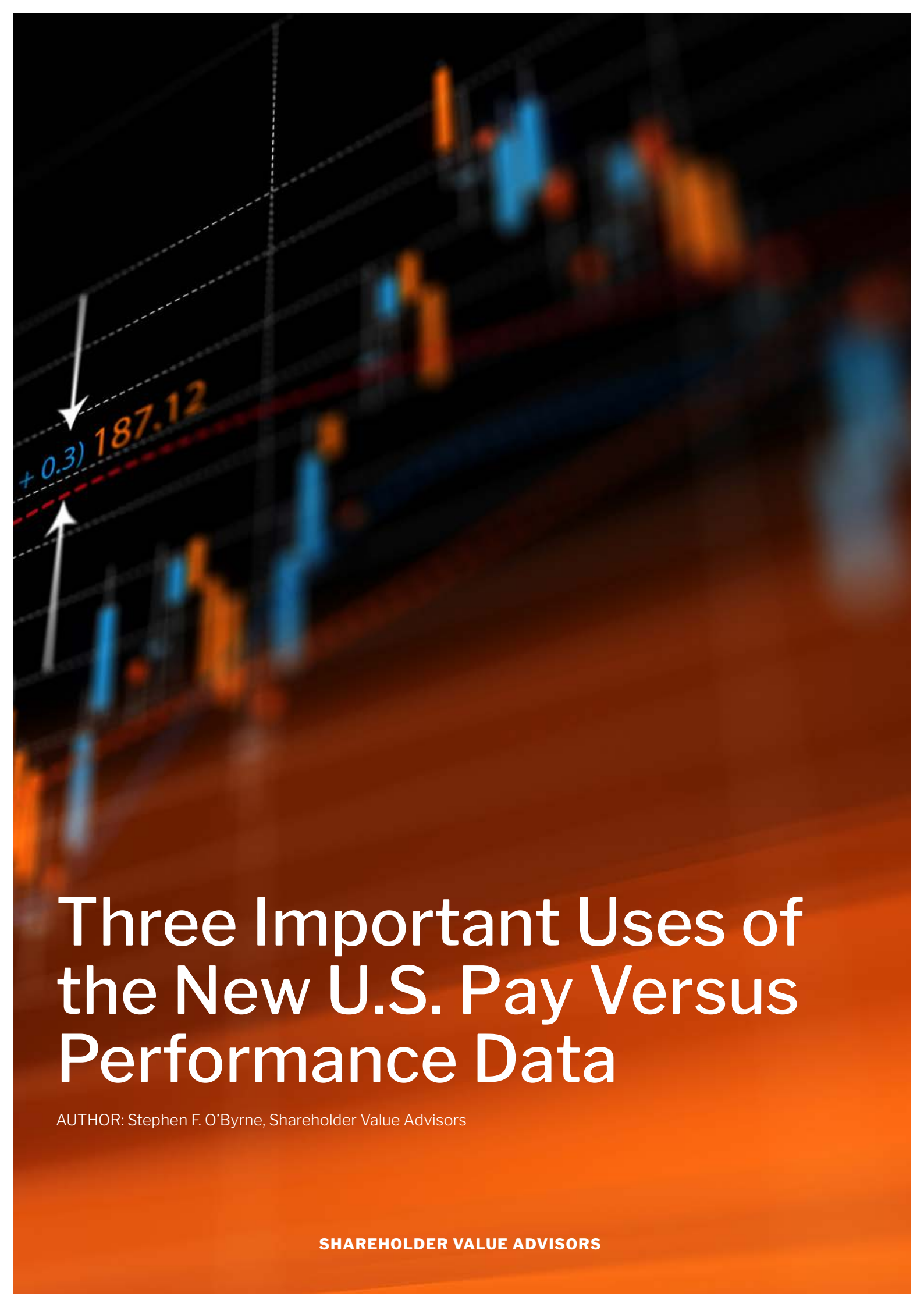




Three Important Uses of the New U.S. Pay Versus Performance Data

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SHAREHOLDER VALUE ADVISORS

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The new Pay Versus Performance data reported in U.S. proxy statements is highly significant because it reports a five year history of executive pay on a “mark to market” basis.

Mark to market pay captures the incentive created by changes in the value of unvested equity compensation and can be used to measure five CEO pay dimensions at the individual company level: pay leverage, pay alignment, the pay premium at peer group average performance, relative pay risk and the pay leverage t-statistic. For 90 years prior to this disclosure, executive pay was only reported on a “grant date pay” basis where equity compensation was only reported at its value at the date of grant. This data was never enough to get a meaningful picture of the CEO's incentive. Here are three important uses of this important new data:

1. Improve Say on Pay (“SOP”) voting. Many asset owners and managers provide very general guidelines for their voting on SOP. The generality of their guidelines makes it difficult for their portfolio companies to predict the asset owner/manager's SOP vote, and hence, difficult for their portfolio companies to improve their executive pay plans in a way that increases the likelihood of a favorable SOP vote. This means that the asset owner/manager's SOP vote is wasted; it has no impact on company practice. It is now possible to establish reasonable specific quantitative guidelines based on the Pay Versus Performance (“PvP”) disclosure of mark to

market pay; it was not possible to do so in the past based on the long-standing disclosure of grant date pay. Specific quantitative guidelines give portfolio companies the ability to predict the asset owner/manager's vote and the ability to change their pay design in a way that increases the likelihood of a positive vote. They make the asset owner/manager's SOP vote matter; it has an impact on company practice. Reasonable specific quantitative voting guidelines are possible because the PvP data can be used to measure five CEO pay dimensions at the individual company level: pay leverage, pay alignment, the pay premium at peer group average performance, relative pay risk and the pay leverage t-statistic. These dimensions can be used to formulate a simple and understandable Say on Pay voting rule that provides clear guidance to portfolio companies. In this paper, I'll propose a voting rule and show its implications in terms of current approval rates. The proposed rule says that the SOP vote will be “yes” if (a) relative TSR explains at least half of the variation in relative CEO pay, (b) pay leverage is statistically significant at the conventional 5% level, (c) relative pay risk is reasonable (i.e., ≤ 2) and (d) the pay premium cost of above median pay leverage is reasonable (i.e., ≤ 2).

2. Measure the impact of CEO pay and stock ownership on future shareholder returns.

My research shows that two measures of incentive strength, i.e., relative pay risk and initial stock & incentive security holdings, have positive effects on future stock returns and a measure of performance

adjusted cost, i.e., the pay premium at peer group average performance, has a negative effect on future stock returns. The PvP data, together with holdings data, can be used to calculate the predicted impact of CEO pay and stock ownership on future shareholder returns. These predicted values can be used, in turn, to improve stock selection and portfolio construction.

3. Improve pay design. The conventional wisdom is that companies can achieve the three basic objectives of executive pay – providing strong incentives to increase shareholder value, retaining key talent and limiting shareholder cost – if they have a high percent of pay at risk with target pay set at the peer group median. The conventional wisdom accepts a low correlation of target (and grant date) pay with relative TSR but argues that post-grant date changes in the value of unvested equity provide a strong incentive to increase shareholder value. For 70 years, proxy statements only reported grant date pay and there was no way to test the truth of the conventional wisdom. The new PvP disclosure provides, for the first time, the data to test the conventional wisdom and it shows that the conventional wisdom doesn't work well for many companies. For more than half, relative TSR explains less than 50% of the variation in relative mark to market pay. A third of companies have very weak incentives - a 1% increase in relative shareholder wealth increases relative mark to market pay by less than 0.2%. The analysis we do with the PvP data, i.e., plotting relative pay against relative TSR to quantify five pay dimensions, provides a guide path to better pay design. It provides a clear goal, showing that there is a simple pay plan with annual grants of performance shares that provides a perfect correlation of relative pay and relative performance with pay leverage of 1.0 and a zero pay premium at peer group average performance. It also provides a way to monitor progress toward the goal: benchmarking pay dimensions – alignment, incentive strength, relative pay risk and performance adjusted cost – to measure progress in improving the company's pay plan.

The basic objectives of executive pay and the conventional wisdom on how to achieve them

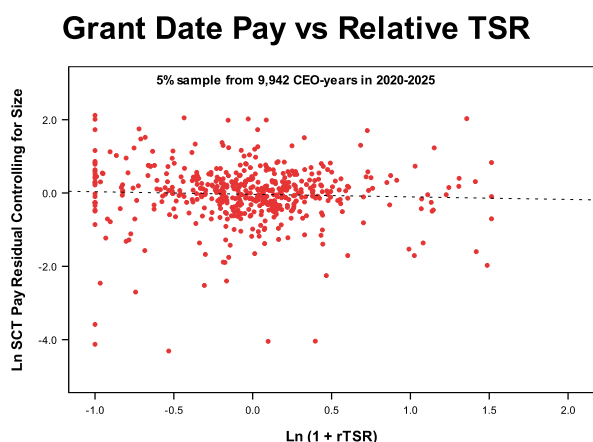
Before we get into the details of the new PvP data, it's helpful to review the basic objectives of executive compensation and the conventional wisdom on how to achieve them. As we just noted above, executive

pay plans have three basic objectives: providing strong incentives to increase shareholder value, retaining key talent and limiting shareholder cost. The conventional wisdom about U.S. executive pay is that these three objectives can be achieved by having a high percent of pay at risk while maintaining target pay at the peer group median. The conventional wisdom is that a high percent of pay at risk provides a strong incentive while maintaining target pay at the peer group median retains key talent and limits shareholder cost. Median target pay retains key talent because target pay does not fall below the peer group median and it limits shareholder cost because target pay does not rise above the peer group median. The critical flaw in the conventional wisdom is the belief that a high percent of pay at risk ensures a strong incentive. Setting target pay at the peer group median, regardless of past performance, creates a systematic "performance penalty" – a rising stock price is penalized with a reduction in equity grant shares to avoid exceeding target pay and a declining stock price is rewarded with an increase in equity grant shares to provide target pay – and makes a key component of executive wealth – the present value of expected future pay beyond the current year – completely insensitive to current performance. The performance penalty undermines the alignment of cumulative pay and cumulative performance because cumulative pay depends on the price path, not just the ending stock price. Making expected future pay independent of current performance creates a weak incentive.

Executive pay data: grant date pay vs mark to market pay

Pay data on top executives has been reported to shareholders since the 1930s. Until 2023, all pay data reported to shareholders was "grant date pay", that is, pay where equity compensation is reported at its value on the date of grant. Grant date pay doesn't give the shareholder any sense of the changes in equity value caused by post-grant changes in stock price or the expected vested multiple. The primary pay exhibit in the proxy statement, The Summary Compensation Table, continues to report grant date pay only. Starting in 2023, the U.S. Securities and Exchange Commission required companies to report "mark to market pay", that is, pay where current year equity grants are valued based on the stock price and expected vesting multiple at the end of the year and where pay includes the change in value during the year of prior year grants that were unvested at the

Figure 1



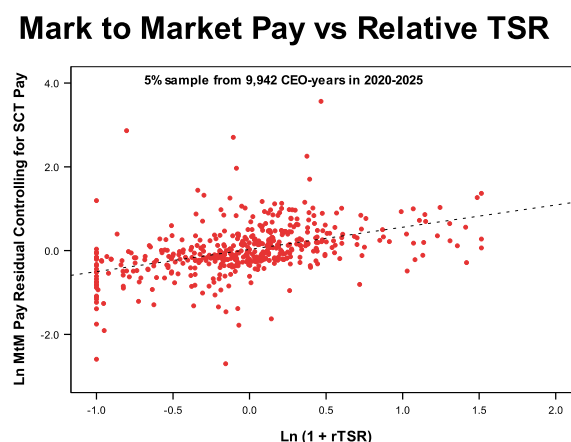
start of the year. The mark to market pay is reported in the Pay Versus Performance table and is called “Compensation Actually Paid” or “CAP”. The SEC required companies to report a three year history of CAP in 2023, a four year history in 2024 and a five year history in 2025 and subsequent years.

The reported pay data is mark to market, or “realizable”, pay; it’s not compensation “actually paid” or “realized” pay. The SEC regulations require the term “Compensation Actually Paid” because that was the language used in the 2011 Dodd-Frank bill when it ordered the SEC to require disclosure of “compensation actually paid” and its relationship to company performance. The Pay Versus Performance table also reports the grant date pay from the Summary Compensation Table, using the label “SCT pay”.

The dynamics of grant date pay and mark to market pay

Executive pay studies since the 1950s have shown that CEO pay is strongly influenced by company size and that there is a largely linear relationship between the natural log of executive pay and the natural log of company size, measured by revenue or market value.⁽¹⁾ The log-log model captures the assumption that a doubling in company size is associated with a constant percent change in CEO pay. A 1955 study by Arch Patton, the head of the compensation consulting practice at McKinsey & Company, showed that a doubling in company revenue size was associated with a 20% increase in pay. Twenty-first century studies show that larger increases in pay,

Figure 2



typically 30-40%, are associated with a doubling in company size.

We can use a sample of 9,942 CEO-years to explore the dynamics of grant date pay and mark to market pay. Our data is from the years 2000 to 2025. We first test the impact of size and performance on grant date pay. Our dependent variable is the natural log of annual grant date pay. Our dependent variables are the natural log of revenue, the natural log of market equity value, the natural log of 1 + relative TSR and the number of years since 2020. Grant date pay and the company size measures are adjusted for CPI inflation. Relative TSR is measured from the first year of each company’s PvP report. Our model shows that size explains 40% of the variation in the log of grant date pay. A doubling in size, that is, a doubling in both revenue and market equity value, increases pay by 30%. Relative TSR “explains” an additional 0.3% of the variation in log grant date pay but its impact is tiny and it has a negative coefficient. Figure 1 gives us a visual picture of the weak and negative impact of relative TSR on grant date pay. The vertical axis is the grant date pay natural log premium controlling for size, both revenue and market equity value. The horizontal axis is $\ln(1 + \text{relative TSR})$. The dashed line is the regression trendline. We can see from the trendline that the impact of relative TSR is very weak and slightly negative. It’s not surprising that relative TSR has little effect on grant date pay because the grant date pay is close to target pay and the conventional wisdom is that target pay should be set at the peer group median regardless of past performance.

Figure 2 shows that we get a very different picture if we look at cumulative mark to market pay as a function of cumulative grant date pay and relative TSR. The PvP disclosure reports mark to market pay on an annualized basis but we convert it to a cumulative measure of pay because our ultimate pay for performance objective is to align relative cumulative mark to market pay with relative cumulative shareholder return. Our sample is the same 9,942 CEO-years. The vertical axis is the natural log premium of cumulative mark to market pay controlling for cumulative grant date pay, the horizontal axis is $\ln(1 + \text{relative TSR})$ and the dashed line is the regression trendline. We can see from the trendline that relative TSR has a substantial and positive effect on the $\ln$ mark to market pay premium. Relative TSR explains 19% of the $\ln$ pay variance after we control for cumulative grant date pay. The coefficient of $\ln(1 + \text{relative TSR})$ is 0.52. This tells us that a doubling in relative shareholder wealth increases cumulative mark to market pay by 43%.⁽²⁾

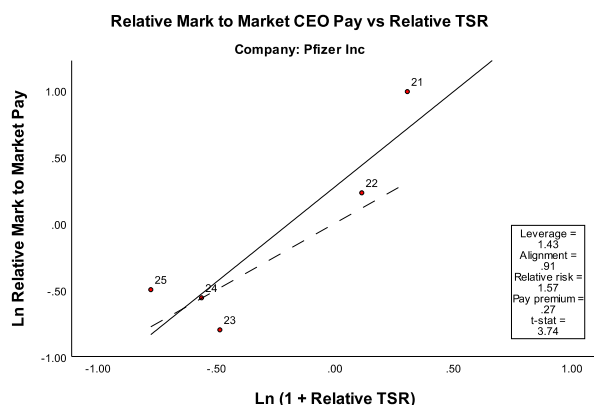
Figures 1 and 2 show why the new Pay Versus Performance disclosure is so important: it shows that CEOs have substantial and measurable incentives to increase shareholder value. The old disclosure of Summary Compensation Table pay, which doesn't include changes in the value of unvested equity compensation, suggests that CEOs have no measurable incentive to increase shareholder value.

How we measure pay dimensions at the individual company level

To make the new data really useful – and to accomplish the three tasks outlined at the start of this paper – we need to measure incentives at the individual company level. Since we have small samples at the individual company level – just five years of mark to market pay data in each proxy statement – we need a more compact regression to estimate pay sensitivity to performance. Figures 3 and 4 show how we measure pay dimensions at the individual company level.

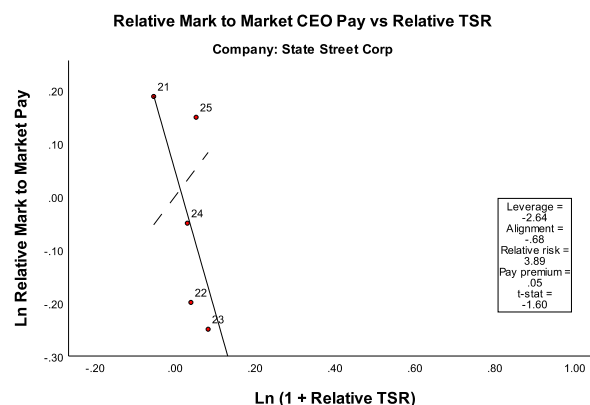
Both graphs plot the natural log of relative pay on the vertical axis against the natural log of $1 + \text{relative TSR}$ on the horizontal axis. The solid line is the regression trendline. The dashed line is a reference line with a slope of 1.0 and an intercept of zero. We include it to help us visually compare two graphs with different scales. We use different scales for each graph to provide better visual images, adjusting the scales so the range in the data uses the entire plot area. Both relative pay and relative TSR are measured on a cumulative basis from the start of the first year shown. The data points are labelled to show the five years included in the analysis, 2021-2025. Relative shareholder wealth, i.e., $1 + \text{relative TSR}$, is cumulative shareholder wealth divided by cumulative peer company shareholder wealth. In other words, relative

Figure 3



Solid line is the company trendline. Dashed line is leverage = 1.0 with pay prem of zero. Mkt pay is increased to include the exp rtr on unvested hids at the start of the perf period.

Figure 4



Solid line is the company trendline. Dashed line is leverage = 1.0 with pay prem of zero. Mkt pay is increased to include the exp rtr on unvested hids at the start of the perf period.

shareholder wealth is actual shareholder wealth divided by the shareholder's opportunity cost. Relative pay is, similarly, cumulative mark to market pay divided by the CEO's cumulative opportunity cost, i.e., cumulative market pay.

The 2023 relative pay value for Pfizer CEO Albert Bourla in Figure 3 is -0.80. That's equal to the natural log of cumulative mark to market pay divided by cumulative market pay plus the expected return on remaining initial unvested equity. Bourla's cumulative mark to market pay for 2021-2023 is \$58.7 million. That's just the sum of the CAP values in the PvP table for 2021, 2022 and 2023, $\$58.7 = \$115.2 + \$5.7 - \62.1 . Cumulative market pay is \$129.6 million, the expected return on remaining initial unvested equity is \$0.9 million and $\ln(\$58.7/(\$129.6 + \$0.9)) = -0.80$. We estimate market rates as average pay for the same position in public companies of similar size in the same industry. We use market equity and revenue as size measures. We use the NAICS sub-sectors to define our industries. 2021 market pay is \$40.0 million for Bourla and \$17.1 million for O'Hanley. We add the expected return on Bourla's remaining initial unvested equity to cumulative market pay because CAP includes gains and losses from equity that was unvested at the start of the five year performance period. Market pay (plus the expected return on initial unvested equity) represents the executive's opportunity cost. See below for more discussion of the mis-match of the pay and performance periods in the PvP disclosure and see the appendix for more detail on our market pay calculations.

Pay dimension #1: pay leverage

The relative pay versus relative performance graph quantifies five pay dimensions. The slope of the line is a measure of incentive strength, what we call pay leverage. It's the ratio of the log change in relative pay to the log change in relative shareholder wealth. It's also equal to the percent change in relative pay associated with a 1% change in relative shareholder wealth. ⁽³⁾ Pfizer CEO Albert Bourla's pay leverage of 1.43 tells us that a 1% increase in relative shareholder wealth has increased his relative pay by 1.43%, on average. State Street CEO Ronald O'Hanley's pay leverage of -2.64 tells that a 1% increase in relative shareholder wealth has diminished his relative pay by 2.64%, on average. The median CEO pay leverage, measured across 3,271 five year periods and 1,359 six year periods, is 0.44. Bourla's pay leverage of 1.43

is above the 80th percentile, while O'Hanley's pay leverage is below the 3rd percentile.

Pay dimension #2: pay alignment

The second pay dimension is pay alignment, the correlation of $\ln$ relative pay and $\ln(1 + \text{relative TSR})$. Pay alignment, which ranges from -1 to +1, tells us the degree to which relative pay and relative performance move together. Pay alignment is +0.91 for Bourla but -0.68 for O'Hanley. The square of pay alignment, what we call pay alignment (r-sq), tells us the percentage of the variation in $\ln$ relative pay that is explained by $\ln(1 + \text{relative TSR})$. For Bourla, relative performance explains 83% of the variation in relative pay, putting him at the 80th percentile of CEOs across 4,630 five or six year periods. For O'Hanley, performance mathematically "explains" 46% of the variation in relative pay, but we don't consider poor performance an acceptable explanation of high pay. For executives, like O'Hanley, with negative alignment, we put a negative sign on pay alignment (r-sq) to make it clear that the relationship goes in the wrong direction. O'Hanley's pay alignment (r-sq) is below the 4th percentile.

Pay dimension #3: relative pay risk

The third pay dimension is relative pay risk. It tells us the ratio of $\ln$ relative pay volatility to $\ln(1 + \text{relative TSR})$ volatility. Relative pay risk is 1.57 for Bourla, but 3.89 for O'Hanley. We can easily calculate relative pay risk because it's equal to pay leverage divided by pay alignment. Bourla's relative pay risk of 1.57 tells that his relative pay is about 60% more volatile than company performance. This puts him at the 69th percentile. It's not clear why pay should be more volatile than company performance. We'll see below that there is a simple pay plan with annual grants of performance shares that provides a perfect correlation of relative pay and relative performance with pay leverage of 1.0 and a zero pay premium at peer group average performance. In this plan, relative pay risk is 1.0.

Pay dimension #4: the pay premium at peer group average performance

The fourth pay dimension is performance adjusted cost, or the $\ln$ pay premium at peer group average performance. It's the trendline intercept, or the point where the trendline crosses the vertical axis extended upward at zero. For Bourla, the pay premium at peer group average performance is 0.27. The pay premium is expressed in natural logarithms.

We can convert it to a percentage pay premium by taking the anti-log and subtracting one. For Bourla, the percentage pay premium is 31%.⁽⁴⁾ For an executive who receives pay in stock or options without well-designed performance conditions, the pay premium at peer group average performance will normally be greater than zero. That's because mark to market pay is a future value number, while market pay is a present value number. Equity should appreciate each year by the cost of equity, so we should expect mark to market pay to be greater than market pay unless the performance conditions limit vesting to the relative TSR component of the stock appreciation. The median pay premium, calculated across 4,630 five or six year periods, is 0.18 (in natural logarithms). This shows that Bourla's pay premium is moderately above average.

Pay dimension #5: the pay leverage t-statistic

The fifth pay dimension is the pay leverage t-stat. This gives us the ability to calculate the probability that the calculated pay leverage could have arisen solely by chance. The conventional standard in social science is to say that we don't have confidence in a measure until the probability that it could have arisen solely by chance is less than 5%. To achieve this level of confidence, the t-stat needs to be 2.13 when we have five observations and 2.02 when we have six observations.⁽⁵⁾ Bourla's t-stat is 3.74 is far higher than the level needed to give us "95% confidence". The t-stat is a very important pay dimension because lack of confidence in pay leverage means we also lack confidence in pay alignment, relative pay risk and the pay premium at peer group average performance because all those numbers are based on pay leverage.

Two ways to adjust for the mis-match of pay and performance periods in the PvP disclosure

Cumulative mark to market pay is sum of the annual CAP figures reported in the Pay Versus Performance table. The annual CAP figures include the year end value of the equity awards granted during the year plus the gains and losses during the year on prior year equity grants that were unvested at the start of the year. Prior year unvested equity grants may include grants made prior to the first performance year in the table. Including gains and losses on unvested equity grants made prior to the first performance year creates a mis-match of the pay and performance periods. There are two ways we can adjust relative pay to correct for the mis-match

of the pay and performance periods. The first alternative is to estimate and exclude gains and losses from holdings that are unvested at the start of the performance period.⁽⁶⁾ The second alternative is to adjust the CEO's opportunity cost to include the expected return on the holdings that are unvested at the start of the performance period. We use the second alternative because it provides a more comprehensive measure of the CEO's incentive and because it is easier for an investor to calculate. It provides a more comprehensive measure of the CEO's incentive because unvested holdings at the start of the performance period do provide additional incentive. It is easier for an investor to calculate because it only requires knowledge of the unvested holdings at the start of the performance period; it doesn't require an estimate of the gains and losses attributable to those holdings. Since we use the second alternative, we need to increase the CEO's opportunity cost to include the expected return on the unvested holdings in addition to market pay. We assume that the unvested holdings vest in equal increments over the next three years and that the expected return is 10%. Due to the vesting, the expected return on unvested holdings granted prior to the performance period declines each year. For year two, it is 2/3 of its year one value. For year three, it is 1/3 of its year one value. For years four and five, it is zero.

Uses of the new data: improving say on pay voting

Asset managers have a fiduciary responsibility to vote proxies in the financial interests of their client. Large asset managers have written proxy voting guidelines and commonly use words like alignment, appropriate risk and linking pay and performance, but they rarely articulate a methodology for measuring those pay dimensions. BlackRock, for example, says in its 2026 proxy voting guidelines that compensation policies should "encourage an appropriate risk appetite, and align the interests of shareholders and executives" but it doesn't provide measures of risk appetite or pay alignment. It says that "we look for a clear link between variable pay and operational and financial performance" but it doesn't make it clear whether "clear link" refers to leverage or alignment and doesn't provide any measurement guidance. Vanguard, in its 2026 proxy voting guidelines, says that "plans should align company executives' pay outcomes with the company's performance relative to its industry peers

over multiple years” but doesn’t offer any methodology to measure alignment.

Vague proxy voting guidelines provide little guidance to portfolio companies. By choosing to adopt vague proxy voting guidelines, an asset owner/manager is largely giving up the opportunity to encourage its portfolio companies to improve their executive compensation practices.⁽⁷⁾ A better alternative is to articulate a measurement framework and a specific quantitative voting standard based on that framework.

A reasonable and specific proxy voting guideline

The PvP disclosures make it practical to have a quantitative voting standard that is specific and reasonable. I propose a proxy voting guideline that says the investor will vote yes on Say on Pay if the company has high alignment, statistically significant pay leverage, reasonable pay risk and reasonable compensation cost. More specifically, the conditions for a positive Say on Pay vote are:

1. Pay alignment ($r\text{-sq}$) is $\geq 50\%$.
2. The pay leverage t-statistic is significant at a 95% confidence level.
3. Relative pay risk is ≤ 2 .
4. The price of above median pay leverage is ≤ 2 ; the price of above median pay leverage is the company’s pay premium (at peer group average performance) above median divided by the company’s pay leverage above median.

These conditions may be satisfied by the five year PvP data in the most recent proxy or by the full history of available PvP data (currently six years).

We have PvP data for 2021-2025 for 1,696 companies, and 1,359 of these 1,695 companies have PvP data for the six years 2020-2025. Our four conditions for a positive SOP vote are satisfied by 497 of the 1,696 companies, 29% of the total. 350 of the 497 positive SOP companies qualify on the basis of the five year regression, while an additional 147 qualify on the basis of the six year regression.

Let’s start with our results for the five year regressions. 724 of the 1,696 companies (43%) have

pay alignment ($r\text{-sq}$) of 50%+. This shows that the PvP disclosures demonstrate alignment far more effectively than the SCT pay disclosures. When we add the condition that pay leverage be statistically significant at the conventional 5% level, the number of companies qualifying for a positive SOP vote drops to 594, or 35%. When we add the condition that relative pay risk is reasonable, i.e., ≤ 2 , the number of companies qualifying for a positive SOP vote drops to 482, or 28%. When we add the final condition that relative cost is reasonable, the number of companies qualifying for a positive SOP vote drops to 350, or 20%. We evaluate cost by taking account of the pay premium at peer group average performance and pay leverage. If the company’s pay premium at peer group average performance is below the median premium, 0.18, the company’s compensation cost is reasonable. If the company’s pay premium is above median, we ask whether the company’s pay premium is justified by having pay leverage above median, 0.44. If the company’s pay premium above median is no more than 2x the company’s pay leverage above median, the company’s compensation cost is reasonable.⁽⁸⁾ About 34% of the companies with above median pay premiums and above median pay leverage pay more than 2x for their above median pay leverage.

Let’s take a look at Pfizer to see if it qualifies for a positive Say on Pay vote. Pay alignment ($r\text{-sq}$) is 83%, well above the 50% threshold for a positive SOP vote. The pay leverage t-stat is 3.74, well above the 2.13 needed for statistical significance with five observations. Relative pay risk is 1.57, well below the negative SOP vote threshold of 2.0. To evaluate Pfizer’s compensation cost, we need to take account of its pay leverage, 1.43, and its pay premium, 0.27. Its pay premium is 0.09 above the median pay premium of 0.18 while its pay leverage is 0.99 above the median pay leverage of 0.44. This means it is paying a log pay premium of 0.09 for each additional 1.0 of pay leverage, well below the 2.0 threshold for a negative SOP vote.

PvP disclosures can be combined to get a longer perspective

One great thing about the PvP disclosures, as I mentioned above, is that they provide mark to market pay and convincing evidence of alignment. A second great thing about the PvP disclosures is that the disclosures from two different proxies can be combined to provide a longer history.⁽⁹⁾ With a longer history, we get a more complete picture of company

pay and often find that a company qualifies for a positive Say on Pay vote based on the longer history when it didn't qualify based on the five year history in the latest proxy.

Let's look at a company, American Express, that doesn't qualify for a positive SOP vote based on the five year disclosure in its 2026 proxy but does qualify when we use data from the 2025 and 2026 proxies to create a six year analysis.

Figure 5 shows the relative pay vs relative TSR regression based on the data reported in American Express's 2026 proxy. American Express doesn't qualify for a positive SOP vote because the CEO's pay alignment (r-sq) is only 46%, lower than the minimum for a positive SOP vote, 50%, and the CEO's pay leverage t-stat is only 1.63, lower than the five observation minimum for a positive SOP vote, 2.13. Figure 6 shows that adding the year 2020 to the data used for the relative pay versus relative performance trendline increases the CEO's pay alignment (r-sq) to 66% and increases the CEO's pay leverage t-stat to 2.79.

Asset owner/manager quantitative guidelines should trigger debate over, and improvement in, the poorly designed quantitative guidelines used by ISS

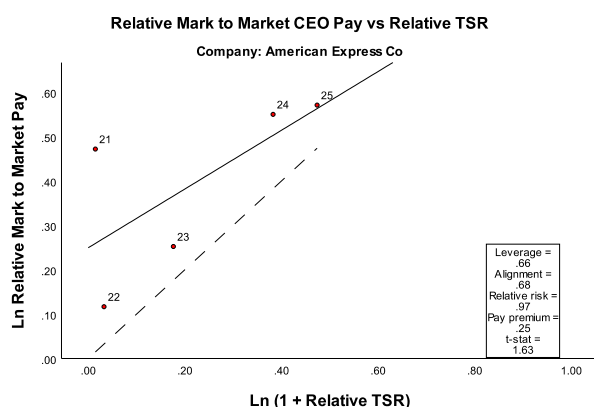
The leading proxy advisor, Institutional Shareholder Services (ISS), has very poorly designed quantitative proxy voting guidelines. When institutional investors propose their own specific quantitative proxy voting

guidelines, these new guidelines will trigger debate on the ISS guidelines and, hopefully, lead to changes that correct their gross deficiencies. ISS uses three primary measures to guide its voting recommendations: Relative Degree of Alignment (RDA), Multiple of Median (MOM) and Pay-TSR Alignment (PTA). All three measures are based solely on grant date pay. Relative Degree of Alignment is the difference between the company's TSR percentile and the CEO's pay percentile. Despite its name, it doesn't provide a measure of the correlation of pay and performance at the individual company level; it's just a proxy for cost. Multiple of Median is the CEO's grant date pay as a multiple of the company's peer group median. It's a direct measure of cost, but it doesn't adjust for performance or pay leverage. Pay-TSR Alignment is an effort to compare the trend in CEO grant date pay with the trend in TSR; it doesn't measure any meaningful pay dimension. My research shows that it is poorly correlated with pay leverage, pay alignment and performance adjusted cost.⁽¹⁰⁾

Uses of the new data: Measuring the impact of CEO pay and stock ownership on future shareholder returns

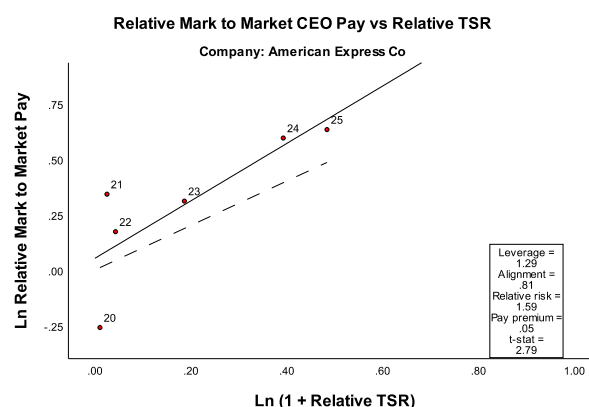
My research has shown that two measures of incentive strength, i.e., relative pay risk and initial stock & incentive security holdings, have positive effects on future stock returns and a measure of performance adjusted cost, i.e., the pay premium at peer group average performance, has a negative effect on future stock returns.⁽¹¹⁾ These measures can be used to measure the expected impact of CEO pay

Figure 5 (Five Years)



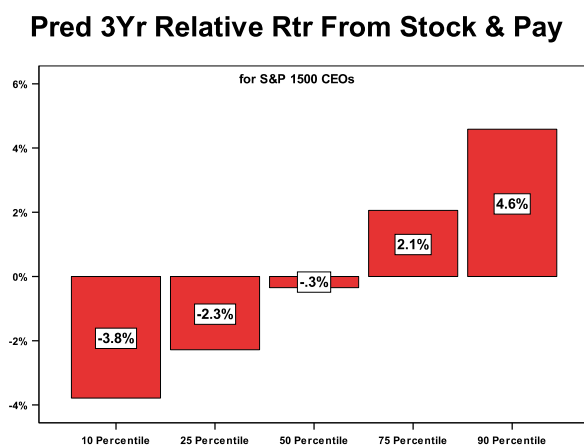
Solid line is the company trendline. Dashed line is leverage = 1.0 with pay prem of zero. Mkt pay is increased to include the exp rtr on unvested hlds at the start of the perf period.

Figure 6 (Six Years)



Solid line is the company trendline. Dashed line is leverage = 1.0 with pay prem of zero. Mkt pay is increased to include the exp rtr on unvested hlds at the start of the perf period.

Figure 7

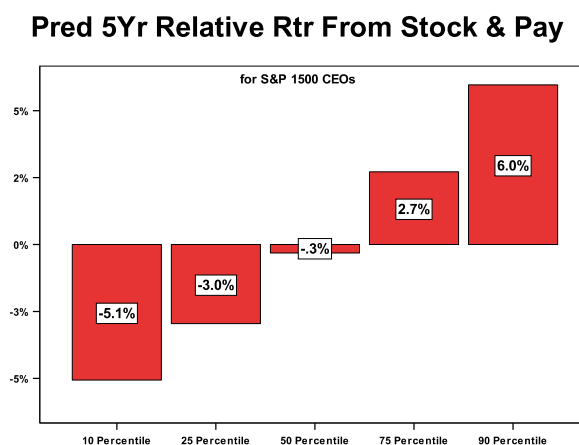


and stock ownership on future three and five year returns. The predicted excess return can, in turn, be used to influence stock selection and portfolio weighting. My research also shows that long-short portfolios selected based on the predicted excess returns earn positive and statistically significant excess returns.

My models are based on estimated mark to market pay calculated using the grant data reported in S&P Global's Execucomp database. The models control for two variables known to affect future returns, company size and momentum (i.e., the prior relative return). The models are not based on the PvP data because there is not yet a long history of PvP disclosures with subsequent three and five year returns but we can use the PvP data to calculate the incentive and cost variables used in the model and to calculate the predicted future returns associated with those variables. Execucomp reports top 5 pay from 1992 to the present. The incentive and cost variables used in the model of future three year returns are calculated using 26,199 five year periods ending in 1998-2021. I start with 1998 because the 1994-1998 five year period is first five year period in Execucomp with at least 500 cases. I end with 2021 because I need a subsequent three year return to assess the impact of the pay dimensions. For the model of five year returns, the number of cases drops to 21,696. To limit the impact of extreme outliers, I winsorized all the variables at the 1st and 99th percentiles.

The incentive and cost variables used in the model have statistically and economically significant effects

Figure 8



on the future returns. A useful way to assess the economic significance of the incentive and cost variables is to look at the differences in predicted future relative return between the 90th and 10th percentiles and between the 75th and 25th percentiles. Figure 7 (from my 2025 paper) shows that the predicted three year relative return at the 90th percentile is +4.6% vs -3.8% at the 10th percentile, a difference of 8.4 percentage points. The predicted three year relative return at the 75th percentile is +2.1% vs. -2.3% at the 25th percentile, a difference of 4.4 percentage points. Figure 8 (from my 2025 paper) shows that the predicted five year relative return at the 90th percentile is +6.0% vs. -5.1% at the 10th percentile, a difference of 11.1 percentage points. The predicted five year relative return at the 75th percentile is +2.7% vs -3.0% at the 25th percentile, a difference of 5.7 percentage points.

We can assess the relative importance of stock ownership vs the other two components of the predicted future 3 year relative return – relative pay risk and the pay premium at industry average performance – by using the three components to explain the total predicted future 3 year relative return. When we do this, we find that relative pay risk accounts for 46% for the variation in the total predicted return, the pay premium accounts for an additional 33% and stock ownership accounts for the remaining 21%. This shows that the pay dimensions that emerge from our pay leverage analysis are extremely important in assessing the impact of incentive and cost variables on future stock returns.

To apply the models using the PvP data, we need to understand how each variable is calculated. The stock ownership variable is the natural log of stock and incentive securities expressed as a multiple of market pay. The multiple of market pay is truncated at 1x and 60x before we take the natural log. We truncate the stock ownership multiple at 1x on the lower end to avoid negative log values. We truncate the stock ownership multiple at 60x at the upper end because doing so improves the model fit. The relative risk variable is calculated as shown in Figure 3 or 4. It is truncated at 2x because relative pay risk has a higher correlation with $\ln(1 + \text{future three year relative return})$ when relative pay risk is truncated at 2.⁽¹²⁾ This raises the coefficient of relative pay risk from .014 to .038. The pay premium at industry average performance is calculated as shown in Figure 3 or 4 above. We only take account of positive pay premiums because high pay has a negative effect on future returns, but low pay does not have a positive effect. The positive $\ln$ pay premium is truncated at 1.0. This makes the positive pay premium coefficient substantially more negative, -.064 vs -.020. A log positive pay premium of 1 implies a percentage pay premium of 172%, so our truncation implies that CEO pay premiums in excess of 172% have no further negative effect on future returns. All the variables are expressed as differences from annual means before we calculate the predicted excess return. The predicted future three year excess return is $0.014 \times [\text{CEO } \ln(\text{holdings}/\text{market pay})[\text{min}, \text{max}=1, 60] - \text{mean value}] + 0.038 \times [\text{CEO relative pay risk} [\text{max} = 2] - \text{mean value}] - .064 \times [\text{CEO positive } \ln \text{ pay premium at industry average performance} [\text{max} = 1] - \text{mean value}]$. The average mean values, for all years from 1998 through 2021, are 1.63 for holdings, 1.28 for relative risk and 0.31 for the positive $\ln$ pay premium. The mean value of the holdings measure is expressed in logs; it corresponds to mean multiple, i.e., holdings/market pay, of 5.1x.

Calculating Pfizer's expected excess return from Bourla's stock and pay

For the Pfizer CEO Albert Bourla at the end of 2025, the predicted three year excess return from his stock and pay is +0.1%. Let's look first at the contribution of the two incentive variables. His stock and incentive securities are 208% of his market pay but that's less than the mean multiple of 510%, so his stock and incentive securities make a negative contribution to his predicted excess return. His relative pay risk is above the mean value (1.57 vs 1.28), but the positive

contribution of his relative pay risk is not quite enough to offset the negative contribution of his below average stock and incentive securities, so his expected return from incentive strength is $-0.002 = 0.014 \times [\ln(2.08) - 1.63] + 0.038 \times [1.57 - 1.28]$. This negative expected return from stock ownership and relative pay risk is offset by a positive expected return of +.003 ($= -.064 \times (0.27 - 0.31)$) from his modest pay premium at peer group average performance. The overall expected excess return from his stock and pay factors is +0.001.

If Bourla had larger stock and incentive security holdings, more relative pay risk and a lower pay premium, his expected three year excess return from stock and pay factors could be as high as $8.2\% = 0.014 \times [\ln(60) - 1.63] + 0.038 \times (2.0 - 1.28) - 0.064 \times [0 - 0.31]$.

It has been a surprise to me that relative pay risk – one of the two components of pay leverage (which equals pay alignment x relative pay risk) – has a much stronger impact of future stock returns than pay leverage. My tentative explanation for this is that relative pay risk has less “noise” than pay leverage. In a prior study, I found that relative pay risk is statistically significant for 80% of all cases while pay leverage is statistically significant for only 40% of all cases. Because it is less noisy, relative pay risk may have a bigger impact on executives' perceived incentive than pay leverage.

Uses of the new data: improving pay design

A third use of the PvP data is improving pay design. A great deal of pay design insight comes from the discovery, in 2012, that there is a simple pay plan with annual grants of performance shares that provides a perfect correlation of relative pay and relative TSR with pay leverage of 1.0 and a zero pay premium at peer group average performance.⁽¹³⁾ This perfect correlation pay plan differs from conventional practice in four ways. First, target pay is not market pay but market pay adjusted for trailing relative performance, i.e., $\text{market pay} \times (1 + r\text{TSR})$. If a company's relative TSR since the start of the plan is -25%, target pay should be 75% of market pay, not 100% of market pay. And if the company's relative TSR since the start of the plan is +25%, target pay should be 125% of market pay, not 100% of market pay. Second, 100% of pay is in performance shares. There is no base salary. Third, vesting takes out the industry (or peer group) component of the stock

return. The vesting multiple is $1/(1 + \text{the industry return from the date of grant})$.⁽¹⁴⁾ If the industry stock price doubles, only half of the shares granted to an executive will vest. The executive receives the grant value of the stock and the excess return versus the industry (or peer group) but no more than that. The conventional approach to vesting, which makes the vesting multiple equal to $(1 + \text{relative TSR})$, leverages the industry return instead of removing the industry return.⁽¹⁵⁾ Fourth, all cash paid out prior to retirement is treated as a draw against the value of the performance shares. There is no final vesting until retirement.

The conventional practice of making target pay equal to market pay regardless of past performance creates a systematic performance penalty that undermines the alignment of cumulative pay and cumulative performance. Superior performance is penalized by a reduction in equity grant shares, while poor performance is rewarded with an increase in equity grant shares. If market pay is \$1 million and the stock price is \$100, a stock grant of 10,000 shares is needed to provide market pay. If superior performance raises the stock price to \$200, stock grant shares are reduced from 10,000 to 5,000 to avoid exceeding market pay. And if poor performance drives the stock price down to \$50, stock grant shares are increased from 10,000 to 20,000 to avoid falling short of market pay. The perfect correlation pay plan maintains fixed grant shares when the price change is due to company performance, but adjusts the number of grant shares when the price change is due to industry performance.

The perfect correlation pay plan provides a perfect correlation of relative pay and relative performance because the ultimate value of each year's performance share grant is affected by the relative return in every year from the start of the plan to the executive's retirement. The relative return in each year prior to the grant affects the cumulative relative return and that cumulative relative return affects target pay and the number of shares granted. The relative return in each year after the grant affects the number of shares vesting.⁽¹⁶⁾

We get more insight into the differences between the perfect correlation pay plan and conventional practice if we compute two additional measures of pay leverage: the leverage of grant date pay and the leverage of post-grant date pay changes. We compute grant date pay leverage by calculating the

trendline relating $\ln$ relative grant date pay to $\ln(1 + \text{relative TSR})$.⁽¹⁷⁾ The grant date pay leverage of the perfect correlation pay plan is always 1.0. Company practice is very different from the perfect correlation pay plan. Median grant date pay leverage across 4,630 five and six year periods is -0.10. Only 10% of companies have grant date leverage of 1.0 or more. We compute the leverage of post-grant date pay changes by calculating the trendline relating the difference between $\ln$ relative mark to market pay and $\ln$ relative grant date pay to $\ln(1 + \text{relative TSR})$. The leverage of post-grant date pay changes is always 1.0 for the perfect correlation pay plan. Median post-grant date pay leverage across 4,630 five and six year periods is 0.55 and 34% of companies have post-grant pay leverage of 1.0 or more. This shows that the average company follows the conventional wisdom: all pay leverage comes post-grant date changes in stock price and expected vesting; none comes from grant date pay.

While companies scorn grant date pay leverage, grant date pay leverage contributes to mark to market pay leverage just as much as post-grant date leverage. We can see this if we regress mark to market pay leverage on grant date pay leverage and post-grant date pay leverage. The two component leverages explain 94% of the variation in mark to market pay leverage and that their coefficients are very similar: 0.99 for grant date pay leverage and 0.92 for post-grant date pay leverage.

The PvP disclosures give companies the opportunity to benchmark the four pay dimensions that are used in our proposed SOP voting guideline: pay alignment (r-sq), the pay leverage t-stat, relative pay risk and price of above median pay leverage. This benchmarking should be a powerful spur to better pay design. Figure 9 shows that pay alignment (r-sq) is only 39% for the median company. Figure 10 shows that the pay leverage t-stat for the median company is only 1.5, well below the levels needed for 95% confidence (2.02 for six year periods and 2.13 for five year periods). Figure 11 shows that almost 25 percent of companies have excessive relative pay risk. Figure 12 shows that the median company with above median pay leverage pays a very small premium for its above median pay leverage. Benchmarking these pay dimensions would give companies an opportunity to set targets for improvement and monitor their progress in achieving them.

Companies benchmark percent of pay at risk but it's not a meaningful measure of incentive strength

Right now, companies only benchmark percent of pay at risk and target pay percentile. Our model of future relative returns provides additional insight into the problems of the conventional wisdom. When we substitute percent of pay at risk for relative pay risk and the gross grant date pay premium for performance adjusted cost, we find two important results. First, percent of pay at risk, unlike relative pay risk, has a negative coefficient and is not statistically significant. This highlights a fundamental problem with the conventional wisdom used by companies and proxy advisors: it provides no meaningful measure of incentive strength.

Second, the gross grant date pay premium is statistically significant. When we split the gross grant date pay premium into two pieces, the component that is related to performance adjusted cost and a residual component, we find that the coefficient on the component related to performance adjusted cost is 60% larger (in absolute value) than the coefficient on the residual component. This confirms that performance adjusted cost is a better cost measure but also shows that investors provide some punishment for high pay that is due to incentives and superior performance, not the pay premium at industry average performance. Hopefully, this investor reaction will disappear as investors become more knowledgeable about better measures of incentive strength.

Figure 9

Figure 10

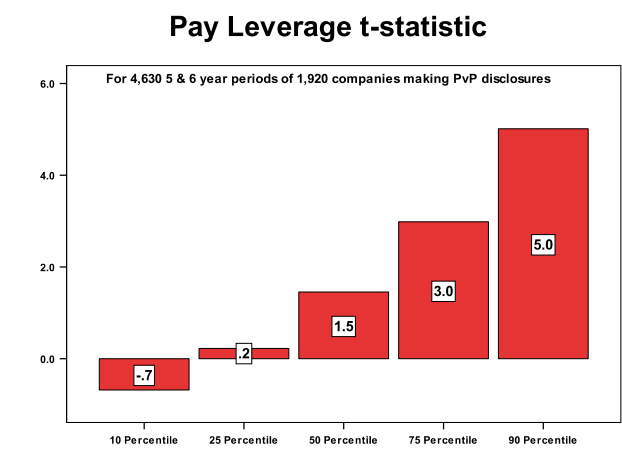
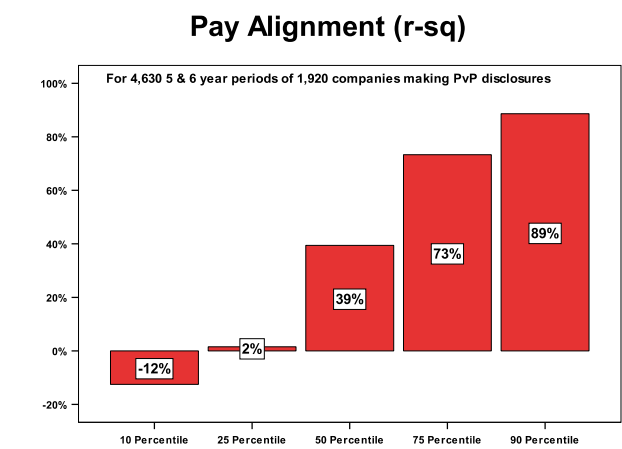
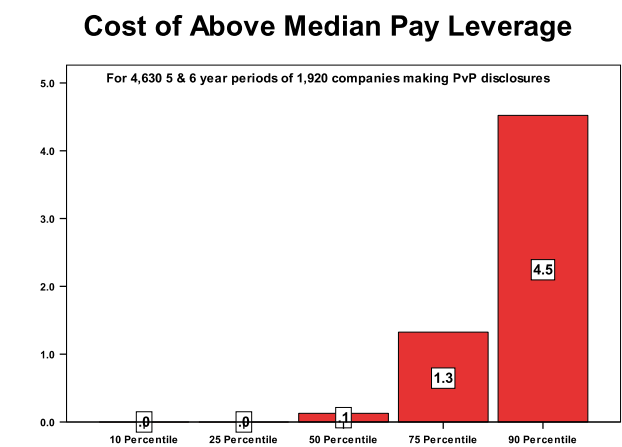
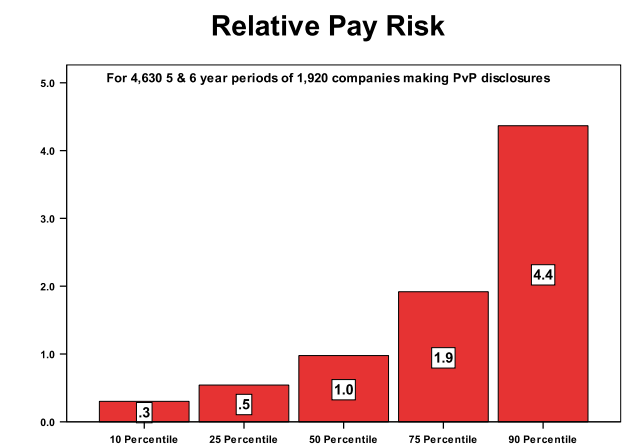


Figure 11

Figure 12



APPENDIX

How we calculate market rates of pay

We use the North American Industry Classification System (NAICS) to develop market rates. The NAICS was developed by the U.S. Government and replaced Standard Industry Classification (SIC) Codes in 1997. The NAICS was last revised in 2022. There are 24 NAICS sectors and 96 sub-sectors. Pfizer, shown in Figure 3, is in sector 32, Manufacturing – Chemicals & Related, and sub-sector 325, Chemical Manufacturing. State Street Corporation, shown in Figure 4, is in sector 52, Finance & Insurance, and subsector 522, Credit Intermediation and Related Activities.

We develop market rates using separate regressions for each NAICS sub-sector. The dependent variable is the natural log of CEO SCT pay. The independent variables are market equity size, revenue size and years since 2020. We use two measures of company size because the two measures explain considerably more pay variance than each measure alone. To make the predicted values easier to interpret, we express the model in terms of differences from the mean values of the independent variables. In this expression, the predicted value is equal to the mean $\ln$ CEO SCT pay for the sub-sector plus adjustments based on each difference from the sample mean. This expression makes it clear which variables contribute to above or below average market rates. This expression also makes it easier to modify the coefficients to eliminate extreme coefficients; when we modify a coefficient, we don't need to re-calculate the constant term to ensure that the mean predicted $\ln$ pay remains equal to the mean actual $\ln$ pay.

For our analyses of grant date pay and mark to market pay, we make four refinements that improve our statistical models. The first is “winsorizing” the data. Winsorizing truncates the data at a top and a bottom percentile – we use the 99th and 1st percentiles – to limit the effect of possibly spurious outliers. It's named in honor of biostatistician Charles P. Winsor (1895-1951) who developed the procedure. When we winsorize the variables, sales and market equity value explain 39% of the variation in $\log$ CEO SCT pay vs 26% when we don't winsorize the variables. The difference is largely due to CEO SCT pay values near zero. The second refinement is adjusting for non-linear relationships, typically for low levels for a variable. One example is pay and size.

There is a strong linear relationship between $\ln$ pay and $\ln$ size but the relationship flattens out for small companies. This finding suggests that a minimum level of qualifications (and pay) is required to run a public company regardless of how small it is. We get a stronger relationship between $\ln$ pay and $\ln$ size if we assume that there is no discount for smaller size below \$100 million, inflation adjusted.⁽¹⁸⁾ A second example is pay and relative TSR, as shown in Figure 2. Controlling for CEO SCT pay, $\ln$ mark to market pay shows a linear relationship with $\ln(1 + \text{relative TSR})$ but the relationship flattens out for large negative returns. This finding suggests that CEOs tend to receive minimum pay levels even when performance is extremely poor. We get a stronger relationship between $\ln$ mark to market pay and $\ln(1 + r\text{TSR})$ if we assume that there is no further discount for poor performance when $\ln(1 + r\text{TSR})$ falls below -1.⁽¹⁹⁾ The third refinement is adjusting extreme coefficient values. We limit the aggregate size coefficient (i.e., the sum of the $\ln$ sales and $\ln$ market equity coefficients) to a range of 0.30-0.75. This affects 3 of 58 subsectors.⁽²⁰⁾ We limit pay inflation in excess of CPI to 0% to 5%; this affects 34 of 58 subsectors. The fourth refinement is a “smearing adjustment”.⁽²¹⁾ When we use the log of pay as the dependent variable, the mean predicted $\ln$ pay is equal to the mean actual $\ln$ pay but mean predicted dollar pay (i.e., the anti-log of predicted $\ln$ pay) is less than mean actual pay. The smearing adjustment corrects for this and makes the mean predicted dollar pay equal to the mean actual dollar pay.

Let's look at the market rate calculations for State Street CEO Ronald O'Hanley and Pfizer CEO Albert Bourla. For both executives, we start with pay for other CEOs in the same NAICS sub-sector and then adjust for differences in company size and pay inflation in excess of the CPI. The two NAICS sub-sectors are 522, Credit Intermediation and Related Activities, for State Street and 325, Chemical Manufacturing, for Pfizer. Each CEO's market rate is based on a regression, using data for 2020-2025, relating the natural log of inflation adjusted CEO SCT pay to inflation adjusted company size and the number of years since 2020. We test two measures of company size, the natural log of inflation adjusted revenue and the natural log of inflation adjusted

market equity value. We use both size measures if they both have positive coefficients. This is the case for State Street where the coefficient of revenue is 0.18 and the coefficient of market equity value is 0.38. These coefficients imply that a doubling in revenue increases pay by 13%, a doubling in market equity value increases pay by 30% and a doubling in both size measures increases pay by 47%. If either one has a negative coefficient, we use the one size measure that has the highest correlation with Inflation adjusted SCT pay. This is the case for Pfizer. Market equity value has a negative coefficient when we use both size measures in a two factor regression. But market equity value also has the highest correlation with CEO SCT pay when we test revenue and market equity value as single size measures. We use market equity value as the sole size measure for Pfizer's subsector and it has a coefficient of 0.41. This coefficient implies that a doubling in market equity value increases pay by 33%.

To make our market rates easier to explain, we express each regression equation as the sum of the mean log pay for CEOs in the sub-sector plus weighted differences from the mean for our size and time factors. The first weighted difference is the revenue coefficient times the company's difference from the mean natural log of inflation adjusted revenue; the second weighted difference is the market equity coefficient times the company's difference from the mean natural log of inflation adjusted market equity; the third weighted difference is the time coefficient times the company's difference from the mean number of years since 2020. When we take the anti-log of this expression, it tells us that market pay is the product of geometric mean pay plus a series of multipliers, i.e., geometric mean pay x revenue multiplier x market equity multiplier x pay inflation multiplier. The multipliers are greater than 1.0 for a factor that increases market pay and less than 1.0 for a factor reduces market pay. When we do this, we can express O'Hanley's market rate as \$19.997 million = \$2.745 million x 1.88 x 3.90 x 0.99 and we can express Bourla's market rate as \$44.473 million = \$4.481 million x 1 x 9.96 x 1. From these expressions, we can see that State Street's size difference from average increases O'Hanley's market rate by a factor of 7.33 (= 1.88 x 3.90) and Pfizer's size difference from average increases

Bourla's market rate by a factor of 9.96. We can also see that the impact of pay inflation in excess of CPI is trivial.

We make three more adjustments before we get the market rates we use in Figures 3 and 4. These adjustments do three things: (1) they correct the shrinkage in total payroll that comes from using a model of log pay, not dollar pay, (2) they take out the inflation adjustment to 2025, leaving us with market rates expressed in 2021 dollars and (3) they allocate the five year market rate pool to the years 2021-2025 so the market rates match the company's utilization of pay; in other words, they match opportunity cost with resource utilization just as we would do with the capital charge in an economic profit calculation. Let's go through each of these adjustments in a little more detail. We use models of log pay, not dollar pay, because the log models give us a much better fit; that is, the relationship between log pay and log size is much more linear than the relationship between dollars of pay and dollars of size. But log models shrink the total payroll; we adjust for this by calculating the ratio of actual total payroll to predicted total payroll for each NAICS sub-sector and multiplying all the market rates in each sub-sector by this correction factor. This "smearing adjustment" increases O'Hanley's market rate by 16% from \$19.997 million to \$23.212 and increases Bourla's market by 15% from \$44.473 million to \$51.051 million. Our second adjustment expresses the market rates in 2021 dollars. This reduces O'Hanley's market rate to \$19.611 million and reduces Bourla's market rate to \$43.131 million. Our third adjustment views market pay as a five year pool of resources and allocates that pool, while maintaining the same present value, to match the company's utilization of pay.⁽²²⁾ Both O'Hanley and Bourla have years with larger equity grants. For example, O'Hanley's SCT pay is \$14.1 million in 2021, \$18.0 million in 2022 and \$13.4 million in 2023. Similarly, Bourla's SCT pay is \$24.4 million in 2021, \$33.0 million in 2022 and \$21.6 million in 2023. Our third adjustment allocates the market pay pool to match the company's utilization of SCT pay. With this adjustment, O'Hanley's market pay is \$17.1 million in 2021, \$21.8 million in 2022 and \$16.3 million in 2023, while Bourla's market pay is \$40.0 million in 2021, \$54.2 million in 2022 and \$35.4 million in 2023, a total of \$129.6 million for 2021-2023.

References

1. Arch Patton, Building On the Executive Compensation Survey, Harvard Business Review (1955). The natural log, commonly denoted as “ln”, uses the number e (= 2.7183...) as the base. $\ln(10) = 2.3026$ because $e^{2.3026} = 10$. The common logarithm, commonly denoted as “log”, uses number 10 as the base so $\log(10) = 1$ because $10^1 = 10$. In this paper, “ln”, “natural log” and “log” always refer to the natural log.
2. $2 \times 0.52 - 1 = .43$.
3. For small changes, the percentage change is close to the log change.
4. $\exp(.27) - 1 = 0.31$.
5. These are the t-stats for a “one-sided” test. A t-stat of 2.13 means that there is only 5% probability that pay leverage is that high due to chance. A t-stat of 2.78 is needed to say that there is only 5% probability that the absolute value of pay leverage is that high due to chance. We don’t expect pay leverage to be negative, so a one-sided test is sufficient for our purposes.
6. This approach is discussed and used in Stephen F. O’Byrne, Comment letter to SEC on Pay Versus Performance disclosure, May 2025, available at www.valueadvisors.com/publications.
7. The asset owner/manager can use stewardship meetings and communications to provide more specific guidance than its proxy voting guidelines provide but this will reach many fewer portfolio companies than specific quantitative proxy voting guidelines.
8. A company fails the cost test if its pay premium is above median but its pay leverage is below median.
9. To get cumulative mark to market pay, we can add the annual pay values shown in the two proxies. The first year in the 2025 proxy, 2020, includes gains and losses from grants that are invested at the start of 2020, while the first year in the 2026 proxy, 2021, only includes gains and losses from grants that were still unvested at the start of 2021. This difference does not distort cumulative mark to market pay because the grants that vested in 2020 are included in 2020 CAP. To get cumulative company and peer TSR from the start of 2020, we need to adjust the company and peer TSR shown in the 2026 proxy to reflect returns in 2020.
10. See Stephen F. O’Byrne, The ISS Pay for Performance Model, available at ssrn.com/abstract=2289360.
11. See Stephen F. O’Byrne, CEO Pay Has A Big Impact on Future Stock Returns, available at ssrn.com (abstract = 6161637).
12. My 2025 paper, CEO Pay Has A Big Impact on Future Stock Returns, truncates relative risk at 4x. To be consistent with the proposed proxy voting rule, I have changed the truncation point from 4x to 2x and re-run the model. The coefficients and mean values shown here are from the revised model, not the original paper.
13. See Stephen F. O’Byrne, Achieving Pay for Performance, Conference Board Director Notes, Vol 4, No 24 (December 2012).
14. The vesting multiple can also be expressed as the percentage of shareholder wealth that is attributable to relative TSR. The vesting multiple is $1/(1 + iTSR)$ where $(1 + iTSR)(1 + rTSR) = (1 + TSR)$, so $(1 + iTSR) = (1 + TSR)/(1 + rTSR)$ and $1/(1 + iTSR) = (1 + rTSR)/(1 + TSR)$.
15. The typical vesting multiple is $(1 + rTSR)$. Since the ending stock price is equal to beginning stock price $\times (1 + iTSR) \times (1 + rTSR)$, the vesting stock value is equal to beginning stock $\times (1 + iTSR) \times (1 + rTSR) \times (1 + rTSR)$. This shows that conventional vesting leverages $(1 + iTSR)$ instead of removing $(1 + iTSR)$.
16. As shown in a note above, the vesting multiple of $1/(1 + iTSR)$ can also be expressed as $(1 + rTSR)/(1 + TSR)$. This expression makes it clear that $rTSR$ affects the number of shares vesting.
17. For this calculation, relative grant date pay is calculated using a constant market rate. We don’t adjust the market rate to reflect the company’s utilization of SCT pay.
18. The r-squared increases from 38.8% to 39.7% and the sum of the size coefficients increases from 0.367 to 0.380.
19. When $\ln(1 + rTSR) = -1$, $rTSR$ is -63%. With no further discount below $rTSR = -63\%$, the coefficient of $\ln(1 + rTSR)$ increases from 0.408 to 0.517.
20. There are 96 NAICS sub-sectors, but we have public companies with PvP data and 40+ cases in only 58 sub-sectors.
21. See Naihua Duan, Smearing Estimate: A Nonparametric Retransformation Method, Journal of the American Statistical Association, Vol 78, No 363 (Sep 1983).
22. For more discussion of this issue, see Stephen F. O’Byrne, Matching market pay to grants captures more pay for performance, OpenAccessGovernment.org, issue 49.

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