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In This Issue: **Strategy and Valuation**

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Six Factors That Explain Executive Pay (and its Problems)

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Most investors are convinced that top management incentives have a significant impact on company performance, but few investors make systematic use of compensation data in their investment decision-making. Pay creates incentives for revenue growth that can undermine the shareholder value incentives created by stock and option holdings, but few investors have a comprehensive measure of top management's shareholder value incentive—one that takes account of the incentives created by current pay, expected future pay and stock and option holdings. In this paper, we will present a statistical model of top management pay in U.S. public companies that shows the impact of six factors: responsibility (i.e., position and company size), industry, pay inflation, business risk, performance—both in terms of shareholder value and revenue growth—and company pay policy (that is, the company's average pay premium or discount for the prior five years). We will show that these six factors explain 77% of the variation in total compensation over the period 1997-2008 for a sample consisting of almost 75,000 cases. Among our most important findings, the incentives to create shareholder value provided by U.S. total pay packages are significantly weaker than the incentives to produce revenue growth.

We also present more comprehensive "wealth" measures of value and revenue incentives that take account of not only current pay, but also expected future pay and stock and option holdings. Using these measures, we show that the median top five executive now has a stronger wealth incentive for revenue growth than for shareholder value growth, and that value wealth incentives are often inconsistent across time and across management teams. We conclude by reviewing some recent research (including our own) on incentives and company performance and offering suggestions for investors on how to identify companies that provide strong and cost-efficient incentives to increase shareholder value.

Our Statistical Model of Top Management Pay

Our statistical model is based on 1997-2008 compensation data for a sample of over 21,000 executives representing almost 2,400 U.S. companies. Our data source is Standard & Poor's Execucomp database, which includes compensation data on the top five executives from proxy statements for the years 1992-2008. The company sample for each year is roughly the S&P 1500 (which is made up of the S&P 500, the Mid Cap 400, and the Small Cap 600). We limit our model to compensation for the years 1997-2008 because five years of historical data are needed to calculate our company pay policy variable.

The dependent variable in our model is the natural logarithm of inflation-adjusted total compensation. Total compensation is the sum of base salary, other non-performance pay reported in the proxy such as the value of perquisites, annual bonus, the grant date target value of multi-year performance cash grants, the grant date executive value of stock grants, and the grant date executive value of stock option grants. We use grant date values for equity compensation (not the FAS 123 expense allocations reported in the proxy summary compensation table) to better capture the sensitivity of pay to performance. Our executive value calculations assume that the executive discounts expected future cash flows to reflect the total risk of the security, not just the market-related risk (as reflected in CAPM measures like beta).[1] All total compensation figures are inflation-adjusted to calendar year-end 2008 using the consumer price index. The independent variables in our model represent six factors: responsibility, industry, executive pay inflation, business risk, performance, and company pay policy.

Our measures of responsibility are position/pay rank and company size. We use dummy variables for pay ranks #2 through #5 to capture the pay differentials between the CEO and the other members of the top management team. We distinguish company size from company performance by defining company revenue and market equity value (both inflation adjusted) at the end of the fifth prior year as size measures and the changes in revenue and shareholder wealth (also inflation adjusted) over the most recent five years as performance measures.[2] We use dummy variables for 23 of the 24 GICS industry groups to capture industry pay differ-

1. See Lisa K. Meulbroek, The Efficiency of Equity-Linked Compensation: Understanding the Full Cost of Awarding Executive Stock Options, *Financial Management*, Summer 2001, pp. 5-41, and Stephen F. O'Byrne, Management's Valuation of Incentive Securities, *Benefits Quarterly*, First Quarter 1992, pp. 51-56.

2. Our two size measures are correlated 0.79, so one explains 62% of the variation in the other, but our performance measures are only correlated 0.37, so revenue growth only explains 14% of the variation in shareholder return and we can reasonably distinguish value from revenue growth incentives.

Table 1 Descriptive Statistics for the Regression Variables

Descriptive Statistics			
	Mean	Std. Deviation	N
Ln Infl Adj Exec Value Total Compensation[0]	7.1002	.94381	74514
Ln Infl Adj Revenue[-5]	7.0511	1.65548	74514
Ln Infl Adj Market Equity Value[-5]	7.2735	1.59312	74514
#2 Exec	.2069	.40506	74514
#3 Exec	.2076	.40560	74514
#4 Exec	.1972	.39792	74514
#5 Exec	.1757	.38054	74514
Energy	.0514	.22084	74514
Materials	.0751	.26355	74514
Commercial & Professional Services	.0338	.18083	74514
Transportation	.0238	.15241	74514
Automobiles & Components	.0172	.13008	74514
Consumer Durables & Apparel	.0539	.22576	74514
Consumer Services	.0414	.19928	74514
Media	.0241	.15333	74514
Retailing	.0585	.23461	74514
Food & Staples Retailing	.0136	.11591	74514
Food Beverage & Tobacco	.0290	.16789	74514
Household & Personal Products	.0092	.09571	74514
Health Care Equipment & Services	.0634	.24368	74514
Pharm., Biotech. & Life Sciences	.0388	.19311	74514
Banks	.0569	.23173	74514
Diversified Financials	.0267	.16126	74514

Descriptive Statistics			
	Mean	Std. Deviation	N
Insurance	.0333	.17951	74514
Real Estate	.0159	.12521	74514
Software & Services	.0589	.23544	74514
Technology Hardware & Equipment	.0710	.25677	74514
Semiconductor Equipment	.0374	.18981	74514
Telecommunications Services	.0097	.09809	74514
Utilities	.0607	.23881	74514
Mkt Correlation x Stock Volatility[0]	.1451	.10392	74514
(1 - Mkt Corr) x Stock Volatility[0]	.2668	.14599	74514
Ln (1 + Infl Adj 5 Yr TSR[0])	.3005	.89226	74514
Ln (Revenue[0]/Revenue[-5])	.4185	.63390	74514
Dummy for 1998	.0838	.27712	74514
Dummy for 1999	.0844	.27799	74514
Dummy for 2000	.0849	.27871	74514
Dummy for 2001	.0858	.28014	74514
Dummy for 2002	.0898	.28597	74514
Dummy for 2003	.0932	.29064	74514
Dummy for 2004	.0969	.29585	74514
Dummy for 2005	.0972	.29627	74514
Dummy for 2006	.0744	.26236	74514
Dummy for 2007	.0670	.25004	74514
Dummy for 2008	.0606	.23853	74514
Company Mean Ln Pct from Mkt Prior 5 Years [EV]	.0120	.39843	74514

Table 2 Correlation Matrix for the Regression Variables

	Ln Infl Adj Exec Value Total Compensation[0]	Ln Infl Adj Revenue[-5]	Ln Infl Adj Market Equity Value[-5]	Mkt Correlation x Stock Volatility[0]	(1 - Mkt Corr) x Stock Volatility[0]	Ln (1 + Infl Adj 5 Yr TSR[0])	Ln (Revenue[0]/ Revenue[-5])
Ln Infl Adj Exec Value Total Comp[0]	1.000	.558	.593	.044	-.311	.138	.053
Ln Infl Adj Revenue[-5]	.558	1.000	.789	-.122	-.478	-.057	-.372
Ln Infl Adj Market Equity Value[-5]	.593	.789	1.000	.005	-.457	-.187	-.185
Mkt Correlation x Stock Volatility[0]	.044	-.122	.005	1.000	.195	-.235	.033
(1 - Mkt Corr) x Stock Volatility[0]	-.311	-.478	-.457	.195	1.000	-.215	.116
Ln (1 + Infl Adj 5 Yr TSR[0])	.138	-.057	-.187	-.235	-.215	1.000	.370
Ln (Revenue[0]/Revenue[-5])	.053	-.372	-.185	.033	.116	.370	1.000

Table 3 **Coefficients and t-stats for the Regression Model**

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	3.961	.018		224.347	.000
Ln Infl Adj Revenue[-5]	.252	.003	.442	94.683	.000
Ln Infl Adj Market Equity Value[-5]	.198	.003	.333	74.506	.000
#2 Exec	-.571	.006	-.245	-95.091	.000
#3 Exec	-.838	.006	-.360	-139.705	.000
#4 Exec	-.998	.006	-.421	-164.038	.000
#5 Exec	-1.123	.006	-.453	-178.843	.000
Energy	.022	.011	.005	1.999	.046
Materials	-.025	.010	-.007	-2.593	.010
Commercial & Professional Services	-.050	.012	-.010	-4.053	.000
Transportation	-.176	.014	-.028	-12.473	.000
Automobiles & Components	-.077	.016	-.011	-4.780	.000
Consumer Durables & Apparel	.155	.010	.037	14.794	.000
Consumer Services	.106	.012	.022	9.169	.000
Media	.289	.014	.047	20.408	.000
Retailing	-.085	.010	-.021	-8.195	.000
Food & Staples Retailing	-.425	.018	-.052	-23.420	.000
Food Beverage & Tobacco	.034	.013	.006	2.593	.010
Household & Personal Products	.092	.021	.009	4.301	.000
Health Care Equipment & Services	.015	.010	.004	1.407	.159
Pharm., Biotech. & Life Sciences	.214	.013	.044	16.722	.000
Banks	.098	.011	.024	9.172	.000
Insurance	.112	.012	.021	8.943	.000
Real Estate	.232	.017	.031	13.419	.000
Software & Services	.154	.011	.038	13.984	.000
Technology Hardware & Equipment	-.048	.010	-.013	-4.759	.000
Semiconductor Equipment	.006	.013	.001	.420	.674
Telecommunications Services	.169	.021	.018	8.055	.000
Utilities	-.253	.010	-.064	-24.451	.000
Dummy for 1998	.032	.010	.009	3.343	.001
Dummy for 1999	.108	.010	.032	11.193	.000
Dummy for 2000	.145	.010	.043	14.937	.000
Dummy for 2001	.122	.010	.036	12.514	.000
Dummy for 2002	.177	.010	.054	17.973	.000
Dummy for 2003	.145	.010	.045	14.991	.000
Dummy for 2004	.200	.010	.063	21.033	.000
Dummy for 2005	.229	.009	.072	24.326	.000
Dummy for 2006	.292	.010	.081	29.244	.000
Dummy for 2007	.331	.010	.088	32.468	.000
Dummy for 2008	.318	.011	.080	29.493	.000
Mkt Correlation x Stock Volatility[0]	.824	.024	.091	34.070	.000
(1 - Mkt Corr) x Stock Volatility[0]	.402	.019	.062	20.783	.000
Ln (Revenue[0]/Revenue[-5])	.291	.004	.195	73.492	.000
Ln (1 + Infl Adj 5 Yr TSR[0])	.202	.003	.191	70.234	.000

ences (Capital Goods, GICS 2010, is our base) and dummy variables for each year from 1998 to 2008 to capture pay inflation in excess of the CPI. Our measures of business risk are market-related stock volatility (= stock volatility x correlation with S&P 500) and company-specific stock volatility (= stock volatility x [1 - correlation with S&P 500]) where stock volatility is calculated using 60 months of historical returns. Our revenue and shareholder value performance measures are logarithmic growth measures calculated from inflation-adjusted values. Descriptive statistics for the variables, a correlation matrix excluding the dummy variables and the regression coefficients and standard errors for the model that excludes company pay policy are shown in Tables 1 to 3. The model is based on 74,514 cases where each case is one executive's total compensation for one year. (All variables are truncated at the 1st and 99th percentiles to limit the impact of extreme values.)

If we simplify the model to size, performance and "other" variables, the equation (see Table 3) is ln(pay) = .252 x ln(revenue[-5]) + .198 x ln(market value[-5]) + .291 x ln(revenue[0]/revenue[-5]) + .202 x ln(1 + 5 yr TSR) + other variables where [-5] denotes the fifth prior year value. When we take the anti-log, this becomes:

predicted pay = revenue[-5]$^{.252}$ x market value[-5]$^{.198}$ x (revenue[0]/revenue[-5])$^{.291}$ x (1 + 5yr TSR)$^{.202}$ x other

A 10% increase in company size (i.e., both revenue[-5] and market value[-5]) increases predicted pay by 4.4% (= 1.1$^{.252}$ x 1.1$^{.198}$ - 1). A 10% increase in current year revenue increases predicted pay by 2.8% (= 1.1$^{.291}$ - 1), while a 10% increase in current shareholder wealth increases predicted pay by only 1.9% (= 1.1$^{.202}$ - 1). We refer to the ratio of percentage change in pay to percentage change in performance as *pay leverage*; and for our entire sample, we find that revenue pay leverage is 0.28 while value pay leverage is 0.19.

These measures reflect the leverage of *total* compensation. To better understand incentive compensation decisions, it's useful to estimate the leverage of incentive compensation. The value pay leverage of incentive compensation can be estimated based on the average percentage of executive *pay at risk* (which was 60% for the years 1997-2008) while assuming that non-performance pay has zero value leverage. This results in an average incentive pay leverage of 0.32 (since 0.19 = 0.0 x 40% + 0.32 x 60%).

But what do these numbers mean? For comparative purposes, an executive's incentive pay leverage would be close to 1.0 if incentive pay were made up of a fixed percentage of economic profit or an annual award of a fixed number of shares of stock. For a stock grant to have pay leverage of only 0.32, a 10% stock price increase would have to be offset by a 6.2% reduction in shares: (1 - .062) x 1.1 = 1.032.

The responsibility measures, position/pay rank and company size, explain 55.5% of the variation in total compensation. On average, the number two executive is paid 57% of what the CEO is paid, the number three is paid 43%, the number four 37%, and the number five 33%. The three variables that are independent of company pay practices—industry differentials, pay inflation and business risk—explain an additional 4.8% of the variation in total compensation, bringing the total variance explained to 60%. The two industries whose executives receive the largest pay premiums are diversified financials (+80%) and media (+34%), while the two largest pay discounts are in food and staples retailing (-35%) and utilities (-22%). What's more, we find that, after controlling for consumer price inflation, top management pay in 2008 was 37% higher than it was in 1997. We also find a bigger pay premium for market-related risk than for company-specific risk. A one standard deviation increase in market related stock volatility increases total compensation by 8.9%, as compared to a 6.0% increase associated with a one standard deviation increase in company-specific stock volatility.

When we add our two performance variables—shareholder return and revenue—our model explains an additional 8.2% of the total variance, or 21% of the variance remaining after we control for responsibility, industry, pay inflation, and business risk. Finally, when we introduce our company pay policy variable—that is, the company's average pay premium or discount for the prior five years[3]—the model explains another 8.2% of the total variance, or 26% of the variance remaining after we control for responsibility, industry, pay inflation, business risk and performance. With company pay policy included, our model explains 77% of the total variation in pay. Since company pay premiums are explained in part by differences in corporate risk and performance, we find it more useful to focus on the model (shown in Table 3) that excludes the company pay premium variable.

Table 4 **Pay Leverage for 39,442 Option Grants**

Year 2 Leverage	< 0	30.7%
	0 - 0.5	10.0%
	0.5 - 1.5	29.2%
	> 1.5	30.1%

Table 5 **Option Grant Leverage—Year 3 vs. Year 2**

		Year 3 Leverage			
		< 0	0 - 0.5	0.5 - 1.5	> 1.5
Year 2 Leverage	< 0	32.1%	10.3%	27.1%	30.4%
	0 - 0.5	32.3%	15.5%	27.1%	25.0%
	0.5 - 1.5	25.3%	8.7%	39.9%	26.2%
	> 1.5	33.0%	9.1%	27.0%	31.0%

Pay Leverage Is Inconsistent, Not Conservative

Our model implies that revenue growth incentives are 50% stronger than value creation incentives and that simple "sharing" concepts such as a fixed percentage of economic profit or an annual grant of a fixed number of shares of stock would provide roughly triple the incentive of the average incentive pay package.

The low sensitivity of incentive pay to performance suggests that companies have conservative policies that make pay changes smaller than shareholder value changes. But corporate pay leverage is not so much conservative as inconsistent. We can see this in three ways.

First, typical bonus plan designs show narrow ranges of high leverage that are offset by practices such as the use of caps and floors, along with annual recalibrations of pay and performance targets, that have the effect of creating wide ranges of zero leverage.

Second, few companies have consistent sharing of EBITDA or market value. For the median company-year in the Execucomp database, the total compensation of the top five amounted to 3.1% of EBITDA and 0.43% of market value (based on 25,010 company years since 1992). If a company's sharing percentage stayed within (plus or minus) 20% of its average sharing percentage, its sharing percentage range—the difference between its highest sharing percentage

3. We use annual regressions that control for current revenue size, position and industry to calculate the "market rates" used to compute each company's pay premium or discount in the prior years. We use this limited set of variables because company pay policies, e.g., 75th percentile pay, rarely take account of risk or performance.

Table 6 **2007 Wealth Leverages for General Electric CEO Jeff Immelt**

		Percent of Total Wealth	Component Value WL	Contribution to Value WL	Component Revenue WL	Contribution to Revenue WL
Stock holdings ($000)	$112,909	29%	1.00	0.29	0.00	0.00
Option holdings	17,733	5%	2.00	0.09	0.00	0.00
Current year incentive compensation	15,867	4%	0.40	0.02	0.45	0.02
PV of IC beyond the current year	190,403	49%	0.15	0.07	0.45	0.22
PV of non-performance pay	48,421	13%	0.00	0.00	0.45	0.06
Total wealth	$385,333	100%		0.48		0.30
				Value WL		Revenue WL
Reported 2007 total compensation	$19,592					
Years to retirement	13					

and its lowest—would by construction be 40% of its average sharing percentage. But very few companies show this level of consistency. For the median company with at least five years of history data, the range for EBITDA sharing was 164% of the average, and the range of market-value sharing was 167% of the average. Some of this variability is due to the fact that sharing percentages decline as companies get bigger. But even when we adjust for size by using individual company trend-lines, we find that the range of deviations from the trend-line, expressed as percentages of the trendline sharing percentage, is 127% for EBITDA sharing and 126% for market-value sharing.

Third, the pay leverage of stock option grants is widely variable and inconsistent from year to year. To illustrate this pay leverage concept, if an executive receives option grants in two successive years, we would calculate the pay leverage of the second grant by dividing the percentage change in the grant value of the option from year one to year two by the percentage change in the stock price. If we limit the analysis to at-the-money option grants, we can reasonably assume that the option grant value is proportional to the aggregate exercise price, so the option grant pay leverage is just the percentage change in the number of shares times the exercise price divided by the percentage change in the exercise price. To make this clearer, let's look at a couple of examples. If the number of shares is the same in both grants, then the percentage change in the number of shares x exercise price is equal to the percentage change in the exercise price—and in that case the option grant pay leverage is 1.0. But if the number of shares times the exercise price increases by 5% when the exercise price falls by 20%, option pay leverage becomes a negative -0.25 (= 5%/-20%). In this case, the number of option shares has been increased by over 30% to offset the decline in the stock/exercise price:

$$\text{shares}_2 \times \text{exercise price}_2 = 1.05 \times \text{shares}_1 \times \text{exercise price}_1$$

$$\text{shares}_2/\text{shares}_1 = 1.05 \times (\text{exercise price}_1 / \text{exercise price}_2) = 1.05 \times 1.25 = 1.31$$

To assess the level and consistency of option grant leverage, we identified 39,442 cases in which the same executive received three consecutive at-the-money option grants. Table 4 shows that most of the year-two option grants had pay leverage far below or far above the average pay leverage of incentive pay, 0.32. Just over 30% of the grants had negative leverage while almost 60% of the grants had leverage above 0.5, with over 30% above 1.5. Negative leverage means that the option grant value went down when the stock price went up or that the option grant value went up when the stock price went down. Moreover, Table 5 shows that the pay leverage in year 2 often changed dramatically in year 3. Of the executives with negative leverage in year 2, 57.5% had leverage in year 3 greater than 0.5 and 30.4% had leverage in year 3 greater than 1.5. Similarly, roughly one third of the executives with leverage greater than 1.5 in year 2 had negative leverage in year 3.

A Comprehensive Incentive Measure: Wealth Leverage

Stock and option holdings have much greater value leverage than pay. Stock leverage, by its definition, has value leverage of 1.0; in other words, a 10% increase in stock price increases stock value by 10%. Option leverage averages about 1.6 for ten-year at-the-money-options, which means that a 10% increase in stock price increases the option value, on average, by 16%. Option leverage increases as options fall out of the money and decreases down to stock leverage (1.0) as the option gets further into the money. While pay creates an incentive for value-destroying revenue growth, stock and option holdings create a counter-balancing incentive for shareholder value creation. To understand incentives for shareholder value vs. incentives for value-destroying revenue growth, we need a comprehensive measure of incentives—a measure that takes account of not only current-year pay, but expected future pay and stock and options holdings.

We refer to such a multi-period incentive measure as *wealth leverage*—and we calculate such a measure for both

value and revenue growth. *Value wealth leverage* is the ratio of the percentage change in management wealth to the percentage change in shareholder wealth. Revenue wealth leverage is the ratio of the percentage change in management wealth to the percentage change in revenue.

Table 6 shows both estimates of wealth leverage for GE's CEO Jeff Immelt at the end of 2007. As can be seen in the table, we use five wealth components to calculate value and revenue wealth leverage. In our calculations, stock and option holdings are assumed to have revenue leverage of 0 because we are trying to measure the incentive for value-destroying revenue growth. We calculate the value leverage of option holdings using the Black-Scholes model. We assume a 25% price increase over a one-year horizon and calculate the ratio of the percentage change in the Black-Scholes value to the 25% change in the stock price. (To make the wealth leverage calculation easier for analysts, we use the Black-Scholes value without the adjustment for diversifiable risk that we included in our statistical model of top management pay.) To limit the impact on our results of extreme option leverages—which may not have a proportional impact on management motivation—we limit option leverage to a maximum of 2.0. We estimate current and expected future pay using the total compensation figure reported in the proxy statement's summary compensation table.

Immelt's reported total compensation for 2007 was $19.592 million. We don't use this figure for our statistical model of pay levels because it reflects accounting allocations of equity compensation expense instead of current-year grant values. Nevertheless, this number often provides a simple and usually reasonable estimate of normalized pay for wealth leverage analysis.[4] Our estimate of the present value of current and expected future pay is SEC reported total compensation for the present year multiplied by the number of years to age 65. Using years to retirement as a present value factor is a simplification designed to make it easier for analysts to estimate wealth leverage, and not an unreasonable one. It assumes that the expected growth in top management pay is equal to a reasonable discount rate. For the years 1993-2005 (the period used in our most recent analysis), the increase in median total compensation for executives reported in Execucomp averaged 3.2% more than the 20-year U.S. government bond yield, and we believe that three percent is a reasonable risk premium for top management pay. And since top management pay has considerably less risk than a simple fixed share stock grant, a risk premium well below the equity risk premium seems appropriate.

Immelt's 2007 total compensation of $19.6 million consisted of $3.3 million in salary, $5.8 million in cash bonus, $9.8 million in stock grants, $0.2 million in option grants, $0.078 million in pension value change, and $0.4 million in other compensation. We assume that the pension is based on salary and bonus, so we treat 64% (= bonus / [salary + bonus]) of the pension change as incentive compensation. Adding up cash bonus, stock grant value, option grant value and the bonus based pension change, we get incentive compensation of $15.9 million and non-performance pay of $3.7 million. The present value of Immelt's expected future incentive compensation—given that he was 52 in 2007, or 13 years from expected retirement—is $206.3 million ($15.9 million x 13), and the present value of expected future non-performance pay is $48.4 million ($3.7 million x 13). Subtracting current-year incentive compensation of $15.9 million from the present value of expected future incentive compensation gives us the present value of incentive compensation beyond the current year, $190.4 million. We separate current from future incentive compensation because current incentive compensation typically has significantly higher pay leverage.

The next step in our analysis was to use historical regressions to estimate future pay leverage for the 24 GICS industry groups.[5] We estimate the leverage of future pay to current performance by calculating the leverage of current pay to past performance. For example, we use the leverage of current pay to shareholder return in the fourth prior year to estimate the leverage of pay four years in the future to current shareholder return. For each industry group, we do seven regressions for shareholder return and seven regressions for revenue size. The dependent variable is always current year pay and the successive independent variables are current year performance, prior year performance..., sixth prior year performance.[6]

Table 7 shows the value leverage of current year incentive compensation, the average value leverage of future incentive compensation and average revenue leverage. The average value leverage of future incentive compensation is the average leverage of the regressions relating current pay to performance in years [-1] through [-6]. Average revenue leverage is the average leverage of all seven revenue regressions. We don't break out current year revenue leverage because it is normally similar to future year revenue leverage. We use Table 7 to get our leverage estimates for each component of Immelt's future pay and then take weighted averages of the wealth component leverages to get overall value and revenue wealth leverage.

As reported in Table 6, Immelt's value wealth leverage is 0.48, which means that, for each 10% increase in shareholder value, his wealth increases by 4.8%. At the same time, Immelt's revenue wealth leverage is 0.30, which implies that a 10% increase in revenue increases his wealth by 3.0%.

4. Immelt's 2008 compensation highlights a pitfall of using the SEC total compensation figure without further examination. Immelt received no bonus in 2008, so his incentive compensation was only 49% of his total compensation vs. 81% in 2007.

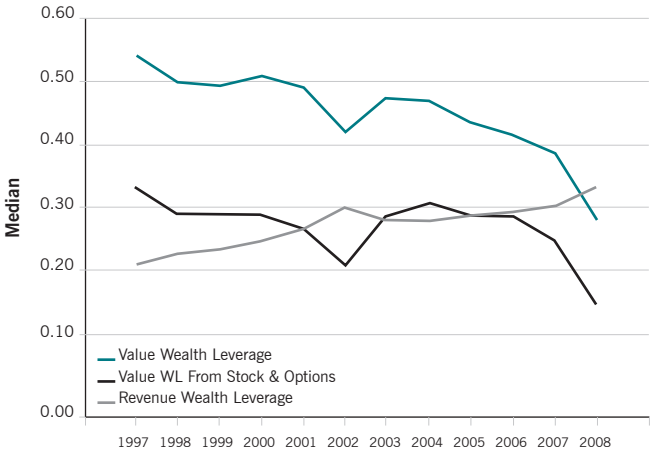
5. We could use individual company regressions, but about two-thirds of individual company regressions are not statistically significant. To provide a simpler wealth leverage calculation, we use the industry regressions.

6. In the value regressions, we control for differences in beginning pay level by dividing current pay by the industry trendline pay for the position at revenue[-5]. Since we use revenue[-5], not revenue[0], our value pay leverage reflects the impact of revenue growth to the extent it is correlated with value. This gives us a better measure of total value leverage, but also understates the incentive for value-less revenue growth.

Table 7 **Industry Pay Leverages**

GICS Industry Group	Current IC Value Leverage	Avg Value Leverage of Future IC	Avg Revenue Leverage
Energy	0.23	0.18	0.35
Materials	0.49	0.29	0.41
Capital Goods	0.40	0.15	0.45
Commercial & Professional Services	0.22	0.22	0.28
Transportation	0.69	0.15	0.45
Automobiles & Components	0.69	0.23	0.46
Consumer Durables & Apparel	1.05	0.58	0.54
Consumer Services	0.54	0.48	0.46
Media	0.10	0.10	0.41
Retailing	0.54	0.20	0.38
Food & Staples Retailing	0.64	-0.13	0.48
Food Beverage & Tobacco	0.15	0.15	0.46
Household & Personal Products	0.73	0.06	0.52
Health Care Equipment & Services	0.63	0.17	0.35
Pharm., Biotech. & Life Sciences	0.16	0.15	0.31
Banks	0.69	0.40	0.48
Diversified Financials	0.38	0.25	0.52
Insurance	0.64	0.20	0.35
Real Estate	1.10	0.80	0.29
Software & Services	0.25	0.11	0.32
Technology Hardware & Equipment	0.29	0.09	0.36
Semiconductor Equipment	0.30	0.17	0.38
Telecommunications Services	0.78	0.06	0.42
Utilities	0.27	0.25	0.49
Averages	**0.50**	**0.22**	**0.41**

Figure 8 **Top Five Wealth Leverage**



Based on all top 5 executives reported in Execucomp with sufficient data for wealth leverage calculations. Sample ranges from a high of 7,776 cases in 2004 to a low of 4,805 in 2008.

What can we infer from such measures? With these value and revenue wealth leverages, Immelt would have a modest incentive to pursue an acquisition that increased revenue by 25% but reduced shareholder value by 15%. More specifically, his expected wealth gain from the revenue increase is 0.30 x 25% = 7.5%, while his wealth loss from the decline in shareholder value is 0.48 x -15% = -7.2%, for a net gain of 0.3%.

Our research suggests that more than 60% of all top five executives were in the same position as Immelt at the end of 2007—they would personally benefit from such value-destroying revenue growth. Moreover, this is a considerable shift from the previous decade. As reported in Figure 8, in 1997 the median value wealth leverage of 0.54 was more than double the median revenue wealth leverage of 0.21. By 2004, median value wealth leverage had declined modestly to 0.47 while median revenue wealth leverage had risen modestly to 0.28. But since 2004, there has been a marked decline in value wealth leverage. When combined with a continuing increase in revenue wealth leverage, value wealth leverage is now the smaller of the two (0.28 vs. 0.33).

As the green line in the Figure 8 shows, a large part of the decline in value wealth leverage is attributable to the decline in the value wealth leverage contribution from stock and option holdings. One part of this decline reflects the decline in stock prices in 2008 and a second part is a shift away from options to stock grants. From 2004 to 2008, the median percentage of wealth in stock options declined from 13% to 3%.

Value wealth leverage, like pay leverage and sharing percentages, is often inconsistent across time and across the management team. If an executive's value wealth leverage fluctuated by plus or minus 0.1 around an average of 0.5, the range of the executive's wealth leverage would be 40% of his average wealth leverage. But for the median executive in the Execucomp database with eight or more years of top-5 service, the range of the executive's value wealth leverage was 88% of the executive's average wealth leverage. Value wealth leverage also varies substantially across the top-5 management team. Within the same year, the median company's value wealth leverage range was 97% of its average wealth leverage. Across multiple years, the median company's value wealth leverage range was 174% of its wealth leverage average.

The Impact of Incentives on Company Performance

There is a long history of executive pay studies but, as Hallock and Murphy write, "surprisingly little direct evidence

that higher pay-performance sensitivities lead to higher subsequent company performance."[7] A famous study by Jensen and Murphy found that a $1,000 increase in shareholder wealth increased CEO wealth by only $3.25, leading the authors to conclude that the "general absence of management incentives in public corporations presents a challenge to social scientists and compensation practitioners."[8] But others have found more positive results. For example, Core and Larcker found that companies that adopted stock ownership targets for top management significantly increased top management's stock ownership and outperformed their industry over the next two years.[9] A recent study of mutual fund incentive formulas by Massa and Patgiri finds that funds with stronger incentives have better performance.[10] The management fee for two-thirds of the funds in their study was a constant percentage of assets, but a third of the funds had a formula that pays a declining percentage of assets. Massa and Patgiri used the change in the asset fee to calculate a measure of the manager's incentive to increase asset value.

To illustrate, assume that a mutual fund manager receives 0.75% of assets up to $100 million and 0.60% of assets above $100 million. At $100 million, the manager's expected future pay is 0.75% x $100 million x a PV factor that reflects the manager's expected tenure and discount rate. At $110 million, the manager's expected future pay is [0.75% x $100 million + 0.60% x $10 million] x PV factor. The percentage change in the manager's expected future pay is 80% [= 0.60%/0.75%] of the change in shareholder wealth, so the manager's wealth leverage is just the ratio of the ending asset fee to the beginning asset fee. The incentive measure used by Massa and Patgiri (what they call the "Coles' incentive rate" in deference to prior literature) is the difference between the last and first asset fee rates divided by the last rate, or [0.60% - 0.75%]/0.60%. This is equal to 1 - (1/wealth leverage). An increase in wealth leverage from 0.80 to 1.00 increases their incentive measure by 0.25 and their regression results show that this increases the fund manager's annual four-factor alpha by 0.9%.

Our own (considerably simpler) analysis, using data for 1997-2008, shows that value wealth leverage for the top-five management team has a statistically significant impact on subsequent three-year returns in three of the ten GICS sectors: consumer discretionary, consumer staples and financials. In these sectors, a 0.1 increase in value wealth leverage increases three-year shareholder returns by from 2 to 3 percentage points. Given the state of incentive research, directors have to make a judgment call about optimal value wealth leverage. But given that decision, directors should strive to achieve consistent value wealth leverage across time and across the management team. There are three ways directors can do this:

1. Use fixed share incentives to make the leverage of current and expected future pay comparable to the leverage of stock holdings:

a. Use an incentive pool equal to a fixed percentage of economic profit that funds both cash and equity compensation, or

b. Use a bonus plan that gives managers a fixed percentage of excess economic profit improvement and an equity incentive plan that provides fixed share grants.

2. Tie total compensation targets to the market pay line, but vary the leverage of deferred compensation in inverse proportion to the relative size of each executive's expected future pay:

a. Use more leveraged equity instruments, e.g., options, for younger members of the management team; and

b. Use less leveraged equity instruments, e.g., a combination of deferred equity and deferred cash, for older members of the management team.

3. Tie total compensation targets to a "market" pay line that uses market equity value as the sole measure of size and TSR as the sole measure of performance.

a. Provide deferred compensation in a combination of equity and deferred cash to match the leverage of the market pay line.

What Investors Should Look For

Current and future pay usually provides stronger incentives for revenue growth than for shareholder value. To identify companies with strong and cost-efficient shareholder value incentives, investors should:

(1) look for pay policies that create strong incentives;

(2) estimate value and revenue wealth leverage for the companies that have strong incentive pay policies; and

(3) make sure that the incentive benefit of strong value leverage is not offset by excessive compensation cost.

Pay policies that create strong incentives include incentive plans with fixed share grants or fixed sharing percentages, performance based formulas for total compensation, equity grants with long vesting periods and substantial stock ownership and/or retention requirements. By contrast, companies that emphasize "competitive" pay policies—for example, paying at the 50th percentile regardless of company performance—are unlikely to have strong shareholder value incentives. If a company has strong incentive pay policies, it should be worthwhile to take the time to estimate value and

7. See Hallock, Kevin F. and Kevin J. Murphy (1999), *The Economics of Executive Compensation*. Edward Elgar Publishing, Inc. Northampton, MA.

8. Jensen, Michael C. and Kevin J. Murphy (1990), "Performance Pay and Top-Management Incentives," *Journal of Political Economy*, 98 (2) April 225-264.

9. Core, John E. and David F. Larcker (2002), "Performance consequences of mandatory increases in executive stock ownership," *Journal of Financial Economics* 64 317-340.

10. Massa, Massimo and Rajdeep Patgiri (2009), "Incentives and Mutual Fund Performance: Higher Performance or Just Higher Risk Taking?," *The Review of Financial Studies* 22 (5) 1777-1815.

revenue wealth leverage. If value wealth leverage is significantly greater than revenue wealth leverage and significantly above average (see Figure 8), the next step is to compare the company's pay levels with those of peer companies. If the company's pay levels are significantly higher than its peers (adjusted for differences in size), the final step is to use the research cited above to estimate whether the expected shareholder wealth gain from the company's strong incentives is sufficient to justify the company's pay premium relative to that of its peers.

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