels, we'll change our question to how many companies provide high alignment with a reasonable balance between retention risk and shareholder cost? We'll define a good job of managing CEO pay as providing alignment (r-sq) of 50%+ with a pay premium at peer group average performance of +/-25% or less. Alignment (r-sq) of 50%+ means that relative performance explains at least half of the variation in relative pay. It's disappointing to report that only 165 companies (15%) of the 1,097 companies in our sample do a good job of managing CEO pay. 303

companies have moderate shareholder cost, i.e., the pay premium at peer group average performance is 25% or less, and limited retention risk, i.e., the pay premium at peer group average performance is no lower than -25%, but 138 of these companies have low alignment (r-sq). This leaves us with only 165 (= 303 – 138) companies.

We get two quite striking pictures when we combine the good and the bad companies in separate scatterplots showing relative pay on the vertical axis against relative TSR on the horizontal axis. In the left panel, Figure 8, showing the good companies, we can see that relative TSR, adjusted for differences in individual company pay leverage, explains 83% of the variation in relative pay. This is what we would expect to see in a universe where pay for performance rules. But, unfortunately, this graph includes only 15% of our sample. In the right panel, Figure 9, with 85% of our sample, we can see that relative TSR explains only 6% of the variation in relative pay. We don't show relative TSR adjusted for differences in individual company pay leverage in this graph because doing so reduces the variance explained.

These two graphs provide compelling evidence that most companies don't do a good job of managing CEO pay. We only have this evidence because companies now report mark to market pay in the newly required Pay Versus Performance disclosure. This shows that the new disclosure requirement is very significant.

The evidence, in Figure 9, of poor pay plan design has had no impact on practice because proxy advisors and compensation consultants haven't been aware of it. Proxy advisors and consultants have long been aware that relative grant date pay is poorly correlated with relative performance but they have dismissed the low correlation as irrelevant. Grant date pay is similar to target pay – because it doesn't reflect post-grant changes in the value of equity compensation – and target pay should be, in the conventional wisdom, unrelated to past performance because it is meant to be sufficient to retain key talent regardless of past performance.

Why don't companies do better? Poorly designed pay measures used by proxy advisor ISS are one reason

The basic concept of plotting relative pay against relative performance has been used by proxy advisors and consultants for many years but has never led to a pay leverage measure. The proxy advisor ISS has long compared CEO performance percentile with CEO pay percentile but it focuses on the difference between the two percentiles, calculated using three year average pay and performance measures. ISS doesn't measure the sensitivity of pay percentile to performance percentile nor the correlation of the pay and performance percentiles. Moreover, by using percentiles instead of relative pay and relative TSR, ISS is telling companies that maintaining a consistent

Figure 8

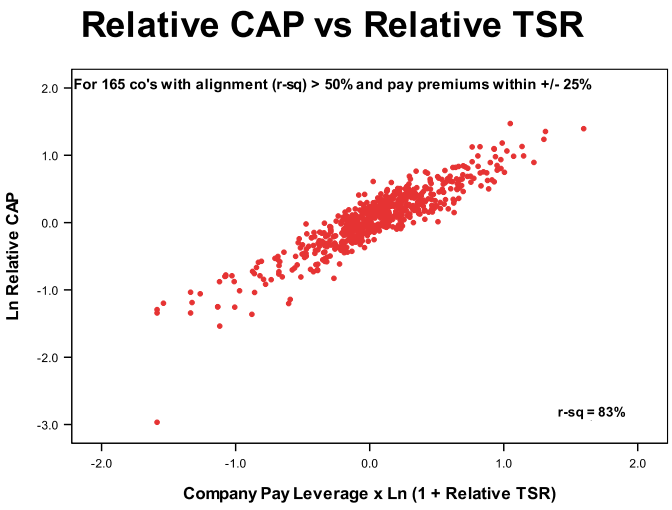
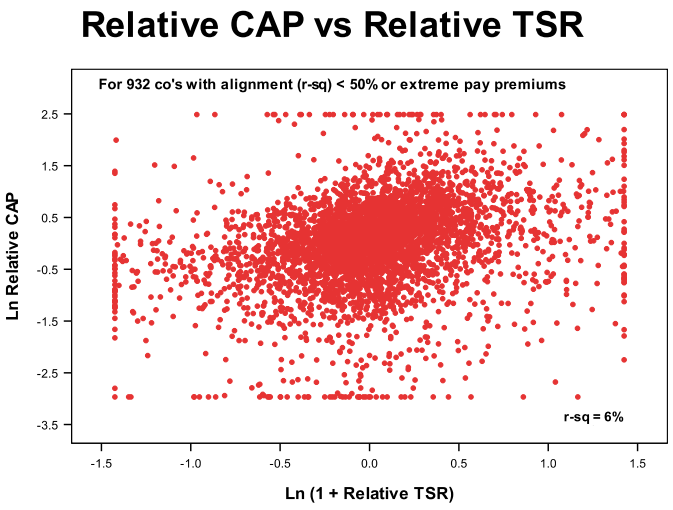


Figure 9



sensitivity of relative pay to relative performance is unimportant.

ISS uses three quantitative measures for "Pay-for-Performance" evaluation: "Relative Degree of Alignment" or "RDA", "Multiple of Median" or "MOM", and "Pay-TSR Alignment" or "PTA". These measures are used to classify companies as having Low, Medium or High Concern. ISS conducts a qualitative review for companies with Medium and High Concern. The ISS approach to pay for performance evaluation encourages companies to adopt the key elements of the conventional wisdom. ISS's quantitative measures encourage companies to target pay at the 50th percentile and its qualitative review encourages companies to increase their percent of pay at risk.

RDA is the difference between the CEO's performance percentile and CEO's pay percentile, measured using three year average pay and TSR. A difference of -50 triggers "Medium Concern" and a difference of -60 triggers "High Concern". The large negative difference needed to trigger Medium Concern shows ISS's support for competitive pay policy for poorly performing companies. ISS will not object if a company with 1st percentile performance pays at the 50th percentile.

Multiple of Median (MOM) is the ratio of the CEO's pay to the median CEO pay of the company's size adjusted industry peer group without any adjustment for the performance difference between the company and the peer group. If the Multiple of Median is more than 200% for S&P 500 companies, ISS triggers Medium Concern. If the Multiple of Median is more than 300%, ISS triggers High Concern. This measure shows ISS's support for competitive pay policy for highly performing companies. Superior performance does not justify a pay premium greater than 100%.

A key consideration in the qualitative review is the "strength of performance-based compensation and rigor of performance goals." The ISS review of Microsoft CEO pay in 2019 provides a good example of the ISS two step review process. Satya Nadella's grant date pay of $39 million resulted in a 2.05 Multiple of Median which, in turn, triggered a qualitative review. ISS recommended a "no" vote for Say-on-Pay because Microsoft had increased Nadella's salary from $1.5 million to $2.5 million (an increase representing less than 3% of Nadella's total pay). ISS noted that "while some year-over-year base pay increases may be reasonable with the backdrop of strong long-term performance, any substantial increases should be strongly performance-based." While ISS recommended a "no" vote, it failed to calculate the relative pay vs relative TSR trendline for Microsoft. That trendline, calculated using my estimates of mark to market pay based on Microsoft grant data, was ln relative pay = -0.42 + 1.75 x ln (1 + relative TSR) with an r-squared of 97%. The intercept shows that Microsoft CEO pay was 34% below average at industry average performance while providing high pay leverage (1.75) and very high pay alignment. The ISS "no" vote recommendation is extraordinary evidence that the ISS pay measures are poorly designed and cause it to miss the big picture shown by the relative pay vs relative performance regression trendline.

Pushed by SEC rule changes and proxy advisor guidelines, companies have increasingly embraced median target pay with a high percent of pay at risk

In 2006, new SEC proxy disclosure rules took effect, requiring companies to report the companies in their compensation peer group. In 2011, pursuant to the Dodd-Frank Act of 2010, investors were granted an advisory Say-on-Pay vote. These two changes, combined with ISS support for competitive pay policy and a high percent of pay at risk, have led to a growing embrace of the conventional wisdom that companies should have 50th percentile target pay with a high percent of pay at risk. ISS Say-on-Pay recommendations support the conventional wisdom and research shows that an ISS "no" vote recommendation reduces the supporting vote for Say-on-Pay by 25 percentage points.[1]

Both percent of pay at risk and use of 50th percentile target pay have been increasing. The average percent of S&P 1500 CEO pay at risk has risen from 74% in 2006 to 85% in 2023 and the average percent of pay in equity has risen from 46% to 63%. CEO pay levels have gotten closer, over time, to the median pay of the company's size adjusted industry group. ISS uses the median pay of a 12-24 company peer group, selected based on size and industry, as its proxy for market pay.

A 2024 study by Jochem, Ormazabal & Rajamani found that the average deviation of CEO pay from the median of the company's size adjusted industry

group had fallen by 45% since 2007. [2] This is one sign of a growing embrace of competitive pay policy, that is, a belief that companies should set target pay at the 50th percentile of peer group pay without any adjustment for performance. A growing embrace of competitive pay policy should lead to stronger evidence of a performance penalty in equity grants. This is confirmed by a 2024 study by Ferrari, Jain, O'Byrne, Rajgopal and Reggiani. [3] This study compares equity grants in one year to equity grants in the prior year and analyzes the change in grant shares as a function of the stock price change. If a company perfectly adhered to competitive pay policy, the change in grant shares would fully offset the price change and log share change (i.e., $\ln(shares_1/shares_0)$) would be -1 x the log price change. The authors found that the grant share response to the price change has gotten markedly closer to pure competitive pay policy over the last 25 years. The negative coefficient on log price change has increased (i.e., become more negative) from -.30 in 1995 to -.74 in 2021.

Reflecting the growing embrace of the conventional wisdom, compensation consultants and proxy advisors mistakenly believe U.S. executive pay is well designed

The substantial increase in the percent of pay at risk and in equity and the increasing commitment to competitive pay policy have led to a widespread belief that current CEO pay is well-designed and effective. A leading compensation consulting firm, Pay Governance, said in 2018 that "corporate governance in general and of executive compensation has improved dramatically over the past 20 years." [4] ISS, in its 2024 proxy review, noted that failed say-on-pay resolutions had fallen to a record low (<1% for the S&P 500) and added that "many compensation committees appear to be doing a better job at addressing investor concerns" following a low say-on-pay vote. [5]

The new disclosures of Pay Versus Performance could have a significant effect on U.S. executive pay practice because they clearly show that the widely embraced conventional wisdom is not effective for most companies. Additional strong evidence of the shortcomings of the conventional wisdom comes from my 2012 discovery that there is a simple pay plan with annual grants of performance shares that provides a perfect correlation of relative pay and relative performance. [6] This Perfect Correlation Pay Plan shows that a perfect correlation of relative pay and relative performance requires three major changes in conventional pay plan design.

There is a perfect correlation pay plan and it departs from conventional plan design in three major ways

The Perfect Correlation Pay Plan has three basic features. Figure 10 shows the first feature and Figure 11 shows the second. The first basic feature is that target compensation is market compensation adjusted for trailing relative performance, i.e., target compensation equals market compensation x (1 + relative TSR), not market pay without any adjustment. Figure 10 shows this change gives both scenarios the same number of grant shares each year. In the Good Early Performance scenario, market compensation for year 3 is $1,000, but target compensation is $2,458 (= $1,000 x (22.52/9.16)), and the number of shares granted is 109.2 (= $2,458/22.52) The relative performance adjustment is the ratio of the stock price, $22.52, to the stock price assuming industry performance from the beginning of year 1, $9.16. In the Bad Early Performance scenario, target compensation for year 3 is $606 (= $1,000 x (5.55/9.16)), and the number of shares granted is also 109.2 (= $606/5.55).

Adjusting grant shares for the trailing relative return gives our two scenarios the same number of shares as long as the industry return is the same, but it does not make relative pay equal to relative performance. Figure 10 shows that cumulative pay for both scenarios is $9,798, or 196% of cumulative market pay even though shareholder wealth is only 104% of industry shareholder wealth. Figure 11 shows that making the vesting multiple equal to 1/(1 + the industry return from the date of grant) makes relative pay equal to relative performance. The vesting multiple reduces cumulative pay from 9,798 to 5,209, which makes cumulative pay equal to 104% of cumulative market pay, just as shareholder wealth is 104% of industry shareholder wealth.

A common vesting multiple for performance share plans is (1 + rTSR). It's easy to see that this vesting multiple leverages industry performance instead of taking out industry performance. The stock price can be expressed as beginning stock price x (1 + iTSR) x (1 + rTSR) where iTSR is the industry return and rTSR is the relative, or excess, return. The vesting stock value, in conventional plan design, is grant shares x

Figure 10

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Market pay		1,000	1,000	1,000	1,000	1,000
Beginning stock x (1 + industry return)	10.00	10.26	9.16	10.67	14.62	20.07
GOOD EARLY PERFORMANCE						
Stock price	10.00	21.12	22.52	33.04	31.53	20.91
Relative return (at beginning of year)		0%	106%	146%	210%	116%
Target pay (= market x (1 + relative return))		1,000	2,057	2,458	3,095	2,157
Grant shares (= target pay / BOY stock price)		100.0	97.4	109.2	93.7	68.4
Cumulative shares		100.0	197.4	306.6	400.3	468.7
Ending wealth						**9,798**
BAD EARLY PERFORMANCE						
Stock price	10.00	7.36	5.55	6.27	9.54	20.91
Relative return (at begininng of year)		0%	-28%	-39%	-41%	-35%
Target pay (= market x (1 + relative return))		1,000	717	606	588	652
Shares (= target pay / stock price)		100.0	97.4	109.2	93.7	68.4
Cumulative shares		100.0	197.4	306.6	400.3	468.7
Ending wealth						**9,798**

(1 + rTSR) x stock price = grant shares x beginning stock price x (1 + iTSR) x (1 + rTSR) x (1 + rTSR) = grant shares x beginning stock price x (1 + iTSR) x $(1 + rTSR)^2$. (1 + iTSR) remains a component of the vesting stock value and is multiplied, or leveraged, by an additional factor of (1 + rTSR).

The third basic feature of the Perfect Correlation Pay Plan is that all cash paid out until retirement is treated as a draw against the ultimate value of the performance shares. This extends the performance measurement horizon to match the CEO's tenure.

The perfect correlation pay plan limits relative pay risk

In the Perfect Correlation Pay Plan, the variation in relative pay exactly matches the variation in relative performance. This means that relative pay risk is always 1.0. In our analysis of 1,097 companies, we found that 61% have relative pay risk greater than 1.0, and 46% of these companies have pay leverage less than 1.0. These CEOs bear more risk but have a weaker incentive than they would with the Perfect Correlation Pay Plan. No investor (or CEO) would want that.

The perfect correlation pay plan shows how to reconcile the two traditions in executive pay history

At the start of this e-book, I showed that executive pay has shifted from fixed sharing concepts to competitive pay concepts over the last 75 years, and I highlighted that each approach has challenging problems. The fixed sharing plans make it difficult to retain key talent, while the competitive pay plans make it hard to create strong incentives. The Perfect Correlation Pay Plan shows us how we can combine fixed sharing with competitive pay concepts to provide strong incentives while limiting retention risk. Cumulative pay under the Perfect Correlation Pay Plan is equal to the cumulative future value of market pay plus a fixed share of the cumulative dollar excess return. The fixed share depends on cumulative industry performance, but it is not affected by company's relative return, so there is no performance penalty.

The Perfect Correlation Pay Plan makes cumulative earned mark to market pay equal to the cumulative FV of market pay x (1 + rTSR). The future value (FV) adjustment recognizes that market pay is a present

Figure 11

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Market pay		1,000	1,000	1,000	1,000	1,000
Beginning stock x (1 + industry return)	10.00	10.26	9.16	10.67	14.62	20.07
GOOD EARLY PERFORMANCE						
Stock price	10.00	21.12	22.52	33.04	31.53	20.91
Relative return (beginning of year)		0%	106%	146%	210%	116%
Target pay (= market x (1 + relative return))		1,000	2,057	2,458	3,095	2,157
Grant shares (= target pay / BOY stock price)		100.0	97.4	109.2	93.7	68.4
Industry return from grant to end of year 5		101%	96%	119%	88%	37%
Year 5 vesting multiple (= 1 /(1 + industry return))		0.50	0.51	0.46	0.53	0.73
Vesting grant shares		49.8	49.8	49.8	49.8	49.8
Cumulative vesting shares		49.8	99.7	149.5	199.3	249.2
Ending wealth						**5,209**
BAD EARLY PERFORMANCE						
Stock price	10.00	7.36	5.55	6.27	9.54	20.91
Relative return (beginning of year)		0%	-28%	-39%	-41%	-35%
Target pay (= market x (1 + relative return))		1,000	717	606	588	652
Grant shares (= target pay / BOY stock price)		100	97	109	94	68
Industry return from grant to end of year 5		101%	96%	119%	88%	37%
Year 5 vesting multiple (= 1 /(1 + industry return))		0.50	0.51	0.46	0.53	0.73
Vesting grant shares		49.8	49.8	49.8	49.8	49.8
Cumulative vesting shares		49.8	99.7	149.5	199.3	249.2
Ending wealth						**5,209**

value while mark to market pay is a future value; to correct the timing mis-match, we need to adjust market pay for the expected accretion in equity compensation. We use an annual accretion factor of 5% in our estimates of pay dimensions for the 1,097 companies with PvP disclosures. We use 5% because the ratio of cumulative mark to market pay to cumulative grant date pay increases by 4.8% a year, on average. In Figures 1, 10 and 11, we made the simplifying assumption that the accretion factor was 0%.

Since cumulative earned mark to market pay is equal to the cumulative FV of market pay x (1 + rTSR), pay above market, or excess earned pay, is equal to the cumulative FV of market pay x rTSR. Since shareholders' dollar excess return is equal to the difference between actual market equity and market equity assuming the industry return [i.e., market equity$_0$ x (1 + iTSR) x (1 + rTSR) – market equity$_0$ x (1 + iTSR), or market equity$_0$ x (1 + iTSR) x rTSR], the excess pay share of shareholders' dollar excess return is the cumulative FV of market pay divided by market equity$_0$ x (1 + iTSR). We calibrate the FV factor to be equal to (1 + expected iTSR), so when the actual industry return is equal to the expected industry return, the CEO share of the excess return is just [years x market pay$_0$/market equity$_0$]. In other words, the base annual share is [market pay$_0$/market equity$_0$] and the cumulative share increases by this amount each year.

Only a small percentage of companies are able to get the conventional wisdom to work

Our analysis so far has shown that companies can use the Perfect Correlation Pay Plan design to achieve perfect alignment with a zero pay premium at industry average performance. We have also seen, from the new PvP disclosures, that about 15% of companies have been able to achieve alignment (r-sq) of 50% or more with a pay premium at industry

average performance of no more than +/-25%. It's possible that these "good" companies have adopted the Perfect Correlation Pay Plan concepts, but, in fact, it appears that these companies are working within the conventional wisdom but, surprisingly, getting good results.

The Perfect Correlation Pay Plan makes target pay perfectly correlated with trailing relative performance. But the "good" companies are not doing this. Their average correlation of relative grant date pay and relative performance is only .20, an insignificant difference from the average correlation of the "bad" companies, 0.18. The "good" companies do a much better job of structuring their equity compensation to make the post-grant date value changes more correlated with relative performance. The average correlation between relative performance and the difference between relative mark to market pay and relative grant date is 0.53 for the "good" companies but only 0.20 for the "bad" companies.

The "good" companies do a much better of not paying for industry performance. When we measure the average sensitivity of pay to relative TSR and industry TSR for the "good" companies, we find the "good" companies pay 7x more for relative TSR than for industry TSR, while the "bad" companies pay 26% less for relative TSR than for industry TSR. We know that the "good" companies are not taking out industry performance by following the Perfect Correlation Pay Plan and using 1/(1 + the industry return) as their vesting measure. It's possible that they are just lucky in the sense that they may pay for gross TSR but appear to pay little for industry performance because their gross TSR is, at least for now, poorly correlated with industry TSR. Industry explains only 14% of the variation in gross TSR for the "good" companies but 31% for the "bad" companies.

Some companies have resisted the conventional wisdom by front loading many years of pay

While the conventional wisdom is widely accepted, there is evidence that some companies are dissatisfied with it. These companies have made very large equity grants to their CEOs that make the CEO's total compensation far greater than median annual pay. These companies often say that they are making a grant that front-loads 5 or 10 years of annual equity compensation. Unfortunately, these companies have failed to articulate a better measure of incentive strength to help companies think in a more meaningful way about incentive strength and to demonstrate that the conventional wisdom leads to weak leverage and alignment.

Let's look at four examples. In 2011, Apple granted CEO Tim Cook restricted stock with a grant date value of $376 million. In 2018, Telsa granted CEO Elon Musk stock options with a grant date value of $2.3 billion. In 2019, Alphabet granted CEO Sundar Pichai restricted and performance stock with a grant date value of $276 million. In 2020, Palantir Technologies granted stock and options to CEO Alexander Karp with a grant date value of $1.1 billion. In all four cases, the total compensation far exceeded the ISS "High Concern" standard for CEO pay as a multiple of median pay.

The Apple board said, in its 2012 proxy, that the "determination of the amount of the RSU award was subjective. There was no formula or peer group 'benchmark' used in determining the award amount. Rather, the award was the product of the Board's business judgment…". The Tesla board said, in its 2019 proxy, "the basic premise is simple – Elon's compensation will be 100% aligned with the interests our stockholders….Elon's only compensation will be a 100% at-risk performance award, which ensures that he will be compensated only if Tesla and all of our stockholders do extraordinarily well." But the board failed to offer a quantitative measure of alignment that would support its conclusion that the award made alignment perfect.

The Alphabet board said, in its 2020 proxy, that "we grant equity awards…to reinforce management's focus on long-term shareholder value and commitment to the company." The Palantir Technologies CEO Karp received 73% of his special grant in options with an exercise price 50% greater than the grant date stock price. The board said, in its 2021 proxy, that the exercise price premium "created direct alignment between the realizable value of the Executive Options and the delivery of value to our stockholders without incentivizing excessive risk-taking." But it failed to offer quantitative measures of alignment or risk that would support its conclusions.

The Musk grant is particularly interesting because it triggered a shareholder suit and led to a judge's opinion that Musk's 22% stock ownership provided

"every incentive" to advance the value of Tesla and eliminated the need for formal incentive compensation. At the time of the new grant in January 2018, Musk held 37.9 million Tesla shares worth $13.2 billion. The new grant was an option in 12 tranches with vesting conditions based on stock price, revenue and EDITDA. For all 12 tranches to vest, the market value of Tesla needed to rise from $59 billion to $650 billion. If all 12 tranches vested, the options would increase Musk's wealth by 49%, from $142.2 billion to $211.3 billion, and Musk's percentage interest would increase from 22% to 28%.

Judge Catherine McCormick said that "At a high level, the '6% for $600 billion' argument has a lot of appeal. But that appeal quickly fades when one remembers that Musk owned 21.9% of Tesla when the board approved his compensation plan. This ownership stake gave him every incentive to push Tesla to levels of transformative growth – Musk stood to gain over $10 billion for every $50 billion in market capitalization increase." [7]

The option grant, at full vesting, increased Musk's gain per $50 billion of new market capitalization from $10.9 billion to $16.8 billion, but the Judge never cited the higher figure, never assessed the effect of the increase on Musk's performance (or retention) and never assessed whether the performance effect was cost-efficient for the shareholders. The Judge, like Tesla itself, failed to provide a meaningful measure of incentive strength, and hence, failed to provide support for her conclusion that the shareholders got zero incremental incentive for an expected cost of $2.3 billion.

Companies and investors should use wealth leverage as well as pay leverage

The Musk case highlights the need for a measure of incentive strength that takes account of stock ownership, unlike pay leverage. A useful broader measure of incentive strength is "wealth leverage". Wealth leverage is the ratio of the log change in executive wealth to the log change in relative shareholder wealth. Executive wealth is the present value of the expected future cash flows to the executive, just as shareholder wealth is the present value of expected future dividends to the shareholder. Executive wealth consists of initial stock and option holdings, the present value of expected future pay during the four (soon to be five) years we use to measure pay leverage and the present value of expected future pay beyond four (soon to be five) years. Executive wealth includes stock holdings unrelated to the executive's operating company, but we generally ignore that component of executive wealth in measuring wealth leverage.

We can't estimate wealth leverage directly using a regression as we do for pay leverage. We don't have annual wealth returns because we don't have readily accessible annual estimates of the present value of expected future pay beyond the four (soon to be five) year period we use to measure pay leverage. Instead of using a regression, as we do for pay leverage, we estimate wealth leverage as the weighted average of holdings leverage, pay leverage and the pay leverage of expected future pay beyond four (soon to be five) years. The leverage of stock owned is 1.0 since a 1% increase in relative shareholder wealth generates a 1% increase in stock owned. We use each company's actual pay leverage for the second component of our wealth leverage calculation. The median pay leverage is 0.65 although 33% of companies have pay leverage greater than their stock leverage of 1.0. We estimate the pay leverage of expected future pay beyond four (soon to be five) years by measuring the sensitivity of grant date pay to prior period performance (as a proxy for the sensitivity of future pay to current performance). For simplicity, we measure future pay leverage using all industries. Estimates based on single industries or individual companies are noisy and less reliable. Average grant date pay leverage to prior relative TSR is 0.25 for a one-year lag, 0.15 for a two-year lag and 0.10 for a three-year lag. We assume that grant date pay leverage is 0.05 for a four year lag and 0 for lags of five years and more. The median pay leverage of expected future pay beyond four (soon to be five) years is 0.09.

We weight the three wealth component leverages by each component's percentage of beginning wealth. The mean percentages of wealth are 31% for initial stock holdings, 32% for the present value of expected market pay over the four (soon to be five) year pay leverage measurement horizon and 37% for the present value of expected future market pay beyond four (soon to be five) years. To estimate the present value of expected future pay beyond four (soon to be five) years we use market pay and an executive's age. At the start of our pay leverage measurement, the median executive is age 54 and has 11 years to retirement. We assume zero future years of pay if the executive will be 65 or older at the

Figure 12

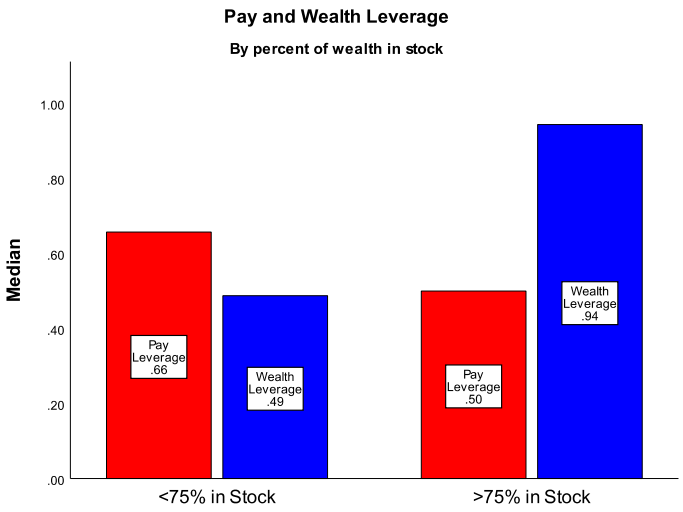
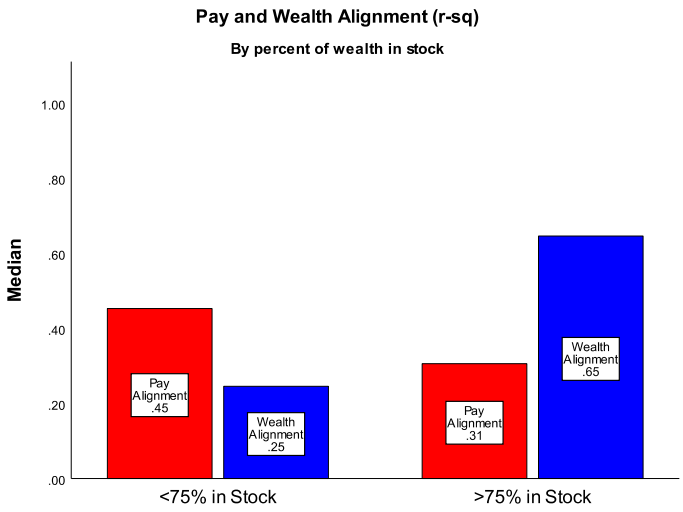


Figure 13



end of our four (soon to be five) year measurement horizon for pay leverage and we use future years to 65 if the executive will be 64 or younger at the end of our four (soon to be five) year measurement horizon. We calculate present values using the company's cost of equity as the discount rate.

When we use our mean percentages of wealth to weight our median wealth and pay leverages, we get wealth leverage of 0.55 (= 31% x 1.0 + 32% * 0.65 + 37% x 0.09), which is the same as our median wealth leverage. Median wealth leverage is lower than median pay leverage, 0.65, because the low leverage of future pay beyond four (soon to be five) years, 0.09 at the median, more than offsets the high leverage of stock holdings. About 12% of CEOs have 75%+ of their wealth in stock. For these CEOs, median wealth leverage, 0.94, is significantly greater than median pay leverage, 0.50, as Figure 12 shows.

We also need an indirect way to estimate wealth alignment because we don't have the data to calculate the correlation of wealth return and relative TSR. We calculate the correlation of wealth return with relative shareholder wealth by using the correlations and standard deviations of the three wealth components: stock holdings, four (soon to be five) years of pay and the present value of expected future pay beyond four (soon to be five) years. We need the correlation of each component with relative shareholder wealth as well as correlations of each component with the other wealth components.

As we do in our estimates of wealth leverage, we use all industry data to estimate the correlations of expected future pay beyond four (soon to be five) years with relative TSR, stock holdings return and four-year relative pay. We use the correlations of relative grant date pay with trailing relative TSR, trailing TSR and prior relative mark to market pay to estimate these correlations. Our estimates are correlations of 0.15 with trailing relative TSR, 0.15 with trailing TSR and 0.60 with prior relative mark to market pay.

Figures 12 and 13 show that CEOs with large stock holdings, that is, where stock accounts for 75% or more of their total wealth, have significantly higher wealth leverage than pay leverage and significantly higher wealth alignment than pay alignment. This shows that there is a group of companies where investors should pay more attention to wealth leverage and alignment than to pay leverage and alignment.

Conclusion: How U.S. executive pay should change

The most important change needed in U.S. executive pay today is better measures of key pay dimensions. Percent of pay at risk is a poor measure of incentive strength and needs to be replaced by pay leverage and wealth leverage. Target pay percentile is a poor measure of compensation cost and needs to be replaced by the pay premium at industry average



performance. The new Pay versus Performance disclosures make it practical for companies, compensation consultants, proxy advisors and institutional investors to calculate better measures of incentive strength, alignment, performance adjusted cost and relative pay risk and to use them for benchmarking, pay plan design, say-on-pay voting and stock selection.

Investors will want to use pay leverage, pay alignment and the pay premium at peer group average performance to guide their Say-on-Pay voting. The criteria we used to identify "good" companies above, i.e., relative performance explains 50%+ of the variation in relative pay and the pay premium at peer group average performance is moderate (within +/-25%), is a reasonable and objective basis for Say-on-Pay voting. A great virtue of using an objective criterion like this is that it provides a tool companies can use to improve pay design. Investors who have a strong view of optimal pay leverage can substitute a Say-on-Pay standard using leverage and cost, e.g., pay leverage of 0.75+ and a moderate pay premium at peer group average performance.

For stock selection and sizing, investors should use wealth leverage and alignment, together with performance-adjusted cost, because these incentive measures provide a more comprehensive view of CEO incentives than pay leverage and pay alignment. Institutional investors, proxy advisors and compensation consultants would all benefit by encouraging more academic research on the impact of wealth and pay dimensions on future stock returns.

Better measures of pay dimensions should, in time, lead to better pay design. Companies will surely try to achieve the key objectives – high alignment and moderate pay premiums at industry average performance – while maintaining a target pay percentile regardless of past performance and using vesting to leverage operating performance measures. They will likely find that it is difficult to achieve the key objectives without drawing on the insights that come from the Perfect Correlation Pay Plan: target pay should be market pay adjusted for trailing relative performance, and vesting should take out the industry component of the stock return, not leverage that component.

Footnotes

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