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In This Issue: Executive Pay and Corporate Governance

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Top Management Incentives and Corporate Performance

by Stephen F. O'Byrne, Shareholder Value Advisors, and S. David Young, INSEAD

Many critics of U.S. executive compensation are skeptical that compensation has a positive effect on top management decision-making or corporate performance.[1] Academic research has been unable to make a convincing case that strong incentives improve firm performance and thus has done little to diminish critics' skepticism.[2] Researchers have used many different measures of incentive strength, including pay sensitivity and pay "elasticity," without coming to a consensus on the "right" measure.[3] As a result, managers and directors continue to rely heavily on the conventional measure—percentage of pay "at risk"—as the main indicator of incentive strength.

As we will show, however, percentage of pay at risk is a misleading guide to the incentives provided by executive pay packages. For most companies, the amount of incentive compensation paid or granted in a given year—for example, the bonus paid or the grant date value of stock or option grants—has little correlation with the shareholder return in that year and so provides little incentive to increase value. At the same time, the change in the value of stock or options *previously granted* to the top managers of most companies is in fact *highly* correlated with shareholder return and provides strong incentives to increase shareholder wealth. And thus percentage of pay at risk appears to have turned the real story upside down: it exaggerates the typically modest incentives provided by current-year pay, while ignoring the considerable incentive power of prior stock and option grants.

Starting from the premise that managers, like investors, are motivated by prospective changes in their wealth, we present a measure of incentive strength that we call "wealth leverage." Wealth leverage measures the sensitivity of management's wealth to changes in shareholder wealth. And when we estimated top management's wealth leverage for 702 companies in Standard & Poor's ExecuComp database over the period 1995-2004, we came to three main conclusions:

1) for the median company, a 10% change in shareholder wealth changes management wealth by 4%, which implies that top management in the majority of U.S. companies has significant incentives to increase shareholder wealth;

2) for most companies, almost all wealth leverage comes from changes in the value of stock and option holdings, not from changes in the level of annual compensation; and

3) companies with higher wealth leverage significantly outperform their industry competitors, on average.

The Concept of Wealth Leverage

In contrast to media accounts, with their near-total focus on annual compensation, our approach focuses on changes in a manager's *company-related wealth*. Whereas annual compensation includes salary, bonus, and the value of current-year stock and option grants, wealth includes the manager's *total* company stock and option holdings plus the present value of the manager's expected *future* compensation. The present value of expected future compensation in turn includes the present value of expected future salary, bonus, stock compensation, and pension.[4]

Having come up with a measure of management's wealth, we need to decide on a measure of the annual *change in wealth* that provides the best proxy for the manager's incentive to increase firm value. Although some studies use dollar changes in wealth to evaluate the strength of incentives, we assume that the *percentage change* in the manager's wealth is a better proxy for the manager's motivation. (The basic insight here is that the prospect of an additional $1 million has less impact on a manager with $50 million than on a manager with $5 million.) The percentage change in a manager's wealth in any given year, or what we refer to as a manager's "wealth return," can be expressed as follows:

$$\text{Management Wealth Return} = \frac{\Delta\text{Management Wealth} + \text{Cash Received}}{\text{Beginning Wealth}}$$

where ΔManagement Wealth is the increase or decrease in the manager's company-related wealth (which includes the

1. See, for example, "Has Pay for Performance Had Its Day?," *The McKinsey Quarterly*, Number 4 (2002).

2. Kevin Murphy, for example, notes that "...there is surprisingly little direct evidence that higher pay-performance sensitivities lead to higher stock-price performance"; see "Executive Compensation," *SSRN Working Paper Series* (posted May 19, 1999).

3. Murphy (ibid.) notes that "the CEO pay literature has yet to reach a consensus on the appropriate methodologies and metrics to use in evaluating the implicit relation between CEO pay and company stock price performance."

4. Proxies, our data source, do not include data on managers' other assets. If we accumulate the cash received from compensation and stock sales reported in the proxy and use the after-tax value of that cash as a proxy for the manager's other assets, we find that median company wealth leverage drops by 16%.

change in the present value of expected future compensation as well as the change in the value of stock and option holdings), and Cash Received is total cash compensation plus the proceeds from any stock sales.

Wealth leverage, which is our measure of incentive strength, is the ratio of the management wealth return to the shareholder return:

$$\text{Wealth Leverage} = \frac{\text{Management Wealth Return}}{\text{Shareholder Wealth Return}}$$

$$\text{where Shareholder Wealth Return} = \frac{\Delta\text{Price} + \text{Dividends}}{\text{Beginning Price}}$$

Defined in this way, wealth leverage measures the sensitivity of changes in management wealth to changes in shareholder wealth.

To provide some sense of what such a ratio means, consider the case of a "pure" entrepreneur, who has 100% of his or her wealth in company stock. In this case, wealth leverage is 1.0 because any change in shareholder wealth (the value of the entrepreneur's firm) results in an equal percentage change in his or her wealth. At the other extreme is a manager with no equity ownership whose compensation consists entirely of salary and benefits. In that case, wealth leverage would be close to zero, depending on how year-to-year changes in salary and benefits were affected, if at all, by changes in the company's share value.

How Compensation Practices Affect Wealth Leverage

Before we describe our findings on management wealth leverage for a set of companies in Standard & Poor's ExecuComp database, let's use some simulated data to get a better understanding of the calculation and dynamics of wealth leverage.

We began by running 500 Monte Carlo simulations of the five-year stock price performance of a hypothetical company with an expected annual stock return of 9%. The 9% expected stock return was based on the Capital Asset Pricing Model with an assumed stock beta of 0.83 (the median for companies in the ExecuComp database), an equity risk premium of 5%, and a risk-free rate of 4.9%. We also assumed that shareholder wealth follows a log normal distribution with a volatility of 0.413 (the median standard deviation of the companies in the ExecuComp database) and that shareholder returns are uncorrelated from one year to the next. For simplicity, we assumed no dividends.

For each five-year Monte Carlo simulation, we calculated the year-by-year company-related wealth and wealth changes of a manager with a simple pay package: a base salary of $100,000 and a target bonus of $100,000. This gives the manager 50% of pay at risk, which is about average for the managers in ExecuComp. We assumed, for our first case, that the actual bonus as a percentage of target is equal to the ending shareholder wealth as a percentage of beginning shareholder wealth. With this formula, the bonus is the equivalent of investing the target bonus in the stock at the beginning of the year and then selling the stock at the end of the year.

Table 1 shows the simulation results for one of the 500 scenarios. At the beginning of year 1 (shown as the end of year 0), the manager's wealth is entirely the present value of expected future compensation. The present value of five years of expected salary ($100,000 per year) is $432,948, assuming a 5% discount rate. The present value of five years of expected bonus is also $432,948, for total wealth at the end of year 0 of $865,895.

At the end of year 1—a year in which the stock value is simulated to fall by 9.5%—the manager has received cash payments of $100,000 in salary and $90,530 in bonus and has four years of expected future compensation remaining. Summing the cash received of $190,530 with the present value of four more years of expected salary, $354,595, and the present value of four more years of expected bonus, $354,595, the manager's wealth at the end of year 1 is $899,720. This gives the manager a "wealth return" of 3.9% versus the shareholders' return of -9.5%. With similar calculations for each of the subsequent years, we see that the manager's wealth return ranges from a low of 1.5% in year 3 to a high of 11.8% in year 2, while the shareholders' return ranges from a low of -34.9% in year 3 to a high of 61.5% in year 2.

We then calculated the manager's wealth leverage by forming a trend line over the five-year period, with shareholder return as the independent variable and the manager's wealth return as the dependent variable. The slope of the trend line is the wealth leverage. For the manager in this example, as reported in Table 1, wealth leverage is 0.11—which means that a 10% increase in shareholder wealth is associated, on average, with an increase in manager wealth of 1.1%.

What's surprising here is that a compensation plan with fully 50% of pay at risk in a bonus scheme tied *directly* to shareholder return creates wealth leverage of only 0.11 (and the wealth leverage in this one scenario, by the way, is also the median wealth leverage of the 500 Monte Carlo scenarios). By comparison, an investor with 50% of his or her initial wealth in cash and 50% in company stock would have wealth leverage of 0.5 since a 10% increase in shareholder wealth would increase the investor's wealth by 5%. Thus, it's clear that a plan in which 50% of an executive's pay is at risk can provide much less incentive to create value than a plan with 50% of wealth in company stock.

The bonus plan in our example differs from long-term stock ownership in two important ways. First, the target

Table 1 **Calculation of Wealth Leverage**

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Shareholder Wealth	$20.00	$18.11	$29.25	$19.03	$18.36	$16.34
Shareholder Return		-9%	62%	-35%	-4%	-11%
Shareholder Wealth % of Prior Year		91%	162%	65%	96%	89%
Target Bonus	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000
Actual Bonus % of Target Bonus		91%	162%	65%	96%	89%
Actual Bonus		$90,530	$161,540	$65,051	$96,491	$88,994
Base Salary	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000
PV of Future Salary	$432,948	$354,595	$272,325	$185,941	$95,238	$0
Cumulative Salary Received		$100,000	$205,000	$315,250	$431,013	$552,563
PV of Future Bonus	$432,948	$354,595	$272,325	$185,941	$95,238	$0
Cumulative Actual Bonus		$90,530	$256,596	$334,477	$477,692	$559,071
Executive Wealth	$865,895	$899,720	$1,006,246	$1,021,609	$1,069,181	$1,111,634
Executive Wealth Return		3.9%	11.8%	1.5%	4.7%	4.0%
Shareholder Wealth Return		-9.5%	61.5%	-34.9%	-3.5%	-11.0%
Wealth Leverage						0.11

Note: The calculated wealth leverage is the slope of the regression trend line relating annual executive wealth to annual shareholder wealth return.

bonus, unlike a stock owner's expected return, is independent of prior performance. When the stock price drops from $20 at the end of year 0 to $18.11 at the end of year 1, the share owner's 9% expected return falls from $1.80 per share to $1.63; the target bonus, by contrast, is unaffected by the price drop. To make the bonus more like an ownership interest, we could make the target bonus in each year equal to the actual bonus in the prior year. By taking this step, which amplifies both the penalty for poor performance and the reward for good performance, we would raise the median wealth leverage of the 500 Monte Carlo scenarios from 0.11 to 0.31.

Second, the actual bonus, unlike the share owner's interest, is paid out in cash at the end of the year. To make the bonus more like an ownership interest, we could instead pay the bonus in stock that must be held through the end of year 5. If we do this, the median wealth leverage increases from 0.31 to 0.52.

As this example illustrates, by tying the current compensation opportunity to past performance and making the realized value of current compensation depend on future performance, we can achieve wealth leverage that is five times greater than that provided by the original bonus plan *with no increase in the initial percentage of pay at risk*. Our final bonus plan is equivalent to a stock incentive plan that provides an annual stock grant of a fixed number of shares.

Since our calculated wealth leverage is the slope of a regression trend line, it is equal to the correlation of management and shareholder wealth returns multiplied by the ratio of the two standard deviations—that is, the standard deviation of the management wealth return divided by the standard deviation of the shareholder return. In less technical language, wealth leverage is the product of "alignment" and "relative risk." Alignment is the degree of correlation between manager wealth returns and shareholder returns. Relative risk is the ratio of management wealth variability to shareholder wealth variability. In the example in Table 1, alignment is 1.00, but relative risk is 0.11. The bonus payout is perfectly correlated with shareholder return because it is based directly on the change in shareholder wealth. A bonus based, like most corporate bonuses, on an operating performance measure will have a much lower alignment.[5] And if we assume that the bonus has an alignment with shareholder return of, say, 0.5, then the median wealth leverage for the 500 Monte Carlo scenarios drops from 0.11 to 0.05.

This shows that wealth leverage can be close to zero even when 50% of pay is at risk. Moreover, when the

5. A study of 1,033 firms found that the change in earnings per share had a correlation of 0.36 with excess shareholder return for the median company; see Richard G. Sloan, "Accounting Earnings and Top Executive Compensation," *Journal of Accounting and Economics*, Vol. 16 (1993), pp. 55-100.

Table 2 **Discount for Diversifiable Risk**

A	Stock volatility	0.413
B	Stock correlation with market return	0.333
C	Diversifiable stock volatility	0.275 = (1 - B) * A
D	Market risk premium	0.050
E	Continuously compounded market risk premium	0.049 = LN (1 + D)
F	S&P 500 volatility	0.164
G	Market price of risk	0.298 = E/F
H	Undiversified exec risk premium for diversifiable risk	0.082 = C * G
I	Annual discount factor for diversifiable risk	0.921 = exp(-G) ≈ 1/(1 + H)
J	Annual discount from market value for diversifiable risk	7.9% = 1 - I

bonus has a modest alignment with shareholder return—as most bonuses do—then setting the target bonus equal to last year's actual bonus increases wealth leverage by a smaller amount than we found above. When the bonus alignment with shareholder return is 0.5, setting the target bonus equal to last year's actual bonus increases wealth leverage from 0.05 to 0.15 (versus an increase from 0.11 to 0.31 when the bonus correlation is 1.0). However, paying the bonus in stock still increases wealth leverage substantially. When the bonus correlation is 0.5, paying the bonus in stock increases wealth leverage from 0.15 to 0.36 (versus an increase from 0.31 to 0.52 when the bonus correlation is 1.0).

Some Necessary Adjustments

To measure the historical wealth leverage of the top managements of companies in ExecuComp, we had to address six complications that don't appear in our simple Monte Carlo simulations:

1) More complicated forms of compensation, including stock options and pensions, must be valued.

2) The terms and conditions of outstanding option grants, including the exercise price, vesting conditions, and remaining terms, must be estimated because they are not reported.

3) Target compensation must be estimated because it is not reported in the proxy.

4) A longer time horizon than five years must be used because managers anticipate working to retirement age and receiving post-retirement compensation.

5) A method of calculating company (versus individual) wealth leverage must be determined.

6) Wealth leverage must be measured using shareholder return net of market and industry factors because management wealth changes due to market and industry factors cannot provide an incentive to managers.

Before we present our key findings, we review our approach to each of these complications.

To get a realistic measure of management incentives, we need to estimate the value of stock and options to managers. We made the reasonable assumption that the managers reported in ExecuComp are undiversified and thus bear the total risk of the stock or option (including the diversifiable risk that other investors eliminate by holding a diversified portfolio). To measure the impact of lack of diversification on stock and option value, we assumed that managers have the same risk aversion as other investors and demand the market price of risk for the total risk they bear. Since the market value of a stock or option (that is, the Black-Scholes value of the option) reflects just the market risk (not the total risk) of expected future cash flows, an undiversified manager will discount the market value to provide a competitive return for the diversifiable risk of the stock or option. Table 2 shows that the discount for diversifiable risk for the median company in ExecuComp is 7.9% per year of required holding.

The value of an option to an undiversified manager can be calculated by using this discounted stock value in the Black-Scholes formula.[6] We assumed that the stock grants reported in ExecuComp have three-year vesting, so the value of the stock to the manager at the time of grant is assumed to be 78% (= 0.921^3) of the market price of the stock. We also assumed that stock options have an expected option term of six years, which implies that, for the median company, the value of a new at-the-money option to an undiversified manager is 42% of the Black-Scholes value of the option.

We estimated the exercise prices and remaining terms of outstanding option grants using reported data for individual option grants and assumptions about vesting and option exercise. We assumed that options vest pro rata over a four-year period and that the option shares exercised, which are

6. See Lisa Meulbroek, "The Efficiency of Equity-Linked Compensation: Understanding the Full Cost of Awarding Executive Stock Options," *Financial Management* (Summer 2001), pp. 5-44. To ensure that we don't undervalue vested options that managers are free to exercise, we value options at the option spread when the spread exceeds Meulbroek's value.

Table 3 **Wealth Calculations for Wal-Mart CEO David Glass, 1996-1997 (figures in thousands)**

1996 Executive Wealth		1997 Executive Wealth	
PV Future Non-Perf Cash	$19,341	PV Future Non-Perf Cash	$20,294
PV Future Perf Cash	$1,614	PV Future Perf Cash	$5,558
PV Future Cash Comp	$20,955	PV Future Cash Comp	$25,852
PV Future Stock/Options	$5,413	PV Future Stock/Options	$11,196
PV Future Compensation	$26,367	PV Future Compensation	$37,048
PV Pension	$0	PV Future Pensions	$0
PV Future Comp & Benefits	$26,367	PV Future Comp & Benefits	$37,048
Option Holdings	$5,190	Option Holdings	$12,752
Stock Holdings	$58,929	Stock Holdings	$88,474
Total Stock & Option Holdings	$64,118	Total Stock & Option Holdings	$101,226
Total Beginning Wealth	**$90,486**	**Total Ending Wealth**	**$138,273**
		Change in Wealth	**$47,788**

reported in the aggregate, come first from vested shares that are deepest in the money. If vested shares, using the assumption of four-year pro rata vesting, are not enough to account for the reported shares exercised, we relaxed the vesting assumption. We determined the cash proceeds from option exercise by using our exercise assumptions to estimate the stock price at the time of exercise, next using the reported exercise gain and the estimated stock price at the time of exercise to estimate the potential number of retained shares, and then comparing the changes in share ownership with the potential number of retained option exercise shares to determine the actual number of retained shares. The pre-tax cash proceeds from option exercise are then equal to the option exercise gain minus the value of the retained option exercise shares.

We estimated expected future compensation based on historical proxy data for base salary, annual bonus, "other annual" compensation, long-term incentive cash payouts, stock grants, stock option grants, and "other" compensation. Target base salary was simply assumed to be the most recent base salary. For the other six pay components, we estimated target compensation as a percentage of base salary and then estimated target compensation dollars by multiplying the target percentage of salary by the salary.[7]

To include a given manager in our wealth calculations, we required a minimum compensation history of three years. In calculating the first year of manager wealth, we used the three-year average of a pay component as a percentage of base salary as the target percentage of salary. In subsequent years, the target percentage of base salary was a weighted average of the current-year percentage of salary (1/3) and the prior target percentage of salary (2/3).[8]

We estimated the present value of expected future compensation for each pay component by multiplying the estimated target compensation by a capitalization multiple determined on the basis of assumptions about years to retirement, salary growth (3% over the risk-free rate), the risk-free (government bond) interest rate, and pay component risk premiums. We assumed retirement at age 65 and, if the manager's current age was not reported, we assumed that the manager was 45 years old in the first year he or she was reported in the proxy. Our risk premium assumption was 3% for base salary and other non-incentive compensation and 6% for incentive compensation (that is, bonus, long-term incentive cash payouts, stock grants, and stock option grants). For managers with a history of fixed share option grants, the capitalization multiple was based on stock price growth at the company's expected return (using the Capital Asset Pricing Model) and a risk premium that reflected the stock's total risk to undiversified managers.

An Example

Table 3 shows our 1996 and 1997 wealth calculations for Wal-Mart CEO David Glass using the method described

7. We did not use the most recent percentage of base salary as the target because there are substantial year-to-year changes (both negative and positive) in the actual percentages. For example, for the managers reported in ExecuComp in both 2002 and 2003, the median change in bonus as a percentage of salary was 25% (in absolute value), the median change in option grant value was 28% (in absolute value) of salary, and the median change in option shares granted was 40% of the previous year's share grant (in absolute value). This volatility suggests that a multi-year average provides a better estimate of the expected value than the most recent year alone.

8. Our rule for estimating the target option percentage of salary understates the sensitivity of compensation to shareholder wealth changes if the company has a fixed share grant policy—that is, if the company grants each manager an annual option on a fixed number of shares. To avoid understating wealth leverage, we made an exception to our general rule if a manager has received a fixed share option grant for the past three years and we based the target option percentage of salary on the value of the fixed share grant at the year-end stock price.

Table 4 **Cash Received and Wealth Return for Wal-Mart CEO David Glass, 1997 (figures in thousands)**

1997 Cash Received	
Base	$1,164
Bonus	$1,102
LTIP Payouts	$0
Other Annual Comp	$81
Other Comp	$221
Regular Comp Cash	$2,568
Gross Option Exercise Gains	$4,670
Retained Share Value (pretax)	$0
NET Option Exercise Cash	$4,670
Estimated Stock Sale Proceeds (incl. div)	$11,948
Dividends on Shares Owned	$716
Stock Year-end Adjustment	$0
Net Stock Sale/Div Cash	$12,664
Total Cash Received	**$19,901**

1997 Executive Wealth Return	
Total Cash Received	$19,901
+ Change in Wealth	$47,788
Executive Wealth Return ($)	$67,689
÷ Beginning Wealth	$90,486
Executive Wealth Return (%)	**74.8%**

Table 5 **Management Wealth Returns at Wal-Mart, 1995-2004**

Manager	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Glass	-.07	.15	.75	1.27	.21	-	-	-	-	-
Soderquist	-.07	.14	.74	1.25	.20	-	-	-	-	-
Fields	.07	-	-	-	-	-	-	-	-	-
Hardin, Jr.	.00	.03	-	-	-	-	-	-	-	-
Carter	-	.10	-	-	-	-	-	-	-	-
Martin	-	-	.92	1.33	-	-	-	-	-	-
Scott, Jr.	-	-	-	1.31	.35	-	.48	.26	.20	-.02
Coughlin	-	-	-	1.27	.22	.27	.27	.12	.21	-.12
Menzer	-	-	-	-	-	.20	.33	.18	.22	.03
Grimm	-	-	-	-	-	-	.24	-	-	-
Schoewe	-	-	-	-	-	-	-	-	.10	-.02
Duke	-	-	-	-	-	-	-	-	.45	-.03
Mean	-.02	.11	.81	1.28	.24	.23	.33	.19	.24	-.03

Notes: The CEO's wealth return in the year of promotion to CEO is excluded from the wealth leverage calculation and is shown as a missing value (Scott in 2000).

above. Non-performance cash includes base salary and other annual/other compensation. Performance cash includes bonus and long-term incentive cash payouts.

As we saw earlier, a manager's wealth return for a given year is equal to the change in company-related wealth during the year plus any cash received during the year in the form of salary, bonus and other cash compensation, option exercise gains (to the extent they are not reinvested in stock), and the proceeds from net stock sales during the year. Table 4 shows our calculations of Glass's 1997 cash received and wealth return.

For each year, we calculated a company-average manager wealth return using all reported managers with three or more years of historical pay data. Table 5 shows the calculation of the company-average manager wealth returns at Wal-Mart during the period 1995-2004.

To calculate the *company's* wealth leverage, we regressed the average manager wealth return on Wal-Mart's excess

Figure 1 **Wal-Mart Wealth Leverage Based on 1995-2004 Returns**

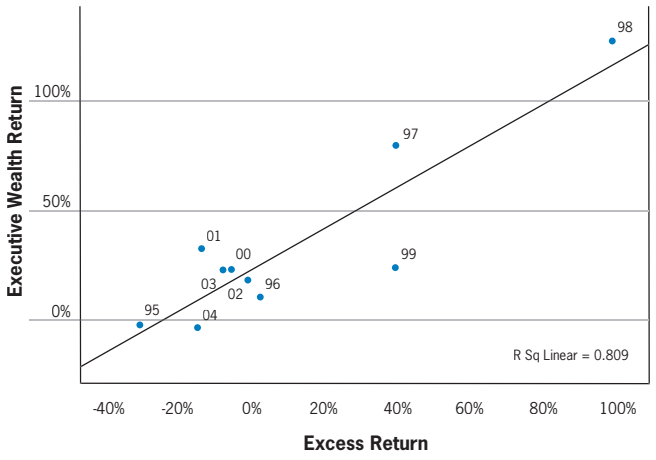
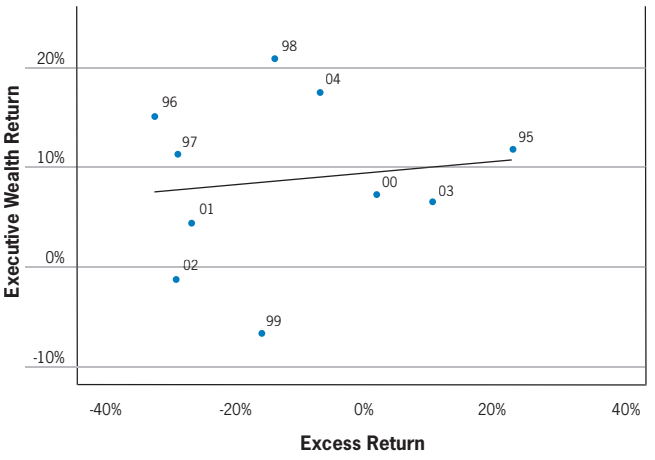


Figure 2 **May Department Stores Wealth Leverage Based on 1995-2004 Returns**



shareholder return relative to its industry group, which is Food & Staples Retailing.[9] The annual excess return is equal to the company's actual return minus its expected return for the year. The company's expected return for the year is equal to β_i × the industry return for the year, where β_i is the coefficient from a regression of the company return on the industry return for the ten years 1995-2004. The annual industry return is compounded from monthly industry returns. The industry return for each month is an equally weighted average of the monthly returns of all the companies in ExecuComp in the same industry group.

Figure 1 shows the wealth leverage scatterplot for Wal-Mart before we excluded outliers. The slope of the trend line is 0.95. As we will see below, about 62% of Wal-Mart's wealth leverage was attributable to stock and option holdings, which represented 41% of top management wealth at Wal-Mart on average over the ten years 1995-2004. However, compensation decisions, such as bonuses and stock compensation grant size, also made a significant contribution to Wal-Mart's wealth leverage. The remaining 38% of Wal-Mart's wealth leverage was attributable to the present value of expected future compensation.

Because the number of years in the wealth leverage regression is small, the slope of the trend line is sensitive to extreme observations. We excluded any year in which the average manager wealth return or the company excess return was more than three standard deviations from the mean of the remaining observations. For Wal-Mart, this test led us to exclude 1998, which reduced Wal-Mart's estimated wealth leverage from 0.95 to 0.82.

Figure 2 shows the wealth leverage scatterplot for May Department Stores. May's wealth leverage is only 0.06, even though stock and option holdings represented 27% of top management's wealth on average over the ten years 1995-2004. As we will see below, the present value of expected future compensation at May—particularly the grant value of stock compensation—had a strong negative relationship to shareholder return and largely offset the positive contribution from stock and option holdings.

Figure 3 shows the distribution of wealth leverage, based on manager and shareholder wealth returns for 1995-2004, for the 702 companies in ExecuComp that met our data requirements. The median company had wealth leverage of 0.43. The distribution shows that Wal-Mart's wealth leverage is at the 90th percentile, while May's wealth leverage is below the 10th percentile. To ensure reasonable wealth leverage estimates, we limited the sample to companies with at least seven years of management wealth returns, based on at least six different managers and at least 21 individual manager wealth return years. We also excluded companies with limited variability in either gross or excess shareholder return—that is, firms with a return standard deviation less than 0.15.

To provide more insight into the sources of wealth leverage, we also calculated, for each of our 702 companies, the wealth leverage of stock and option holdings and the wealth leverage of the present value of expected future compensation and pension. The wealth leverage of stock and option holdings is based on the stock and options held at the

9. Industry groups are defined using the Global Industry Classifications Standard (GICS) developed by Standard & Poor's and Morgan Stanley International.

Figure 3 **Wealth Leverage Percentiles of 702 Companies in ExecuComp**

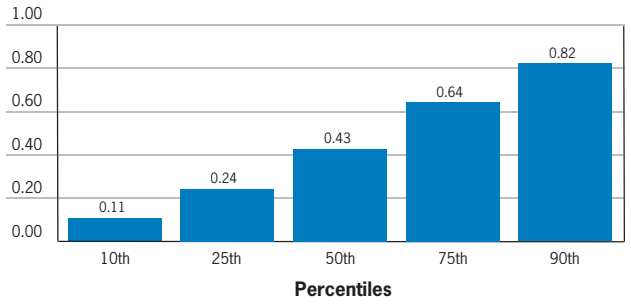
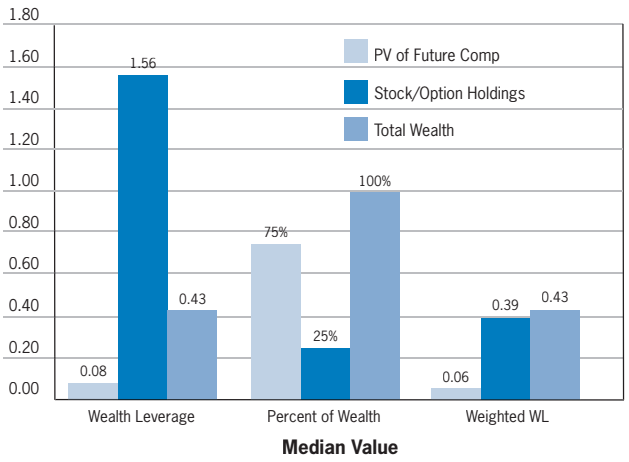


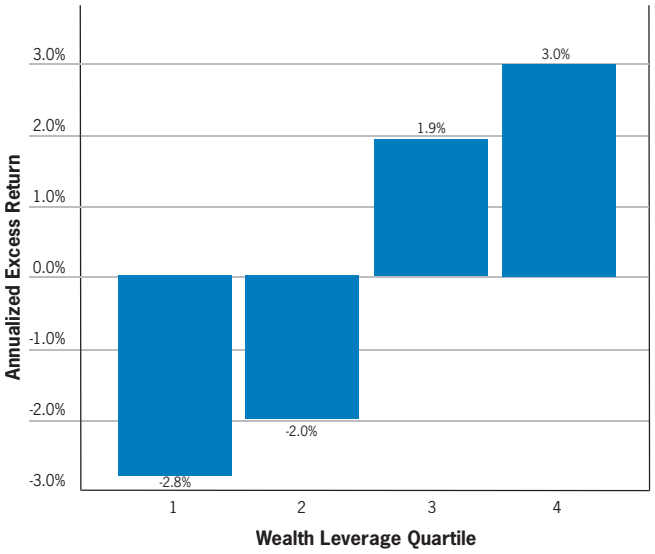
Figure 4 **Median Wealth, Holdings, and Compensation Leverage for 702 Companies in ExecuComp, 1995-2004**



beginning of the year and does not consider any new grants received during the year. A manager's return on beginning stock and option holdings is equal to the change in those holdings during the year (again, excluding new current-year grants) plus the cash received from option exercise (to the extent not reinvested in stock) and stock sales during the year—all expressed as a percentage of beginning holdings. To estimate a company's holdings leverage, we then calculated the average holdings return of all reported managers with three or more years of historical pay data and regressed the average holdings return on the company's excess shareholder return. Finally, the return on the present value of expected future compensation and pension, which we used to calculate "compensation leverage," was the change in the present value of expected future compensation and pension during the year plus the compensation received during the year in the form of salary and bonus as well as the grant date value of stock and option grants received during the year.[10]

Figure 4 shows that the median company in the ExecuComp database had total wealth leverage of 0.43, holdings leverage of 1.56, and compensation leverage of 0.08. During the period 1995-2004, beginning-of-year manager wealth at the median company (median for stock and option holdings, as a percent of wealth) consisted, on average for the company's managers, of 25% in stock and option holdings and 75% in the present value of expected future compensation, which means that the weighted average of median holdings and compensation leverage of 0.45 (= 0.08 × 75% + 1.56 × 25%) is approximately equal to the median total wealth leverage of 0.43.[11] Even for an individual company, the relationship is not exact because regression coefficients of wealth components do not mathematically add to the total wealth regression coefficient.

Figure 5 **Annualized Excess Return versus Wealth Leverage, Based on 702 Companies in ExecuComp**



These leverage figures tell us that, for the median company, a 10% increase in shareholder wealth increases manager wealth by about 4.3%; increases the value of managers' stock and option holdings by 15.6%; and

10. We used the grant date values of stock and option grants rather than their year-end values because the grant date value reflects the company's intended compensation and so makes compensation leverage a better measure of the company's intended leverage.

11. Wealth leverage ≈ weighted compensation leverage + weighted holdings leverage; Wealth leverage ≈ (CL × PV future comp % of wealth) + (HL × holding % of wealth).

Table 6 **Wealth Leverage versus Performance**

Company	Exec Wealth Leverage	Compensation Leverage	Holdings Leverage	Average Holdings Pct of Wealth	Excess Return %ile
Danaher Corp	1.33	.25	1.39	48	91
Cisco Systems Inc	1.24	.56	1.29	64	94
Wal-Mart Stores	.82	.47	1.19	41	86
Best Buy Co Inc	.80	.13	1.19	59	98
General Electric Co	.76	.19	1.21	52	92
Penney (J C) Co	.21	-.07	1.48	21	19
Cooper Tire & Rubber Co	.16	.03	1.52	18	17
Toys R Us Inc	.15	.01	2.10	8	4
McDermott Intl Inc	.12	.02	1.45	10	12
Goodrich Corp	.04	-.01	1.69	15	16

increases the value of current and future compensation by 0.8%. The weighted holdings leverage of May Department Stores is about 75% of the weighted holdings leverage of Wal-Mart because May has higher holdings leverage (1.32 versus 1.19) which partly offsets the difference in stock and option holdings as a percent of wealth (27% versus 41%). The bigger difference between May and Wal-Mart, however, is compensation leverage. May has negative compensation leverage (-0.31), while Wal-Mart has significantly positive compensation leverage (0.47). A more detailed analysis of May's compensation leverage shows that May's bonus leverage is slightly positive (0.10), but its stock compensation leverage is highly negative (-0.71). The negative stock compensation leverage indicates that May has had a strong tendency to increase stock and option grants when the company is performing poorly.

Wealth Leverage and Corporate Performance

To assess the impact of wealth leverage on corporate performance, we measured the performance of our sample companies by their cumulative annualized excess stock returns, based on actual monthly returns minus expected monthly returns. Expected monthly returns are calculated as follows:

$$\beta_1 \times \text{the S\&P 500 return} + \beta_2 \times \text{the industry return for the month}$$

where β_1 and β_2 are the coefficients from a regression of the company return on market and industry returns for the 60 months prior to the current month.[12]

As can be seen in Figure 5, which shows the mean annualized excess return of the sample companies for each wealth leverage quartile, companies with higher wealth leverage had higher average excess returns. Moreover, when we regressed cumulative annualized excess returns on wealth leverage, the regression coefficient was significant at a 1% level and showed that a 0.10 increase in wealth leverage was associated with an increase in the annualized excess return of 0.91 percentage points.

It is possible that at least part of the positive correlation between wealth leverage and firm performance is attributable to the fact that stock price appreciation will increase both wealth leverage and annualized excess return. Stock price appreciation should increase the percentage of wealth in stock and option holdings, which has a relatively greater impact on wealth leverage than the present value of expected future compensation. To test whether the correlation between wealth leverage and excess return was due to a change in the percentage of wealth in stock and option holdings, we did a second regression using both wealth leverage and the change in percentage of wealth from holdings as independent variables, with the latter calculated as the difference between the average holdings percentage of wealth for 2000-2004 and the average holdings percentage of wealth for 1995-1999 (using beginning-of-year wealth values for all years). Both variables were significant at a 1% level, and the change in percentage of wealth from holdings was positively correlated with the excess return, as we would expect. But controlling for the change in percentage of wealth from holdings reduced the wealth leverage coefficient by only 0.03, from 0.091 to 0.088, indicating that the statistical impact of wealth leverage on firm performance is not attributable to changes in the percentage of wealth from holdings.

Table 6 shows five companies with high wealth leverage and superior performance and five companies with low wealth leverage and poor performance.

12. The industry return for each month is an equally weighted average of the monthly returns of all the companies in ExecuComp in the same industry group.

Conclusion

This article presents a measure of incentive strength called "wealth leverage." In contrast to the conventional focus on annual compensation, our approach focuses on changes in a manager's company-related wealth. Whereas annual compensation includes salary, bonus, and the value of current-year stock and option grants, wealth includes the manager's *total* company stock and option holdings plus the present value of the manager's expected *future* salary, bonus, stock compensation, and pension. In our view, taking such a comprehensive look at an executive's pay package is the only reliable way to assess its incentive power.

When we estimated this wealth leverage measure for the top managements of 702 companies in Standard & Poor's ExecuComp database over the period 1995-2004, we reached three main findings:

1) large public companies in the U.S. have significant wealth leverage—a 10% increase in shareholder wealth increases management wealth by 4% for the median company;

2) for most companies, almost all leverage comes from stock and option holdings with very little contribution from current compensation; and

3) companies with higher wealth leverage significantly outperform their industry peers.

For corporate compensation committees intent on providing executives with stronger incentives to increase value, our research has three main implications: 1) focus on wealth leverage, not the percentage of pay at risk; 2) make much stronger efforts to tie compensation to current shareholder returns; and 3) give high priority to policies that increase stock and option holdings, such as payment of bonuses in stock, long vesting requirements, stock ownership guidelines, and stock retention requirements.

STEPHEN O'BYRNE is the co-founder and President of Shareholder Value Advisors, a firm that advises companies on performance measurement, incentive compensation and valuation.

DAVID YOUNG is Professor of Accounting and Control at INSEAD.

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