Shareholder Value Advisors

September 18, 2017

The Honorable Jay Clayton
Chairman
Securities & Exchange Commission
100 F Street, NE
Washington, DC 20549-1090

RE: Human Capital Management (HCM) Disclosures Rulemaking Petition File 4-711 – 07/06/2017

Dear Chairman Clayton:

I am writing in support of the Human Capital Management (HCM) Petition filed with the Securities & Exchange Commission by the Human Capital Management Coalition on July 6, 2017.

I am the President of Shareholder Value Advisors Inc., a consulting firm that helps companies improve shareholder value through better performance measurement, incentive compensation and valuation analysis. I've done extensive research to measure management and employee incentives and assess their impact on company performance. I'm the author of *EVA and Value-Based Management* (with Professor David Young of INSEAD) and many articles on measuring pay for performance and improving pay design. A short bio is included with this letter.

The HCM petition says that "we view effective human capital management as essential to long-term value creation and therefore material to evaluating a company's prospects" and recommends that the SEC engage in a public standard-setting process to identify required disclosures in nine categories of human capital management data including workforce compensation and incentives. **I strongly support the HCM Coalition's view and proposal**.

I would also like to provide evidence that standardized HCM disclosure will allow investors to significantly improve their valuation analysis and estimates of future return. The HCM petition cites research studies by Bassi & McMurrer and by others showing that better HCM management practices improve company performance and stock returns, but these studies are based on proprietary surveys of human resource practices, and hence, don't show that there is standardized HCM disclosure data that investors could use to improve their valuation analysis and assessment of company performance.

It's possible to show that standardized HCM disclosure will help investors because one component of HCM data, total employee compensation, is already reported by almost 1,700 companies reported in Compustat. 249 S&P 1500 companies and 811 other U.S. companies report total employee compensation although nearly 70% of these companies are in the financial sector. 588 Compustat companies incorporated outside the U.S. also report total employee compensation and only 12% of these companies are in the financial sector. Many of these non-U.S. companies may file financial statements under International Financial Reporting Standards which require disclosure (IAS 19).

1865 Palmer Avenue, Suite 107 • Larchmont, NY 10538
Tel: 914-833-5891 • Fax: 914-833-5892 • www.valueadvisors.com

Total employee compensation data can be used to improve valuation analysis and estimates of future return by:

1. Calculating two dimensions of average employee pay: “alignment” and “performance adjusted cost”, and
2. Relating those two measures to “changes in future growth value”.

Future growth value is the market value premium over the perpetuity value of current earnings. Over the past 20 years, future growth value (“FGV”) has been 35% of market enterprise value for the median S&P 1500 company and above 50% for the median company in four of the 24 GICS industry groups: semi-conductors, pharmaceuticals, media and software. Surprisingly, about one in six S&P 1500 companies has negative FGV. The assumption that market value is discounted cash flow value implies that FGV is the present value of future economic profit improvement (where economic profit is profit after a charge for debt *and* equity capital). Negative FGV is evidence that investors believe the current profit level is not sustainable and new investment will earn less than the cost of capital.

Alignment tells us how closely average employee pay tracks company value. It’s the correlation of average employee value added and company value added where employee value added is actual pay minus market pay (after-tax) and company value added is the sum of economic profit and employee value added. Top quartile alignment is 0.90, while bottom quartile alignment is 0.07. Performance adjusted cost is the average employee pay premium when company value added is zero. The pay premium at zero company value added is +10% at the top quartile vs -12% at the bottom quartile, and +27% at the top decile vs -22% at the bottom decile. My research shows that revenue growth is more valuable, i.e., adds more FGV, when alignment is high and performance adjusted cost is low.

I’ve included two attachments to this letter to provide more background on these analyses: (1) a paper published in the Summer 2016 *Journal of Applied Corporate Finance* on “A Better Way to Measure Operating Performance” and (2) a presentation on “Linking Average Employee Pay Practices to Long-Term Value”.

Sincerely,

Stephen F. O'Byrne
President

Stephen F. O'Byrne **President**	**Direct Dial: 914-833-5891**
	Email: sobyrne@valueadvisors.com

Steve O'Byrne is President and co-founder of Shareholder Value Advisors Inc., a consulting firm that helps companies increase shareholder value through better performance measurement, incentive compensation and valuation analysis. His publications include:

- "A Better Way to Measure Operating Performance (Or Why the EVA Math Really Matters)" in the *Journal of Applied Corporate Finance* (Summer 2016)
- "Three Versions of Perfect Pay for Performance (Or The Rebirth of Partnership Concepts in Executive Pay)" in the *Journal of Applied Corporate Finance* (Winter 2014)
- "The Three Dimensions of Pay for Performance" in the *WorldatWork Journal* (4th Quarter 2013)
- "How 'Competitive Pay' Undermines Pay for Performance (and What Companies Can Do to Avoid That)" (with Mark Gressle) in the *Journal of Applied Corporate Finance* (Spring 2013)
- "Achieving Pay for Performance" in *Conference Board Director Notes* (December 2012)
- "Assessing Pay for Performance" in *Conference Board Director Notes* (October 2011)
- "Six Factors That Explain Executive Pay (and its Problems)" (with Professor David Young of INSEAD) in the *Journal of Applied Corporate Finance* (Spring 2010)
- "What Investors Need to Know About Executive Pay" (with David Young) in *The Journal of Investing* (Spring, 2010)
- "Why Capital Efficiency Measures Are Rarely Used in Incentive Plans, and How to Change That" (with David Young) in the *Journal of Applied Corporate Finance* (Spring 2009)
- "Why Executive Pay Is Failing" (with David Young) in the *Harvard Business Review* (June 2006)
- *EVA and Value Based Management* (with David Young), McGraw-Hill (November 2000)
- "Executive Compensation" in the *Handbook of Modern Finance* (1997)

Prior to co-founding Shareholder Value Advisors in 1998, Mr. O'Byrne was head of the compensation consulting practice at Stern Stewart & Co. (1992-1998) and a Principal in the executive compensation consulting practice at Towers Perrin. Prior to joining Towers Perrin in 1979, he worked in the tax department at Price Waterhouse and taught mathematics at Loyola University of Chicago. Mr. O'Byrne holds a B.A. degree in political science from the University of Chicago, an M.S. in Mathematics from Northwestern University and a J.D. from the University of Chicago.

VOLUME 28 | NUMBER 3 | SUMMER 2016

Journal of APPLIED CORPORATE FINANCE

In This Issue: **Active Investors and Valuation**

A Better Way to Measure Operating Performance (or Why the EVA Math Really Matters)

by Stephen F. O'Byrne, Shareholder Value Advisors

Most top executives and middle managers run their companies or businesses, set their goals, and reward their employees using earnings-based measures of financial performance—for the year, the quarter, or the month. And the employees are rewarded handsomely (or not) with pay and promotion that is tied to these measures. But the focus on current earnings has two critical weaknesses that undermine the alignment of pay with investor wealth. It's often easy to boost current earnings at the expense of future earnings through short-sighted cuts in advertising or R&D. At the same time, it's also easy to boost current earnings by investing additional capital that earns less than its opportunity cost.

Stock compensation is the conventional solution to the first problem of excessive focus on current earnings. The use of stock is thought to be effective because stock prices, to the extent they reflect discounted future cash flows, are supposed to deter shortsighted cutbacks in promising long-term corporate investment. But there are at least two good reasons to doubt the effectiveness of rewarding managers mainly with stock. The investment community's focus on consensus earnings and reliance on P/E multiples leads many corporate managers to think that current earnings are far more important than future earnings. And the weak tie between stock value and the performance of individual business units causes many business unit managers to view stock as just part of their expected pay, thereby limiting any incentive effect.

Economic profit, or "EVA" in its best-known version, has been the most common answer to the second weakness of current earnings as a performance goal. EVA discourages investment that earns less than a company's cost of capital by including a charge for debt and equity capital. And because it includes a capital charge, EVA ties directly to discounted cash flow value, unlike GAAP earnings and most widely used performance measures. But for all the theoretical advantages of EVA, many managers complain that its use undermines longer-term focus because it's easier to increase EVA, in the short run, by reducing capital than by investing in new projects that often have a long ramp-up to full profitability.[1]

In this article, I will present two new measures of operating performance that are better than either earnings or EVA because they identify and discourage both the sacrifice of future earnings *and* the failure to earn the cost of capital. What's more, both of these new measures are based on the math that ties EVA to discounted cash flow value. But they make use of what I refer to throughout this article as "the EVA math" in a new way, taking advantage of its ability to provide investors and corporate managers with a better understanding of how their companies' current stock prices and market values are affected by not only today's profits, but by investors' view of the company's prospects for higher earnings in the future.

The EVA math provides this double perspective by starting with the recognition that every company's market enterprise value can be viewed as the sum of two components: (1) the discounted present value of its current earnings stream, or what we refer to as its "current operations value," or "COV";[2] and (2) its "future growth value," or "FGV." A company's FGV can be thought of—and quantified—in at least two different ways. First of all, FGV is the part of a company's current market enterprise value—the market value of its equity plus its debt—that cannot be explained by its COV and can thus be estimated just by subtracting COV from its current enterprise value. Alternatively, and as discussed in more detail below, a company's FGV can be thought of—and, again, quantified—as the discounted present value of future increases in its EVA, or what we refer to hereafter as "EVA improvement." To provide one very simple example of what we mean by COV and FGV, for those publicly traded companies that have yet to report positive earnings (like so many dotcoms at the end of the '90s), their COV is zero (or even negative), and their FGV accounts for 100% (or more) of their current value. For such companies, all of their value is on the come.

This division of all companies' values into current and future growth values, COVs and FGVs, is important for at least two reasons. First, as already suggested, it gives investors and managers a reasonably clear, back-of-the-envelope picture of whether and how much value the market thinks

1. This is one of the reasons why EVA isn't used by more than 10% of S&P 1500 companies. See O'Byrne, Stephen F. and S. David Young, "Why Capital Efficiency Measures Are Rarely Used in Incentive Plans and How to Change That," *Journal of Applied Corporate Finance*, Spring 2009, Vol 21, No. 2, pp. 87-92.

2. More precisely, COV is the value of current earnings and capital, and can be expressed as the sum of book capital and the perpetuity value of current EVA. The perpetuity value of current EVA is EVA/WACC, where WACC is the weighted average cost of capital.

the firm is creating now, and how much it is expected to add in the future. My own research shows that FGV has accounted for 35% of the market cap of the median S&P 1500 company over the past 20 years. And for the median company in industries like semi-conductors, pharmaceuticals, media, and software, FGV has accounted for over 50% of value. But, in what may come as a surprise to many readers, about one in six S&P 1500 companies has negative FGV at any point in time. What the market is effectively saying to such companies is that although your current operations are valuable in and of themselves, we expect you to have declining EVA in the future, and so the prospects for your future operations are actually dragging down the *current* value of the firm. (And in a brief case example of Merck presented later in the article, I show that the well-known pharma company, following its acquisition of Schering Plough in 2009, had negative FGV of almost $100 billion.)

The second important benefit of dividing current company values into COV and FGV comes from its role in helping companies develop performance evaluation and incentive compensation plans for operating managers. The simplest way of using EVA in such plans is to reward managers just by giving them some fixed portion of their operation's EVA. General Motors had an incentive plan that gave management a share of EVA that lasted from 1918 to 1982, and similar plans continued to be widely used by public companies, though few lasted beyond the 1960s. When I joined Stern Stewart & Co. to run its incentive compensation practice in the early 1990s, the remaining EVA plans had evolved into plans that gave management not only a share of EVA, but also a share of the increase in EVA (or "EVA improvement") in an effort to provide stronger incentives for low-profit, but improving, businesses. But even with that adjustment, we found a growing demand among our clients for making more and larger adjustments for two main reasons: (1) to deal with this challenge of "unequal endowments"—that is, differences in the inherent profitability of the businesses that operating managers were asked to run; and (2) to encourage managers to take promising long-horizon investments that were likely to reduce EVA in the near term. In response to both of these challenges, we turned our attention to developing and implementing performance systems that would reward managers for "excess EVA improvement"—that is, increases in EVA that were greater than the "EVA improvements" already reflected in the company's current stock price and implied FGV.

But almost all of the plans adopted in the 1990s were ultimately abandoned.[3] One reason these plans failed was their inability to adjust when circumstances led, or forced, the companies to build FGV at the expense of COV. The problem was that target annual performance—that is, the expected annual EVA improvement, or "EI" for short—was fixed based on a company's beginning FGV, which meant that the excess EVA improvement measure gave managers no credit for increasing FGV. What was missing was an operating model of changes in future FGV that could be used to adjust the EI. In other words, we needed to create a "dynamic EI." Having a good working model of changes in FGV — hereafter "ΔFGV"—is critical to coming up with a "dynamic" EI because it can tell us when, or under what circumstances, a shortfall in today's EVA improvement is expected to be offset by an increase in future EVA improvement—or, what amounts to the same thing, an increase in FGV.

The search for a better measure of target EVA improvement, or EI, is the main subject of this article—though let me add that this framework can be applied to any measure of economic profit that charges companies for use of investor capital. I will use the EVA math to show that the key to a better EI is coming up with a better model of ΔFGV. I'll show that current ΔEVA and capital growth turn out to be very poor predictors of future ΔFGV, even though simple projection models suggest otherwise. Then I will discuss the challenge of finding good operating proxies for ΔFGV and develop a statistical model of ΔFGV that incorporates a limited number of operating metrics such as sales growth, R&D and advertising spending.[4] Finally, I will show how to use that model to calculate two performance measures—one I call "excess EVA improvement with dynamic EI," and the other "excess operating return"—that provide better measures of current operating performance because they reflect predicted ΔFGV in a way that is consistent with DCF value. What's more, these measures both turn out to be much better predictors of investor returns than either EVA improvement by itself or the multi-factor measures now favored by proxy advisors, such as an equally weighted average of pre-tax ROIC, sales growth and EBITDA growth.

The EVA Math

The EVA math has three major components, each of which is summarized in Table 1.

The first component consists of the formulas that link EVA to discounted cash flow value, or NPV. For our purposes, these formulas are important because they show that discounted cash flow value is the sum of current operations value (COV) and future growth value (FGV), and that FGV can be expressed in two different ways: first, as the present value of future EVA improvements over the base-year EVA that is used to calculate current operations value; and second, as the *capitalized* present value of future *annual* EVA improvements. Establishing this link between FGV and annual EVA improvement (again, relative to the past-year's EVA, not the base-year EVA) is the key to target-setting, as I will show below.

3. See O'Byrne and Young (2009), cited earlier.

4. With access to broader data sets, the ΔFGV models can incorporate a wide range of operating metrics such as customer franchise value, brand value, product pipeline, employee training and employee retention.

Table 1 **The EVA Math Formulas**

Component	Description	Formula
1	NOPAT	Net operating profit after tax
1	WACC	Weighted average cost of equity and debt capital
1	EVA	NOPAT – WACC x beginning capital
1	Market enterprise value	Capital + PV of future EVA Capital + EVA/WACC + PV of (future EVA – EVA_0) Capital + EVA/WACC + (1+WACC)/WACC x PV of future annual ΔEVA where annual ΔEVA = EVA_n – EVA_{n-1} Current operations value (COV)+ future growth value (FGV) [Capital + EVA/WACC] + [(1 + WACC)/WACC x PV of future annual ΔEVA]
2	Expected Return	WACC x market enterprise value WACC x current operations value + WACC x FGV
2	Expected EVA improvement (EI)	WACC x FGV = EI + EI/WACC + ΔFGV EI = (WACC x FGV – ΔFGV)/[(1 + WACC)/WACC]
2	Multi-year EI	((1 + WACC)^n – 1) x FGV = (1 + WACC)/WACC x FV of EI + ΔFGV
3	Investors' excess return	Investor wealth – beginning wealth x (1 + WACC)^n (1 + WACC)/WACC x FV of (ΔEVA – EI) + unexpected ΔFGV

The second component of the EVA math is the formulas that tie investors' expected (or required) return on market value to annual EVA improvement and changes in FGV. These formulas show that a company's investors end up earning a cost-of-capital return on the market value of their investment if and only if the following condition is met: the sum of the capitalized value of the company's annual EVA improvement and the change in its FGV (ΔFGV) provide a cost-of-capital return on its beginning FGV. These formulas show that coming up with a good model of ΔFGV is the key to setting targets for ΔEVA. Once we have predicted ΔFGV, we can solve for expected EVA improvement or "EI." (And the converse is also true: for any targeted EVA improvement, we can solve for the implied ΔFGV.)

The third component of the EVA math shows the relationship between corporate operating performance during a given period and investors' returns during the same period. Specifically, this component consists of the investors' excess return formula, which expresses investors' dollar return in excess of the cost of capital (or what might be called their "alpha" measured in dollars) as the sum of two components: (1) the capitalized value of excess ΔEVA and (2) the unexpected change in FGV.[5] Excess ΔEVA is the difference between the actual EVA improvement (ΔEVA) and the level of EVA improvement that is projected in the company's plan (EI). And the unexpected change in FGV is the difference between the actual change in FGV and the expected change in FGV that is implied by the choice of EI. Moreover, this formula holds for *any* choice of EI—even if the EI is not the "true" market EI—as long as the expected change in FGV is calculated using the chosen EI and the second component of the EVA math. The formula says that the sum of a company's operating performance, as measured by its capitalized excess EVA improvement, and the unexpected change in FGV over the time period being evaluated explain 100% of investors' excess return during that period.

Our goal in developing a model of ΔFGV is to increase the percentage of the excess investor return that is explained by operating performance—again, as measured by excess EVA improvement—and to reduce the percentage "explained" by the unexpected change in FGV. In essence, the second component of the EVA math tells us how to develop a better measure of operating performance, and the third component gives us a way to measure how successful we have been in improving our measurement of operating performance.

As can be seen in Table 1, each component of the EVA math includes either FGV or ΔFGV—and all of the FGV terms are important in practice. Figure 1 shows the median value of FGV as a percentage of market value over the last 20 years for each of the 24 GICS industry groups. According to my own research, FGV represents at least 30% of market value for all but four of the 24 industry groups; and as mentioned earlier, it accounts for more than 50% for software, media, pharmaceuticals, and semi-conductors.

Moreover, the median five-year change in a company's FGV as a percentage of its investors' five-year expected return, as can be seen in Figure 3, is greater than 50% in every industry group and more than 100% in 14 of the 24 groups.[6] To give you a better sense of what we mean by this, a company with a $1 billion market cap and an 8% cost of capital needs

5. This formula is derived in Stephen F. O'Byrne, "EVA and Shareholder Return," *Financial Practice & Education*, Spring/Summer 1997.

6. We use five years here in part because it is longest period used by proxy advisors such as ISS to evaluate pay for performance. But the impact of FGV change is even greater for shorter periods. For three-year periods, the median percentage exceeds 100% in every industry group and for one year periods, the median percentage exceeds 190% in every industry group.

Figure 1 **FGV Percent of Market Enterprise Value**

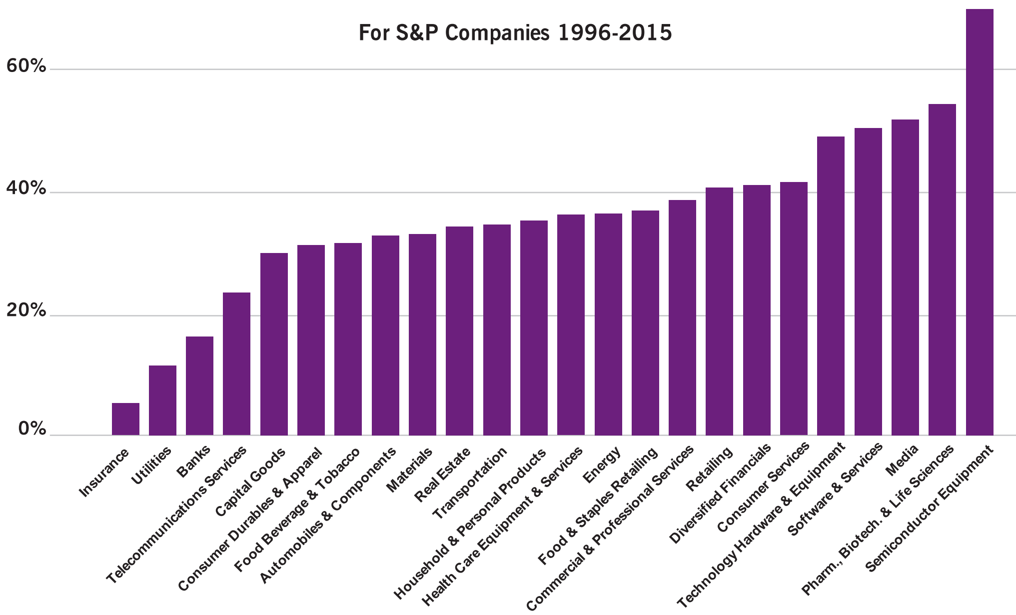
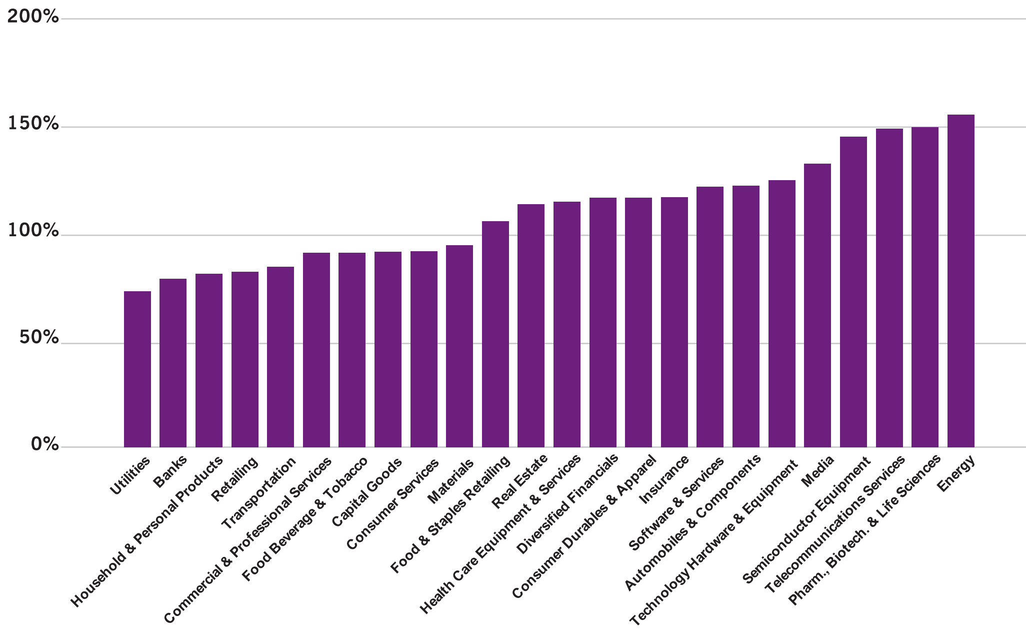


Figure 2 **Absolute Delta FGV Percent of Expected Return**



to provide its investors with $469 million ($1 billion x [(1 + 8%)^5) – 1]) of value—in the form of both price appreciation and free cash flow—over the five-year period in order to earn a cost-of-capital return. Exhibit 3 implies that the median S&P 1500 company of this size has a five-year change in FGV that is greater than +/- $235 million in every industry group and greater than +/- $469 million in 14 of the 24 groups.

But even with FGVs this large, and changes in FGV playing such a big role in investor returns, it's still possible that current EVA and changes in EVA, when combined with the growth rate in capital investment, provide very good proxies for increases in FGV. Before we turn to some empirical data, let's take a look at a set of financial projections that might reasonably lead us to that conclusion.

Table 2 **EVA and FCF Valuations of a Forecast with Constant ROIC and Capital Growth**

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
ROIC	15%						
Cost of capital	10%						
Capital growth	3%						
Beginning capital		100,000	103,000	106,090	109,273	112,551	115,927
NOPAT		15,000	15,450	15,914	16,391	16,883	
Capital charge		(10,000)	(10,300)	(10,609)	(10,927)	(11,255)	
EVA		5,000	5,150	5,305	5,464	5,628	
ΔEVA			150	155	159	164	
Growth rate in ΔEVA				3%	3%	3%	
EVA VALUATION							
Present value of future ΔEVA		2,143					
= year 2 ΔEVA/(WACC - growth rate)							
Capitalized present value of future ΔEVA	A	23,571	= Future growth value				
= (1 + WACC)/WACC x PV							
Present value of current (i.e., year 1) EVA							
= Year 1 EVA/WACC	B	50,000	= Perpetuity value of current EVA			= Current operations value	
Ending capital	C	103,000	= Ending capital				
Market value (= A + B + C)		176,571	= A + B + C				
FREE CASH FLOW VALUATION							
NOPAT			15,450	15,914	16,391	16,883	
Change in ending capital			3,090	3,183	3,278	3,377	
Free cash flow			12,360	12,731	13,113	13,506	
Growth in free cash flow				3%	3%	3%	
Present value of future free cash flow		176,571					
= year 2 FCF/(WACC - growth rate)							

A Simple Financial Forecast Where Current Changes in EVA and Capital Growth Drive FGV

Table 2 shows a five-year forecast for a hypothetical company based on four assumptions: the company's beginning capital (or net assets) is $100,000; its return on capital (ROIC) is constant at 15%; its cost of capital is 10%; and its capital growth rate is 3% in perpetuity. These assumptions imply that the company's EVA in year 1 is $5,000; and as shown in the series of calculations in the exhibit, its market enterprise value at the end of year 1 is $176,571. As the exhibit also shows, we can calculate the company's market value using either discounted EVA or discounted free cash flow. Both the company's annual EVA improvements and its free cash flow, which is NOPAT minus the change in capital, grow at 3% a year. With constant growth rates, we can use simple perpetuity growth formulas to get the EVA and free cash flow valuations.[7]

The EVA valuation shows that FGV at the end of year 1 is $23,571, or 13% of market value. In a projection like this, there are two ways of calculating a company's FGV. One is to take a company's market value, $176,571, and then simply subtract its current operations value. And since COV is $153,000—the sum of the company's book capital, now $103,000 (after a year of 3% growth), and the perpetuity

7. For example, the free cash flow valuation is year 2 FCF/(WACC – growth rate) = $12,360/(10% - 3%) = $176,571.

value of current EVA, $50,000 ($5,000/10%)—FGV turns out to be $23,571.

But we can also calculate FGV directly, which means starting with the projected annual ΔEVA in year 2 of $150. The future annual EVA improvements grow at 3% a year because capital is growing 3% a year and the EVA spread remains constant at 5% (15% – 10%). This makes the present value of the future annual EVA improvements equal to $2,143 ($150/(10% - 3%)). And this makes FGV equal to $23,571, which is the capitalized value of $2,143 ((1 + WACC)/WACC x $2,143). (The explanation for this last step is that (1 + WACC)/WACC is the mathematical conversation factor that takes us from the present value of the *annual* EVA improvements to the present value of the improvements *relative to* year 1 EVA.)[8]

The second component of the EVA math says that the required return on FGV, which is $2,357 (or 10% of $23,571), can be expressed as the sum of two numbers: (1+WACC)/WACC x ΔEVA, which is a measure of the value added by current EVA improvement, plus the change in FGV (ΔFGV) over the same period. We can see this by computing FGV at the end of year 2. In that year, the prospective annual ΔEVA is $154.50 ($150 x 1.03), which makes the present value of future annual ΔEVA equal to $2,207 ($154.50/(10% - 3%). And in that case, FGV is $24,279 ((1 + WACC)/WACC x $2,207). Thus, we can calculate ΔFGV by subtracting $23,571 from $24,279, which gives us $707. And because the capitalized value of year 2 ΔEVA is $1,650 ((1 + WACC)/WACC x $150), that $1,650, when added to $707, gives us the total of $2,357 that we calculated directly above.

The second component of the EVA math plays a critical role in setting targets for incentive plans. Since we know a company's FGV at the start of the performance period, if we can make a reasonable assumption about ΔFGV, we can then solve for the EVA improvement that is required to give investors a cost-of-capital return on FGV—and hence on the company's market enterprise value—at the start of the performance period.

One simple, conservative, and widely used assumption is that FGV is constant, which means of course that ΔFGV is zero. If we were designing a one-year incentive plan for our hypothetical company, this assumption would imply that EI, or the targeted ΔEVA, would be equal to the following:

$$[WACC \times FGV_0 - \Delta FGV]/[(1+WACC)/WACC].$$

Plugging in the numbers from Exhibit 4, EI would be (2,357 – 0)/11, which is $214.

But we can get a better measure of EI if we can develop a model of ΔFGV that's more accurate than the simple assumption that ΔFGV = 0. If we know, for example, that ΔFGV is $700, then EI would be $151 [(2,357 – 700)/11] instead of $214. And in this way, management's current performance target would be reduced to reflect the increase in projected FGV created, say, by an increase in long-term investment. The same logic applies to multi-year incentive plans, although the math is a little more complicated.[9]

What Drives Future Growth Value?

But that brings us back to the question we raised earlier: namely, to what extent does current EVA, or current changes in EVA, provide a reliable proxy for changes in a company's FGV?

When I looked at a series of projections in which the EVA spread and capital growth rate are raised from one constant level to another, I found that unexpected changes in EVA multiplied by the compounded capital growth rate explain almost all of the unexpected change in FGV (see the Appendix for details). This means that ΔEVA is a very good proxy for ΔFGV. This finding helps to explain why EVA and other versions of economic profit have had strong advocates for more than 100 years.

But when I used a similar formula to model the *actual* relationship between excess ΔEVA and the unexpected change in FGV during the past 20 years, I found that excess ΔEVA multiplied by the capital growth rate is in fact a very poor proxy for the unexpected change in FGV (see the Appendix). This helps to explain why EVA struggles to find broad acceptance. And that, in brief, is why we need a model of ΔFGV to help us create a better model of target EVA improvement.

There is as yet no well-developed literature on empirical models of FGV or ΔFGV to guide us. Although EVA driver trees are widely used by companies, they are not useful for developing models of ΔFGV because they relate current, but not future, EVA to current period drivers such as NOPAT margin, sales growth, and capital turnover. The well-known McKinsey book on *Valuation*, now in its 6th edition,[10] presents a "Value Creation Tree" that includes three "medium-term" and three "long-term" drivers. The medium-term drivers are called "commercial health," "cost structure health," and "asset health." The long-term drivers are "strategic health," "core business," and "growth opportunities." The problem with these drivers, at least for our purposes, is that they are very difficult to quantify and so not well suited to a quantitative model of FGV.

In our 2014 IRRCi report on the "Alignment Gap

8. For example, in year 4 the annual EVA improvement is $159, while the improvement relative to year 1 is $464. Each $1 of annual EVA improvement adds $1 to the cumulative improvement over year 1 EVA in the current year and in each future year. The present value of an additional $1 in the current year and in each future year is $1 + ($1/WACC) = (1 + WACC)/WACC. Since each $1 of annual EVA improvement adds (1+WACC)/WACC to the cumulative improvement over year 1 EVA, the total annual EVA improvement of $2,143 adds $2,143 x (1+WACC)/WACC to the cumulative improvement over year 1 EVA.

9. The multi-year required return on beginning FGV is $FGV_0 \times ((1 + WACC)^n - 1)$. This return must be provided by the capitalized future value of annual EI plus the change in FGV. The future value of a constant annual EI is $EI \times [(1 + WACC)^{n-1} + (1 + WACC)^{n-2} + \ldots + (1 + WACC)^{n-n}]$. For example, if WACC = 10% and n = 5, the five year future value of a constant annual EI is 6.11 x year 1 EI, and the capitalized five year future value is 67.16 x year 1 EI. If beginning FGV is $23,571, the required five year return is $14,390 (= $23,571 x (1.10^5 -1)), so EI = ($14,390 – ΔFGV)/67.16. If ΔFGV = $700 per year, EI = $162 = ($14,390 - $3,500)/67.16.

10. The source for the Value Creation Tree is: Tim Koller, Marc Goedhart and David Wessels, *Valuation: Measuring and Managing the Value of Companies*, 5th edition, 2010, John Wiley & Sons, p. 417. The sixth edition was published in 2015.

Between Value Creation, Performance Measurement and Long-Term Incentive Design," my two co-authors and I identified six cross-industry drivers of future value: process innovation; breakthrough new products; completely new markets; new business models; new industries and industry eco-systems; and new invested capital.[11] Unfortunately, most of these drivers are also difficult to quantify and hence not well suited to a quantitative model of FGV.

On the other hand, industry-specific metrics—or at least industry-specific calibrations of generic metrics—could be very helpful when designing a performance evaluation plan. For example, in the upstream oil and gas industry, this might include the following: the size and quality of new discoveries; "field growth" in producing fields; changes in P2 and P3 reserves or contingent resources; and the performance of key unit costs, such as drilling and completion costs, lifting costs, and lease operating expense.

And in fact, the "Balanced Scorecard" approach to performance evaluation developed by Robert Kaplan and David Norton includes the use of such industry-specific metrics. In their book, *The Strategy Focused Organization*,[12] Kaplan and Norton present an example of a balanced scorecard for Mobil North American Marketing and Refining (i.e. downstream) that includes the following "strategic measures": mystery shopper rating; dealer gross profit growth; new product ROI; new product acceptance rate; dealer quality score; yield gap; unplanned downtime; inventory levels; run-out rate; activity cost (vs. competition); perfect orders; and number of environmental incidents and days away from work rate. But if these measures are no doubt useful for internal performance assessments, for our purposes these measures are both too costly to collect for a large sample of public companies in a given industry and too numerous for a parsimonious model of FGV.

A recent book by accounting professors Baruch Lev and Feng Gu highlights the growing importance of FGV by showing that, whereas earnings and book values explained 90% of the variation in public company market values in 1950, by 2010 that number had fallen to just 50%.[13] The authors propose that public companies provide a Strategic Resources and Consequences Report that provides information about the creation, preservation, and deployment of "strategic assets," which are defined as those resources that create "sustained economic profits." Among the examples offered of such assets are patents, oil and gas reserves, brand values, customer franchises, and workforce commitment and knowledge. Moreover, in a related paper on the value of customer franchises in 31 publicly traded subscription-based companies, Lev and two colleagues develop a dollar measure of current customer equity that is based on number of customers, margin per customer, and customer retention rate, and then use that measure, together with income and book value, to explain the market values of those companies.[14]

Finally, the McKinsey discussion of short-, medium- and long-term value drivers cited earlier mentions ten different measures that are both likely to contribute to future growth values and to be available for public companies in many industries: advertising spending; brand strength; customer satisfaction; employee retention; market share; product pipeline; product price premium; R&D spending; sales force productivity; and same-store sales growth.[15] I now present a simpler model that makes use of some version of three of these variables—the only three that are readily available in the Compustat database: namely, sales growth and corporate spending on advertising and investment in R&D.

Empirical Models of Future Growth Value

Before we look at this model of FGV in more detail, let's review why a better model of ΔFGV is the key to improving operating performance measurement. The third component of the EVA math tells us that investors' excess return has two components: the capitalized future value of excess ΔEVA and the unexpected change in FGV. Our goal in developing a model of ΔFGV is to increase (as much as possible) the percentage explained by operating performance and so reduce the percentage "explained" by unexpected changes in FGV. Since the operating performance measure is excess ΔEVA, or the actual minus the expected change in EVA, we can improve its explanatory power in two ways: by improving the EVA measure, improving the expected change in EVA measure, or improving both. Deferring the capital charge for new investment (as discussed in the Appendix) is one way of increasing the explanatory power of operating performance by improving the EVA measure.[16]

But the most effective way to increase the explanatory power of operating performance is by improving our estimate of expected changes in economic profit. We aim to do that by developing a more accurate model of ΔFGV; to the extent that a more accurate model of ΔFGV reduces the unexpected

11. Mark Van Clieaf, Karel Leefland, and Stephen O'Byrne, "The Alignment Gap Between Value Creation, Performance Measurement and Long-Term Incentive Design," IRRCi Report, November 2014, available at www.irrci.org.

12. Robert S. Kaplan and David P. Norton, *The Strategy Focused Organization: How Balanced Scorecard Thrive in the New Business Environment*, 2001, Harvard Business School Press, p. 41.

13. Baruch Lev and Feng Gu, *The End of Accounting and the Path Forward for Investors and Managers*, 2016, John Wiley & Sons, p. 31.

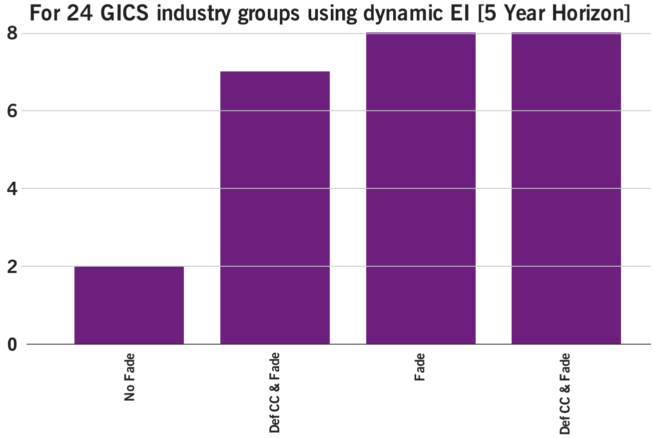
14. Bonacchi, Massimiliano, Kalin Kolev, and Baruch Lev, "Customer Franchise – A Hidden, Yet Crucial, Asset," Contemporary Accounting Research, Vol 32, No. 3 (Fall 2015). The authors estimate customer equity values for 31 companies and 576 quarters and then model market value as linear function of book value, net income and customer equity: market value = $a_0 + a_1$ x book value of equity + a_2 x net income + a_3 x customer equity.

15. Advertising, R&D spending, and same-store sales growth are available in Compustat, and industry-level market share can be computed from Compustat data. Employee retention for top-five executives can be computed from Execucomp data. Brand strength, customer satisfaction data, and sales force productivity may be available from studies and surveys conducted by consulting firms that specialize in brand valuation, customer loyalty, and sales compensation. Product price premiums and product pipeline data may be available from the PIMS (Profit Impact of Market Strategy) database run by the Strategic Planning Institute.

16. Our basic EVA calculation includes several adjustments to improve EVA such as capitalizing special items, operating leases, and R&D.

Figure 3 **Best EVA Accounting Methodology**

For 24 GICS industry groups using dynamic EI [5 Year Horizon]



change in the FGV, more of the excess return is attributable to operating performance. The second component of the EVA math tells us that EI must provide the required return on FGV *after* taking account of the change in FGV. So the second component of the EVA math tells us how to improve operating performance, and the third component of the EVA math gives us a way to measure how successful we are in improving operating performance.

My models of ΔFGV are all multiple regression models with three groups of explanatory variables:

1. The first group is EVA variables: ΔEVA-, ΔEVA+, and ΔEVA+ x sales growth. Our financial projection models, as well as our empirical research, show that these variables affect FGV.[17]

2. The second group of explanatory variables are operating variables that are likely to lead to future period ΔEVA. These variables include R&D, advertising, sales growth, and EBITDA growth.

3. The third group of explanatory variables are initial conditions that are likely to affect ΔFGV, such as beginning FGV and beginning capital.

The dependent variable in all of the models is the five-year change in FGV expressed as a percentage of beginning capital.[18] The independent variables are also expressed as percentages of beginning capital.[19]

It is important to keep in mind that these ΔFGV models are "demonstration models" in the sense they have been deliberately limited to a small set of variables that are available in Compustat. With access to broader data sets, there are many more drivers of future growth value that could be incorporated in our models. For example, the variables highlighted by the McKinsey authors, such as brand strength, customer satisfaction, employee retention, market share, product pipeline, product price premium, and sales force productivity, could also be useful variables.[20]

Since our model is intended to provide the basis for a performance measurement and evaluation system, we tried to ensure that the ΔFGV model provides sensible incentives for operating managers by making three adjustments to the variables or their coefficients. First, we review the sales variables and drop sales variables with negative coefficients to ensure that the model is not telling managers that lower sales and lower EVA is better than higher sales and higher EVA.[21,22]

Second, we review and, where appropriate, adjust the coefficients of R&D, advertising, and EBITDA. More specifically, if five-year R&D or advertising for an industry group is less than 0.5% of beginning capital, we set the R&D or advertising coefficient to zero on the ground that there isn't enough R&D or advertising to reliably estimate its impact.[23] If the R&D, advertising, or EBITDA coefficient is negative—which implies that an additional dollar of R&D, advertising or EBITDA reduces FGV *while holding EVA constant*—we set the coefficient to zero. In the case of R&D, we use zero coefficients for six industry groups, which leaves us with 12 industry groups where R&D is a driver of ΔFGV. For advertising, we make this adjustment for five industry groups, which leaves us with 15 industry groups where advertising is a driver of ΔFGV. For EBITDA, we do this for six industry groups, which leaves us with 18 industry groups where ΔEBITDA is a driver of FGV.[24]

Third and last, we review and, where appropriate, adjust

17. EVA+ is EVA if EVA > 0 and 0 otherwise. EVA- is EVA if EVA < 0 and 0 otherwise. ΔEVA+ is the change in EVA+ from one year to another.

18. As noted earlier, we look at five-year periods because five year periods are often used to assess management performance and the alignment of pay and performance, e.g., by the proxy advisor ISS.

19. The independent variables are Δsales, Δsales x positive EVA return on capital[0,1], after-tax ΔR&D/WACC, after-tax Δadvertising/WACC, after-tax ΔEBITDA/WACC, ΔEVA-/WACC, ΔEVA+/WACC, ΔEVA+ x ln(1+ sales growth rate)/WACC and beginning FGV. We use after-tax values for ΔR&D, Δadvertising, and ΔEBITDA to make their coefficients easier to interpret: a coefficient greater than 1.0 implies that the variable has a net positive effect on value because its contribution to ΔFGV offsets its negative effect on current earnings and, hence, on ΔCOV.

20. A measure of customer satisfaction that's available for a multi-company universe is the Net Promoter Score developed by Fred Reichheld of Bain & Company and Satmetrix (see www.satmetrix.com). J.D. Power is another source of multi-company data on customer satisfaction and product/service reliability, covering a wide variety of industries, including automotive, electronics, energy, finance, health care, home building, insurance, retail and sports (see jdpower.com).

21. If there is a benefit to reducing sales, the benefit, even if small, will cover some reduction in EVA.

22. If both Δsales x positive EVA+ return on capital and Δsales have positive coefficients, we use both variables. But if either has a negative coefficient, we test a model that uses just Δsales x positive EVA+ return on capital. If that variable also has a negative coefficient, we drop both sales variables from the ΔFGV model. We dropped both sales variables for seven industry groups: Materials (GICS 1510); Automobiles & Components (GICS 2510); Food Beverage & Tobacco (GICS 3020); Household & Personal Products (GICS 3030); Health Care Equipment & Services (GICS 3510); Insurance (GICS 4030) and Real Estate (GICS 4040).

23. 5 year R&D is less than 0.5% of beginning capital for six industry groups: Transportation (GICS 2010), Food & Staples Retailing (GICS 3010), Banks (GICS 4010), Insurance (GICS 4030), Real Estate (GICS 4040) and Utilities (5510). Advertising is less than 0.5% for four industry groups: Energy (GICS 1010), Banks (GICS 4010), Real Estate (GICS 4040) and Utilities (GICS 5510).

24. The six industry groups where EBITDA, after controlling for EVA, does not appear to affect value, are Media (GICS 2540), Food, Beverage and Tobacco (GICS 3020), Household & Personal Products (GICS 3030), Banks (GICS 4010), Real Estate (GICS 4040) and Telecommunications Services (GICS 5010). EBITDA is only used as a variable in the FGV model for operating return.

the coefficients of ΔEVA-/WACC and ΔEVA+/WACC. If either coefficient is more negative than -1, we increase the coefficient to -1 so that the net value of $1 of ΔEVA is never negative—that is, it never reduces FGV by more than it adds to COV. For ΔEVA-, we make this adjustment for one industry group, Utilities (GICS 5510), and for ΔEVA+, we also make it for one industry group, Telecommunications Services (GICS 5010).[25]

We tested four models of ΔFGV for each industry group to determine whether deferring the capital charge for new investment or taking account of the "fade" in EVA rates of return provides a better operating proxy for investor returns. Our test of deferring the capital charge was limited to a two-year deferral of the capital charge for all new investment, and thus didn't aim to capture industry differences in the time horizon to full productivity of capital. Our test of "fade" used industry-specific models of the fade in the EVA rate of return to calculate a more refined present value of current EVA than the simple perpetuity value (see the Appendix for more detail).

The four models tested for each industry group use different combinations of the FGV and EVA calculations. The first uses the standard EVA and FGV calculations; the second uses the standard EVA calculation and FGV "with fade"; the third uses EVA with a deferred capital charge and the standard FGV calculation; and the fourth uses EVA with a deferred capital charge and FGV with fade. We use the ΔFGV model that makes excess ΔEVA or excess operating return more highly correlated with excess market returns.

The regressions show that modeling ΔFGV, taking account of fade, and using a deferred capital charge each make important contributions to improving the ability of excess ΔEVA to explain excess investor returns. In our base model, which assumes that FGV remains constant, excess ΔEVA explains 33% of the variance in excess investor returns for the median GICS industry group.[26] Adding a model of ΔFGV to improve the EI measure increases the variance explained to 41% for the median industry group. And when we use a deferred capital charge, the variance explained for the median industry group rises to 48%. Moreover, as reported in Figure 3, the use of fade and/or a deferred capital charge increased the variance explained in 22 of the 24 industry groups.

Two Ways to Use FGV Models: Operating Return and Dynamic EI Targets

The mechanics of our FGV models will be easier to understand if we first review the two ways we use a predicted ΔFGV value to improve performance measurement: one involves use of a measure called "operating return," and the other use of a measure called "excess ΔEVA with dynamic EI."

Let's start with "operating return." To see the logic behind this measure, let's start by noting that investors' return, when measured in dollars, is calculated as follows:

ending market enterprise value + future value of free cash flow – beginning market enterprise value.

Since market enterprise value = capital + EVA/WACC + FGV, we can express the dollar investor return as follows:

[capital_1 + EVA_1/WACC + FGV_1 + future value of free cash flow – (capital_0 + EVA_0/WACC + FGV_0)],

or, equivalently,

Δcapital + ΔEVA/WACC + ΔFGV + future value of free cash flow.

When we use the same formula but substitute predicted ΔFGV for actual ΔFGV, we get the following expression for operating return (again measured in dollars):

Δcapital + ΔEVA/WACC + predicted ΔFGV + future value of free cash flow.

We can also calculate the percentage operating return, which is dollar operating return expressed as a percentage of beginning operating value.

Our second way of using FGV models to improve our measurement of operating performance is to establish "dynamic" EVA improvement targets. Recall that, as stated in the third component of the EVA math,

excess investor return = the capitalized future value of excess ΔEVA + the unexpected change in FGV,

where Excess ΔEVA is ΔEVA – EI, and the unexpected change in FGV is the difference between the actual FGV change and the FGV change used in the EI calculation. The EI calculation, as stated in the second component of the EVA math, starts from a prediction of ΔFGV. In EVA incentive plans, EI has normally been calculated from a ΔFGV prediction that is made at the start of the incentive plan period, which gives us the following:

EI = [WACC x FGV – ex ante predicted ΔFGV]/[(1+WACC)/WACC)]

And since our ΔFGV model allows us to estimate an *ex post* predicted ΔFGV that takes account of actual changes in sales, R&D and advertising, we can calculate a dynamic EI as follows:

Dynamic EI = [WACC x FGV – ex-post predicted ΔFGV]/[(1+WACC)/WACC)]

To the extent that the *ex post* predicted ΔFGV explains much more of the actual ΔFGV, it reduces the unexpected change in FGV, and thereby increases the portion of the excess investor returns that comes from operating performance. When we use *ex post* predicted ΔFGV in this way, excess ΔEVA explains 48% of the variance in five-year excess returns for the median GICS industry group. By contrast, the variance explained is only 33% if we use the *ex ante* prediction that ΔFGV = 0 and only 26% if we use the *ex ante* prediction

25. In all cases where we adjust a coefficient, we adjust the constant term of the regression to leave the mean predicted value unchanged.

26. ΔEVA by itself explains 26% of the variance for the median industry group.

that ΔFGV = WACC x FGV (which implies that EI = 0).

It's also important to note that these two different uses of predicted ΔFGV constrain our choice of explanatory variables for ΔFGV. When we are using predicted ΔFGV to calculate dynamic EI, we drop ΔEBITDA as an explanatory variable and use a dummy variable for positive EVA instead of the EVA+ return on capital to capture the interaction between profitability and sales growth. Both of these changes make it much easier to solve the EI equation (i.e., EI = ΔEVA = (WACC x FGV – predicted ΔFGV)/[(1+WACC)/WACC]) because predicted ΔFGV doesn't depend on either the importance of ΔEBITDA versus the other three components of ΔEVA (Δdepreciation, Δtaxes and Δcapital charge) or on the EVA return on capital.[27] When we are using predicted ΔFGV to calculate operating return, we drop beginning FGV as an explanatory variable to ensure that we have an operating return calculation that is independent of beginning market value.

To illustrate these two performance measures, we now use five-year case studies for Google (now called Alphabet) and Merck. Google had FGV of $50 billion in 2010, while Merck had *negative* FGV of -$98 billion in 2009,[28] so the two cases give us a chance to show that the EVA math and our operating performance measures work as well when investors anticipate declining performance as when they expect improving performance.

Google is a case in which the company produced large positive excess ΔEVA, but where the capitalized value of its excess EVA improvements amounts to less than 15% of both its excess operating return and its excess investor return. And so, even though excess ΔEVA is moving in the same direction as the company's excess return, I will show that it's difficult to create strong incentives with traditional EVA plans when capitalized ΔEVA seriously understates the excess return.

Merck, by contrast, is a case where excess ΔEVA was negative (even when we used the negative EI implied by its large negative 2009 FGV). But the company's excess investor return turned out to be positive because its FGV increased dramatically during the five-year period. Using the case of Merck, I will show that our model's predicted ΔFGV using R&D and other variables succeeds in capturing the big increase in the company's market FGV over this five-year period. And for this reason, excess ΔEVA with dynamic EI provides a much better proxy for the excess investor return than conventional excess ΔEVA. In this case, moreover, the use of conventional excess ΔEVA would not even have been directionally correct—and would thus have resulted in below-market pay for above-market performance.

Excess Operating Return: The Case of Google 2011-2015

For Google, 2011-2015 were years of rapid and profitable growth. As we can see in Table 3, revenue increased from $31 billion in 2010 to $71 billion in 2015, and EVA increased from $8 billion in 2010 to $11 billion in 2015.

If we made the conservative assumption that ΔFGV would be zero over the next five years, Google's excess ΔEVA would have implied an excess investor return of $27 billion.[29] But if we instead used our ΔFGV model for Google's industry group, Software & Services (GICS 4510), we would have estimated a predicted ΔFGV for Google of $191 billion and an excess operating return of $218 billion (see Table 3). And this $218 billion would have been more than eight times the capitalized value of Google's excess ΔEVA!

The three panels on the left in Table 3 show the calculation of Google's actual NOPAT and EVA (upper panel), capital and free cash flow (middle) and expected operating wealth (lower) for each of the five years. The upper panel on the right shows the calculation of predicted ΔFGV.

Using the numbers in the exhibit, Google's excess operating return (again, measured in dollars, not as a percentage) can be estimated using the following three components:

1. The company's ending operating value (at the end of 2015), plus

2. Cumulative free cash flow during the five-year period 2011-2015, minus

3. Expected operating wealth (which is the operating value the company needs to provide a five-year cost-of-capital return on its beginning operating value).

Google's ending operating value of $481 billion is the sum of its ending capital of $115 billion, its capitalized EVA of $126 billion, and its estimated FGV of $241 billion, which in turn is the sum of its beginning FGV of $50 billion and its predicted ΔFGV of $191 billion. The future value of the company's free cash flow is $18 billion. Google's expected operating wealth of $282 billion is its beginning operating value of $185 billion increased by a five-year cost of capital return at 8.8% per year. And when we then subtract the expected operating wealth of $282 billion from the sum of ending operating value and total

27. EI = ΔEVA = ΔEBITDA – (Δdepreciation – Δtaxes – Δcapital charge). If ΔEBITDA contributes to predicted ΔFGV, we can't solve the EI equation (i.e., EI = (WACC x FGV – predicted ΔFGV)/[(1+WACC)/WACC]) without making assumptions about the relative weight of the four components of ΔEVA (i.e., ΔEBITDA, Δdepreciation, Δtaxes and Δcapital charge). To avoid that complication, we drop ΔEBITDA as an explanatory variable. Empirical models of ΔFGV normally show that the impact of sales growth on ΔFGV increases with the EVA+ rate of capital. For example, 5% sales growth with a 10% EVA+ return on capital normally creates more FGV than 5% sales growth with a 5% EVA+ return on capital. We normally capture that dynamic in our ΔFGV models by using an interaction variable (i.e., Δsales x EVA+/capital), but if predicted ΔFGV depends on the EVA+ rate of return, we can't solve the EI equation without making assumptions about capital growth. To avoid that complication, but still capture some of the interaction between profitability and sales growth, we change the interaction variable to only take account of whether EVA is positive or negative, i.e., Δsales x positive EVA return where "positive EVA return" is an indicator (or "dummy") variable that equals 1 if EVA is positive and 0 otherwise. This variable makes it much easier to solve the EI equation because we only need to take account of whether EVA is positive or negative, not the EVA return on capital.

28. We start the Merck case study in 2009 so we can see Merck's performance before the impact of its merger with Schering-Plough in November 2009.

29. Google's 2010 market FGV of $50 billion, with the assumption that ΔFGV is zero, gives an EI of $354 million. The future value of Google's ΔEVA is $4.3 billion and the future value of EI is $2.1 billion, so the future value of excess ΔEVA is $2.2 billion and capitalized future value of excess ΔEVA is $26.9 billion.

Table 3

ALPHABET INC Software & Services	2009	2010	2011	2012	2013	2014	2015	
OPERATING PERFORMANCE								
Revenue ($mil)		31,422	39,423	51,282	60,233	66,001	71,370	
R&D		4,032	5,369	6,943	8,006	9,832	11,522	
Advertising		827	1,606	2,383	2,867	3,004	2,988	
EBITDA		12,434	13,946	15,922	18,565	21,732	24,071	
Tax rate		39%	39%	39%	39%	39%	39%	
NOPAT		11,091	13,163	15,303	16,680	19,379	19,833	
Capital charge		3,217	3,973	4,190	6,037	7,183	8,810	
EVA		7,874	9,191	11,113	10,643	12,196	11,023	
OPERATING RETURN CALCULATIONS								
EVA return on beginning capital		21.5%	20.3%	23.3%	15.5%	14.9%	11.0%	
Cost of capital		8.8%	8.8%	8.8%	8.8%	8.8%	8.8%	
EVA multiple (no fade)		11.4	11.4	11.4	11.4	11.4	11.4	
Present value of current EVA		89,705	104,701	126,600	121,251	138,943	125,581	A
Ending capital	36,646	45,260	47,736	68,775	81,831	100,367	114,565	B
Estimated FGV		50,005					240,871	C
Operating value		184,969					481,017	D = A + B + C
Cumulative future value of FCF							18,421	E
Operating wealth		184,969					499,438	F = D + E
		G						
Free cash flow (= NOPAT - Δcapital)			10,687	-5,736	3,624	843	5,635	
Cost of capital	8.8%	8.8%	8.8%	8.8%	8.8%	8.8%	8.8%	
Expected operating wealth		184,969	201,206	218,868	238,079	258,978	281,711	J
Expected operating return							96,741	L

CALCULATION OF ESTIMATED CHANGE IN FUTURE GROWTH VALUE

DRIVERS OF FUTURE GROWTH VALUE CHANGE	Value	Capitalized After-Tax Value	Delta FGV Multiple	Contribution to Delta FGV
5 year sales growth	39,948		0.00	0
5 year sales growth x avg EVA rtr	6,787		6.41	43,513
5 year R&D growth	7,490	52,050	0.12	6,028
5 year advertising growth	2,160	15,012	6.07	91,110
5 year EBITDA growth	11,636	80,863	0.86	69,350
5 year EVA- change	0	0	-1.00	0
5 year EVA+ change	3,149	35,876	-0.42	-15,185
5 year EVA+ chg x ln(1 + sls growth)	2,583	29,432	0.49	14,329
Year[-5] capital	45,260		-0.40	-18,279
Change in FGV				190,865

OPERATING RETURN

Dollar operating return [H = F - G]	314,468
Percentage operating return [I = H/G - 1]	170.0%

EXCESS OPERATING RETURN

Dollar excess operating return [K = H - L]	217,727
Percentage excess operating return [M = K/J]	77.3%

free cash flow (almost $500 billion), we get Google's dollar excess operating return of $218 billion.

This $218 billion is Google's excess return measured solely on an operating basis (in the sense that it makes no use of information about Google's ending market enterprise value).[30] We can also express this excess return as the sum of its capitalized excess ΔEVA of $27 billion, and its predicted ΔFGV of $191 billion. This decomposition of the excess operating return is an application of the third component of the EVA math. Since the EI used to calculate the capitalized excess ΔEVA of $27 billion assumes that ΔFGV is zero, the predicted change in FGV is equal to the unexpected change in FGV. And this means that the capitalized excess ΔEVA plus the predicted change in FGV equals the excess return.[31]

In this case, the capitalized value of excess EVA improvements represents only 12% ($27 billion/$218 billion) of the company's excess return. And it's very difficult to design an effective EVA incentive plan when capitalized excess ΔEVA is a small and variable percentage of the excess return. For example, let's assume that our sharing percentage norm for top management is 10% of the excess return; and since we use capitalized excess ΔEVA as a proxy for the excess return, management pay is base salary plus 10% of capitalized excess ΔEVA. The problem here is that, although we're trying to provide pay that is salary plus 10% of the excess return, the plan ends up providing salary plus *less than 2%* of the excess return because Google's ΔFGV is so large—and this, of course, means a much weaker incentive. If we were

30. Google's market excess return is $202 billion. The market excess return is less than the operating excess return because Google's ending market enterprise value of $465 billion is less than its operating value of $481 billion calculated from predicted ΔFGV.

31. The same argument holds for Google's market excess return. In this case, ΔFGV is $175 billion and the market excess return is $202 billion, but we still find that the excess return is the sum of the capitalized excess ΔEVA and ΔFGV.

Table 4

MERCK & CO Pharm., Biotech. & Life Sciences	2008	2009	2010	2011	2012	2013	2014
OPERATING PERFORMANCE							
Revenue ($mil)		29,813	49,282	49,971	48,310	44,333	42,237
R&D		6,353	11,779	8,806	8,348	7,554	7,180
Advertising		1,766	2,919	2,960	2,862	2,517	2,300
EBITDA		18,990	9,301	15,187	16,182	12,464	23,526
Marginal tax rate		39%	39%	39%	39%	39%	39%
NOPAT		11,254	19,283	16,920	14,176	11,874	10,075
Capital charge		4,005	7,684	8,475	8,854	8,932	9,087
EVA		7,249	11,599	8,445	5,322	2,942	988
ΔEVA			4,350	-3,154	-3,123	-2,380	-1,954
Dynamic EI			-2,067	-2,067	-2,067	-2,067	-2,067
Excess ΔEVA with dynamic EI			6,417	-1,087	-1,057	-313	113
Future value of excess ΔEVA with dynamic EI			6,417	5,760	5,090	5,119	5,576
Capitalized future value of excess ΔEVA with dynamic EI			101,957	91,525	80,884	81,337	88,592
EVA return on capital		12.2%	10.1%	6.7%	4.0%	2.2%	0.7%
Free cash flow (= NOPAT - Δcapital)			7,507	11,267	13,013	9,569	25,385
DYNAMIC EXPECTED IMPROVEMENT CALCULATIONS							
Market enterprise value		124,447	141,865	153,825	169,469	204,277	188,011
Cost of capital		6.7%	6.7%	6.7%	6.7%	6.7%	6.7%
Present value of current EVA		107,936	172,705	125,743	79,240	43,804	14,713
Ending capital	59,628	114,406	126,182	131,835	132,998	135,303	119,994
Future growth value		-97,894					53,305
Required five year return on FGV		-37,596					188,011
Predicted five year change in FGV		11,350					73,845
Required return on FGV from ΔEVA		-48,946					261,856
ΔEVA value multiple with zero ΔFGV ([1 + (1/WACC)] x FV factor)		90.86					
ΔEVA- value multiple ([1 + (1/WACC)] x FV factor + ΔFGV)		30.81					
ΔEVA+ value multiple ([1 + (1/WACC)] x FV factor + ΔFGV)		20.65					
Five year future value factor		5.72					
Dynamic EI			-2,067	-2,067	-2,067	-2,067	-2,067
Expected EVA		7,249	5,183	3,116	1,049	-1,017	-3,084

CALCULATION OF EXPECTED ΔFUTURE GROWTH VALUE FROM NON-EVA FACTORS

DRIVERS OF FUTURE GROWTH VALUE CHANGE	Value	Capitalized After-Tax Value	Delta FGV Multiple	Contribution to Delta FGV
5 year sales growth	12,424		1.322	16,423
5 year sales growth x EVA+ Co[0]	12,424	1	2.429	30,184
5 year R&D growth	827	7,510	0.561	4,216
5 year advertising growth	534	4,850	5.260	25,510
Year[-5] FGV	-97,894		-0.430	42,072
Year[-5] capital	114,406		-0.672	-76,871
Year[-5] capital x EVA- Co[-5]	114,406	0	2.828	0
Change in FGV (= ΔFGV[other])				41,533
COEFFICIENTS OF THE ΔEVA VARIABLES IN THE ΔFGV MODEL				
5 year ΔEVA-/WACC			-0.81	
5 year ΔEVA+/WACC			-1.00	
5 year [ΔEVA+/WACC] x ln(1 + sales growth)			0.16	

EXCESS RETURN ANALYSIS

Ending market enterprise value	188,011
Future value of FCF	73,845
minus Expected investor wealth	-172,241
Excess return	89,615
Change in FGV	151,199
Expected change in FGV (from non-EVA factors)	11,350
Expected change in FGV (from ΔEVA)	138,827
Unexpected change in FGV	1,023
Capitalized FV of excess ΔEVA	88,592
Excess return	89,615

convinced that capitalized excess ΔEVA would always be 12% of Google's excess return, we could share 10% of the excess return by giving management a much larger—in fact, an 83%—share of capitalized excess ΔEVA. But that's likely to be an unworkable solution in practice because we have no reason to believe that capitalized excess ΔEVA will continue to be a constant percentage of the excess return. A much better solution would be to make management pay equal to salary plus 10% of the dollar excess operating return.

Excess ΔEVA with Dynamic EI: The Case of Merck 2009-2014

In 2009, Merck had capital of $114.4 billion, EVA of $7.2 billion, and a market enterprise value of $124.4 billion. Merck's EVA is based on NOPAT of $11.3 billion, beginning capital of $59.6 billion, and a cost of capital of 6.7%. The big increase in capital during 2009 was largely the result of Merck's $41 billion acquisition of Schering-Plough.[32] Merck's current operations value at the end of 2009, which was $222.3 billion, was far greater than its market value; indeed, Merck had *negative* FGV of almost -$98 billion. The calculation of current operations value reflects the assumption that a company will earn its cost of capital on the new capital added during the year, so Merck's negative FGV is clear evidence that investors expected Merck's current cash return—that is, its NOPAT return on capital—to be far less than 6.7% on the capital it invested in Schering-Plough.

Merck's acquisition of Schering-Plough, like many other acquisitions, is an example of an investment with potential, but delayed productivity, exactly the kind of investment that often causes ΔEVA to be an unreliable proxy for investor return. In this situation, excess ΔEVA with dynamic EI provides an operating performance measure that is a much better proxy for Merck's excess investor return.

32. The acquisition closed in November 2009. The inclusion of Schering-Plough's results for the part of the fourth quarter inflates Merck's 2009 NOPAT, but modestly so.

Let's take a look at the big picture before we explain the dynamic EI calibration. As summarized in Table 4, our "Excess Return Analysis" shows that Merck had an excess investor return of $90 billion over the five years 2009-2014; this is the amount of value that Merck added for its investors over this period. It is calculated as the difference between ending investor wealth of $262 billion—which is the sum of the 2014 market enterprise value of $188 billion and the 2014 future value of five-year free cash flow of $74 billion—and the expected investor wealth of $172 billion (which is estimated as the 2009 market enterprise value of $124 billion increased by five years of expected returns at 6.7%).

Now, to get a better sense how this value was created, let's take a look at the breakdown of this $90 billion of excess investor return between the capitalized future value of excess ΔEVA and the unexpected change in FGV. The capitalized future value of excess ΔEVA is $88.6 billion (and we show the calculation shortly). But for purposes of performance evaluation, the important thing to recognize is that this $88.6 billion represents 99% of the excess investor return, leaving just 1% to be accounted for by the unexpected change in FGV. As we saw earlier, this is the goal of better operating performance measurement—an operating measure that accounts for as large a fraction of the excess investor return as possible, and so minimizes the variance "explained" by the unexpected change in FGV.

To see how we arrive at this $88.6 billion, let's start with Merck's negative FGV at the end of 2009, -$97.9 billion. Negative FGV seems paradoxical at first: how does one earn a return on a negative number? The import of negative FGV for a performance evaluation plan is that investors can get a cost-of-capital return on market value even if EVA declines. The goal of a plan in such cases is to figure out how much EVA can go down without causing investors to earn less than the cost of capital on the market value of their investment.

We can answer that question with the equations of the second component of the EVA math, which work just as well with negative FGV as with positive FGV. The five-year required return on this FGV is -$37,596.[33] Given Merck's 6.7% cost of capital, the five-year future value of each $1 of annual ΔEVA is $5.72, and the capitalized future value is $90.86.[34] This in turn means that $1 of annual ΔEVA for each of the next five years is expected to generate $90.86 of investor return. If we then also assume that ΔFGV is zero, so that the entire required return has to come from ΔEVA, we need a negative annual EI of -$414 million to provide a negative return of -$37,596.[35] This expected performance will reduce Merck's EVA from $7.25 billion in 2009 to $5.18 billion in 2014.

But, as things turned out, this expected 2014 EVA of $5.2 billion was much larger than Merck's actual 2014 EVA of $988 million. And thus, this analysis would lead to us to expect a negative excess return for investors, not a large positive excess return. Clearly our assumption that FGV would remain constant was not a reasonable one. And so to develop a workable performance evaluation plan in this case, we have to come up with a more realistic model of changes in FGV. And that's where our ΔFGV model based on non-EVA factors like R&D, advertising, and sales comes into play.

To see how, let's look now at the difference between the calculation we have just done and the dynamic EI calculation. It appears complicated at first, but it is informed by a simple concept underlying it. We calculate the required return from ΔEVA and the ΔEVA multiple, and then divide the required return by the multiple to get the EI. As shown in the upper right panel in Table 4, the predicted ΔFGV resulting from consideration of non-EVA factors like growth in sales, R&D, and advertising is $41.5 billion. In other words, given Merck's actual sales and level of spending on advertising and R&D over the period 2009-2014, we expect its FGV to increase by $41.5 billion—which has the effect of reducing its EI.

Just below the right panel, we see the coefficients of the ΔEVA variables in the ΔFGV model. These coefficients imply that the ΔEVA+ multiple is 20.65—far less than the 90.86 multiple we used above—and that the ΔEVA- multiple is 30.81. Given the predicted ΔFGV from non-EVA factors of $41.5 billion, this means that the required return from ΔEVA is a much more negative value of -$79.1 billion (-$37.6 billion - $41.5 billion). When we divide this -$79.1 billion by the ΔEVA+ multiple of 20.65, we get an EI of $-3.8 billion. And given Merck's $7.2 billion of EVA in 2009, this EI implies that Merck's EVA is expected to become negative as early as 2012.

But this large projected negative EVA also means that we need to make two revisions to our calculation. First, we revise the predicted ΔFGV from non-EVA factors because part of the contribution from sales growth assumes positive EVA. When we take away this contribution of $30.2 billion, the predicted ΔFGV from non-EVA factors drops to $11.4 billion and the required return from EVA increases from -$79.1 billion to -$48.9 billion. Second, we use both the EVA+ and EVA- multiples because the calculated EI reduces Merck's EVA below zero. Merck's largest negative EI from EVA+ is one fifth of Merck's 2009 EVA of $7.2 billion, or $1.5 billion, but that generates only -$29.9 billion of return (-$1.45 billion x 20.65). To get the remaining -$19.0 billion of return, we add -$0.6 billion from EVA- (since -$0.6 x 30.81 = -$19.0 billion), which gives us a total EI of -$2.1 billion.

33. -$37,596 = beginning FGV x [(1 + WACC)^5 – 1] = -$97,894 x [(1.067)^5 – 1].

34. The future value of $1 a year is (1.067)^4 + (1.067)^3 + (1.067)^2 + (1.067)^1 + (1.067)^0 = 5.72. The capitalized future value is [(1.067)/.067] x 5.72 = 90.86.

35. Since -$414 x 90.86 = -$37,596.

Figure 4 **Excess Delta EVA (Dynamic EI) r-sq for 5-Year Excess Returns**

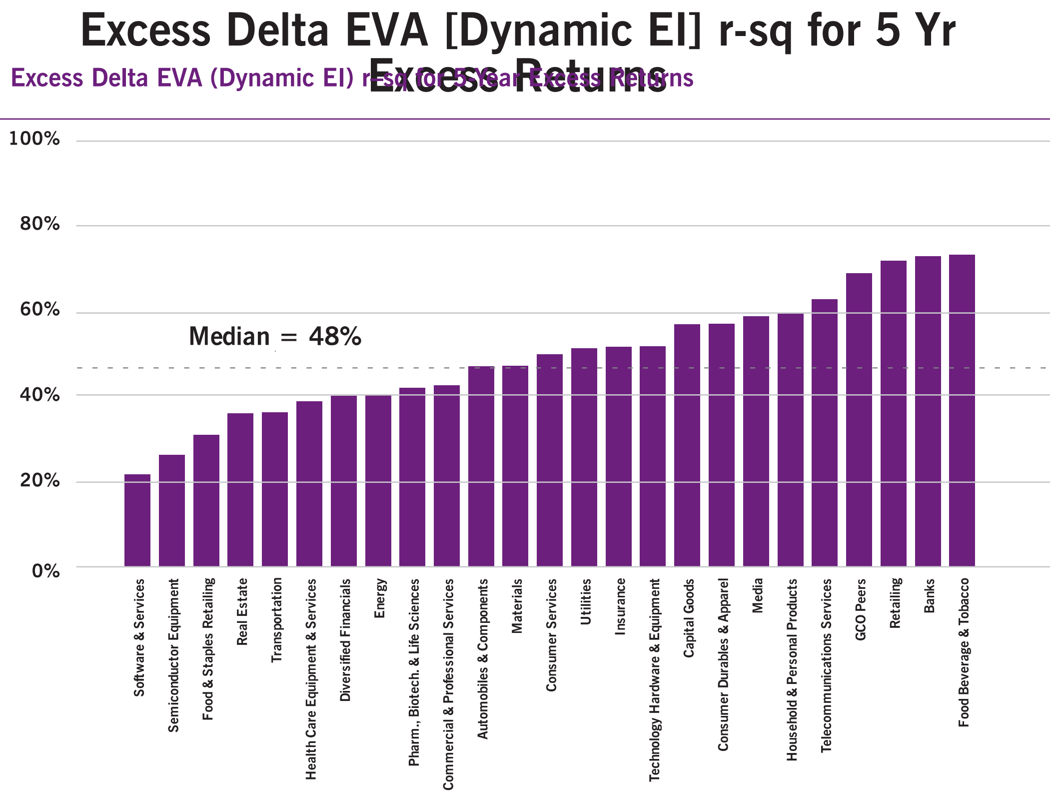
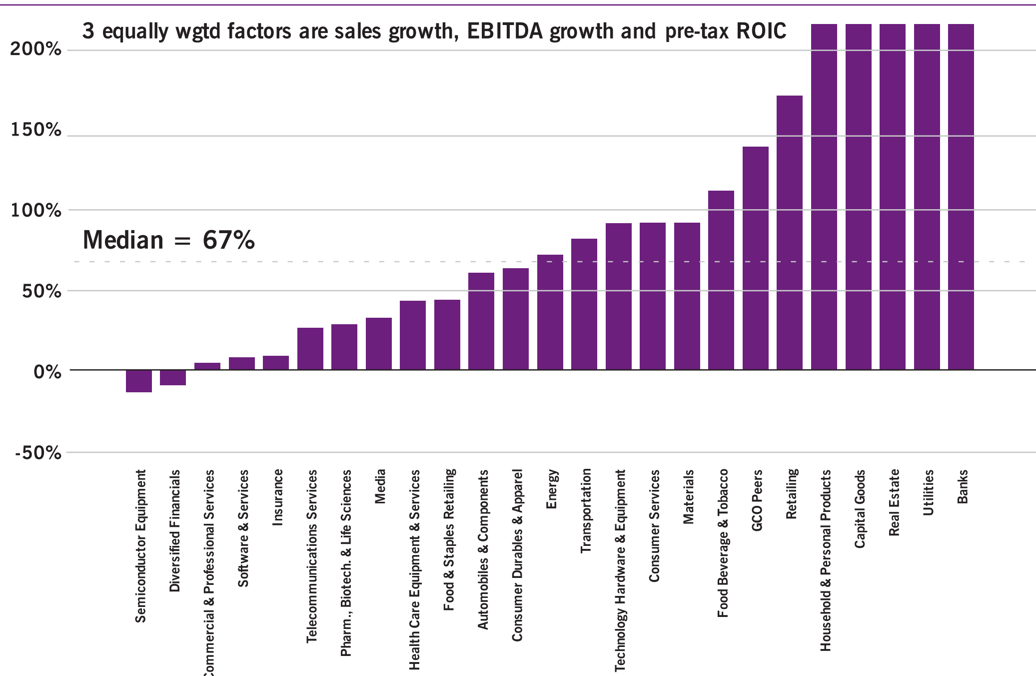


Figure 5 **R–sq of 5-Year Excess Delta EVA (Dynamic EI) vs Equally Weighted Factors**



What does all this mean, and how might it be used in a performance evaluation plan that is used to assess and reward Merck's top management? Given Merck's negative $98 billion of FGV at the beginning of 2009, our dynamic EI of -$2.1 billion implies that Merck's EVA could decline from $7.2 billion in 2009 to as low as -$3.1 billion in 2014 while still providing investors with a cost-of-capital return on Merck's 2009 market enterprise value of $124 billion. With this EI, the future value of Merck's excess ΔEVA is $5.6 billion and its capitalized future value is $88.6

Table 5 The Excess Return from Increases in ROIC and Capital Growth

		Year1	Year 2	Year3	Year 4	Year 5	Year 6
ROIC	15%		18%				
Cost of capital	10%						
Capital growth	3%		4%				
Beginning capital		100,000	103,000	107,120	111,405	115,861	120,495
NOPAT		15,000	18,540	19,282	20,053	20,855	
Capital charge		(10,000)	(10,300)	(10,712)	(11,140)	(11,586)	
EVA		5,000	8,240	8,570	8,912	9,269	
ΔEVA			3,240	330	343	356	
Growth rate in ΔEVA					4%	4%	

CALCULATION OF DOLLAR EXCESS RETURN FROM ΔMARKET VALUE AND FCF

Present value of future ΔEVA	2,143	5,493	
= next year's ΔEVA/(WACC - growth rate)			
Capitalized present value of future ΔEVA (= FGV)	23,571	60,427	
= (1 + WACC)/WACC x PV of future ΔEVA			
Present value of current EVA (= EVA/WACC)	50,000	82,400	
Ending capital	103,000	107,120	
Market value (= A + B + C)	176,571	249,947	
Increase in market value		73,375	A
NOPAT		18,540	
Change in ending capital		4,120	
Free cash flow		14,420	B
Actual return = Δmarket value + free cash flow = A + B		87,795	= A + B
Expected return (= WACC x market value)	17,657		
Excess return (= actual return - expected return)		70,138	C

CALCULATION SHOWING DOLLAR EXCESS RETURN = CAPITALIZED EXCESS ΔEVA + UNEXPECTED ΔFGV

Actual ΔEVA	3,240	
Expected ΔEVA (= EI)	(150)	
Excess ΔEVA (actual ΔEVA = EI)	3,090	
Capitalized excess ΔEVA (= excess ΔEVA x (1 + WACC)/WACC)	33,990	D
Actual ΔFGV	36,855	
Expected ΔFGV	(707)	
Unexpected ΔFGV	36,148	E
Excess return (= capitalized excess ΔEVA + unexpected ΔFGV)	70,138	= D + E = C

billion, or 99% of Merck's excess investor return, as we saw above.

As things turned out, during a five-year period when the company's EVA fell from \$7.2 billion to less than \$1 billion, Merck's management created significant value by increasing sales, R&D, and advertising to raise its FGV by \$151 billion. An incentive plan using excess ΔEVA with dynamic EI would have recognized and rewarded this value creation, while a conventional EVA bonus plan would have paid well below target.

Our Two Measures Provide Much Better Proxies for Investor Return than Equally Weighted Measures

Governance groups such as Institutional Shareholder Services argue that multiple measures are essential to assess company and management performance. In 2007, ISS adopted an operating performance assessment that gave equal weight to three measures: pre-tax ROIC, sales growth, and EBITDA growth.[36] Incentive plans with three or more equally weighted measures are a common response to pressures for multiple measures.

The EVA math provides an analytical framework for assessing the contribution of multiple measures to investors' excess returns, so it is not surprising that ΔEVA with dynamic EI or excess operating return provides a much better proxy for investor excess returns than three equally weighted measures. For the median industry group, as can be seen in Figures 4 and 5, excess ΔEVA with dynamic EI explains 48% of the variance in excess returns and provides an improvement of 67% over the variance explained by the three equally weighted measures of pre-tax ROIC, sales growth and EBITDA margin. These findings show that operating performance measurement can be dramatically improved by identifying drivers of future growth value, quantifying their impact on ΔFGV, and taking account of that impact in a way that is consistent with discounted cash flow valuation.

Conclusion

Institutional investors have long expressed concern that companies are sacrificing long-term growth to maximize current earnings. Most visibly and vocally, BlackRock's CEO Larry Fink, in his February 2016 letter to S&P 500 CEOs, complained that "many companies continue to engage in practices that may undermine their ability to invest for the future." He noted that stock buybacks in the third quarter of 2015 were up 27% over the prior year and commented that "we certainly support returning excess cash to shareholders, but not at the expense of value-creating investment."

In a 2013 survey of more than 1,000 board members and top executives conducted by McKinsey and Canada Pension Plan Investment Board (CPPIB), 79% of those who responded said that they felt pressured to demonstrate strong financial performance within just two years, and almost half said that pressure to raise near term earnings came from the board.[37] In a 2014 article on "Focusing Capital on the Long Term" in the *Harvard Business Review*, Dominic Barton, the global head of McKinsey, and Mark Wiseman, the CEO of CPPIB, argued that the best hope for change is leadership by big asset owners that changes the behavior of directors, managers, and equity analysts. They outline a four-point program for big asset owners that includes a call for "long-term metrics from companies to change the investor-management conversation." The proposal cites as examples of useful long-term metrics "10-year economic value added," "R&D efficiency," and "patent pipelines." And while noting that useful metrics vary by industry, the proposal urges asset owners to insist that their internal and external asset managers integrate such long-term metrics into their valuation models.

In this article, we have shown not only how companies and investors can include long-term metrics in their valuation models, but also how they can incorporate them into two measures of periodic performance—excess ΔEVA with dynamic EI and excess operating return. Such measures can be used by directors and investors to monitor management's success in building value by focusing on drivers of future growth value as well as indicators of current EVA improvement.

STEVE O'BYRNE is the founder of Shareholder Value Advisors.

Appendix

A Simple Financial Forecast Where Current Changes in EVA and Capital Growth Drive FGV

Table 2 shows EVA and FCF valuations of a forecast with constant ROIC of 15% and constant capital growth of 3%. Table 5 shows a revised projection with two unexpected changes: ROIC increases from 15% to 18% and the capital growth rate increases from 3% to 4%. The table shows that investors' excess return in year 2—that is, their dollar return in excess of a cost-of-capital return on beginning market value—is equal to $70,138; and that this excess return is the sum of two components: the capitalized value of larger-than-expected EVA improvements (excess ΔEVA), $33,990, and the unexpected change in FGV, $36,148. This decomposition of investors' excess return is the third component of the EVA math.

If we compare a set of forecasts like those in Table 5, each with different assumptions about the changes in ROIC and capital growth, we find that the current-year ΔEVA together with the capital growth rate provides a very good proxy for ΔFGV. To show this, we developed 64 additional forecasts that assumed a variety of ROIC levels ranging from 16%

36. Institutional Shareholder Services, ISS US Corporate Governance Policy 2007 Updates, available at www.issgovernance.com.

37. Barton, Dominic and Mark Wiseman (2014), "Focusing Capital on the Long Term," *Harvard Business Review*, January-February, pp. 45-51.

to 30% and new capital growth rates ranging from 3.5% to 7.0%.[38] For each scenario, we calculated the unexpected change in FGV and compared that with the capitalized value of current-year excess ΔEVA multiplied by 30 years of projected capital growth.

As can be seen in Figure 6, this proxy explains 91% of the variation in unexpected ΔFGV across the 64 scenarios. Figure 7 shows a second proxy that we will use when we look at the actual relationship between ΔEVA and ΔFGV for S&P 1500 companies. In this proxy, we multiply the excess EVA change by the log capital growth rate instead of the compounded capital growth rate. This works better in practice because capital growth rates are "noisy" and the log growth rate dampens the noise, while the compounded rate amplifies it. When we used this proxy, current-year excess ΔEVA and capital growth still explain 71% of the variation in unexpected ΔFGV across the 64 scenarios.

If the real world were anything like these projections, there would be little need for separate consideration of ΔFGV after taking account of ΔEVA. But, as my analysis below shows, the real world is not much like these projections, and changes in current-year EVA and historical capital growth are in fact very unreliable predictors of what we would like to be able to predict: namely, unexpected changes in future growth values.

In Real Life, Changes in EVA and Capital Growth Rates Explain Little of ΔFGV

When we look at historical data for S&P 1500 companies, we find that the increases in EVA and the growth rate of capital explain very little of the variation in the changes in FGV. To compare across companies, we divide excess ΔEVA x ln(1 + capital growth rate) by WACC and standardize the ΔEVA and ΔFGV variables by capital at the start of each five-year period.[39] For a sample of 1,032 companies (representing 15,534 five-year periods ending within the years 1996-2015) with positive EVA in year 0, capitalized excess ΔEVA multiplied by the capital growth rate[40] explains only 4% of the variation in ΔFGV as a percentage of beginning capital. In other words, the same variable that explained over 70% of the variation in ΔFGV in our projections explained only 4% in real life. In our projections, the average value of $1 of ΔEVA/WACC x ln(1 + capital growth rate) was $32.40; in real life, the average value turns out to be only $0.46.

And when we looked at the 494 companies (representing 9,024 five year periods) with negative EVA in year 0, we discovered another significant problem in the empirical relationship between ΔEVA and ΔFGV. For companies starting with a negative EVA, the change in EVA is actually *negatively* correlated with the change in FGV. In other words, when a company's EVA becomes less negative or more positive, its FGV tends to shrink, on average. To better capture the impact of the beginning EVA level, we defined two new variables: EVA+ and EVA-. EVA+ is equal to EVA if EVA > 0 and 0 otherwise, while EVA- is equal to EVA if EVA < 0 and 0 otherwise. From these variables, we can calculate ΔEVA+ and ΔEVA-. When we looked at five-year periods with negative EVA in year 0 and used [ΔEVA-/WACC]/beginning capital and [ΔEVA+/WACC]/beginning capital to predict ΔFGV/beginning capital, we found that the average value of $1 of ΔEVA-/WACC is -$1.25 and the average value of $1 of ΔEVA+/WACC is $0.33. This means that ΔEVA- is completely misleading as a measure of better performance because its contribution to current operations value is completely offset by its negative impact on FGV.

One reason for a negative correlation like this is the existence of a floor on company value, which could be attributable to its liquidation value or the expectation that poor performance will lead to a takeover or a turnaround effort.[41]

Taking Account of "Fade" and the "Delayed Productivity of Capital" Improves the Correlation of ΔEVA and ΔFGV but Doesn't Provide a Good Model of ΔFGV

Another way to interpret the negative correlation between ΔEVA- and ΔFGV is that investors anticipate that the negative EVA return on capital will "fade" toward zero. If we do regressions that relate current year EVA return on capital to prior year EVA return on capital, we can see that large negative returns on capital become less negative over time, while large positive returns become less positive. For the fade analyses reported in this paper, we use separate regressions for positive and negative EVA companies in each of the 24 GICS industry groups, amounting to a total of 48 regressions. For example, the regression equations for Household and Personal Products (GICS 3030) are current year EVA+ return on capital = .0122 + .8182 x prior year EVA+ return on capital and current year EVA- return on capital = -.0036 + .5855 x prior year EVA- return on capital. From these equations, we can see that a company with a +10% EVA return in capital in one year has, on average, a 9.4% return in the next year, and a company with a -10% EVA return on capital in one year has, on average, a -6.2% return in the next year. While we might expect that competition in the product and capital markets

38. The projections combine 8 ROIC levels, 16%, 18%, 20%, 22%, 24%, 26%, 28% and 30% with eight capital growth rates, 3.5%, 4.0%, 4.5%, 5.0%, 5.5%, 6.0%, 6.5% and 7.0%.

39. We calculate EI using the assumption that FGV is constant. This implies that the change in FGV is the unexpected change in FGV.

40. The independent variable in the regression is [excess ΔEVA/WACC] x ln(1 + capital growth rate)/beginning capital.

41. To see this, consider a company with capital of $100, market enterprise value of $90, and a liquidation value of $80. If the cost of capital is 10% and NOPAT is $8, then EVA is -$2, COV is $80, and FGV is $10. If NOPAT drops to $2 and market enterprise value drops to the liquidation value, then EVA is -$8, COV is $20, and FGV, because of the company's liquidation value, increases to $60. In that case, a decline in capitalized EVA of $60 has been largely offset by an increase in FGV of $50.

Figure 6 **Delta FGV vs Delta EVA x Exponential Capital Growth Factor**

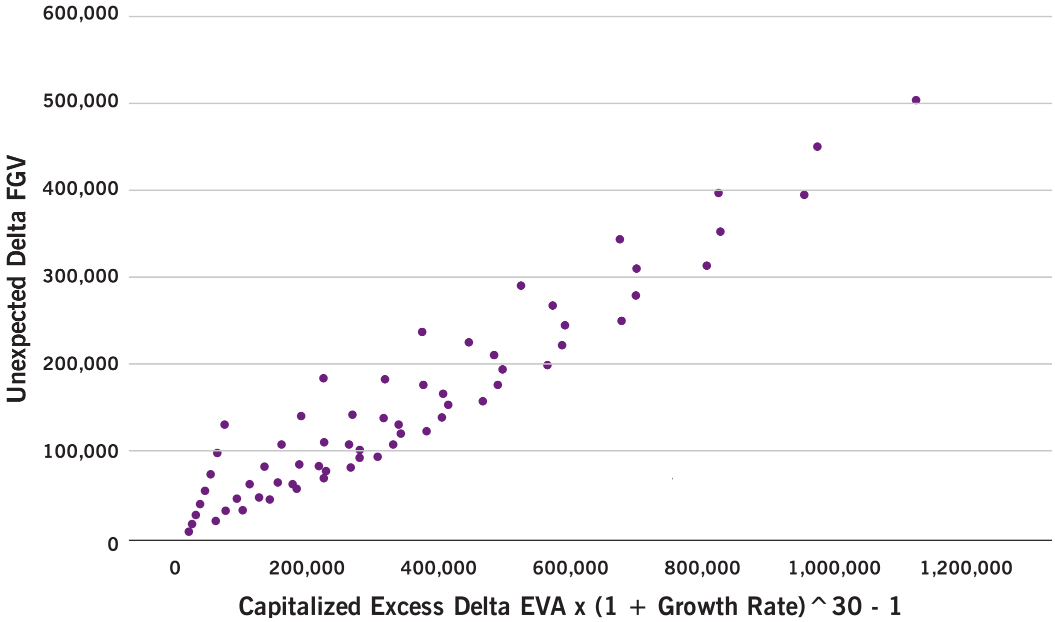
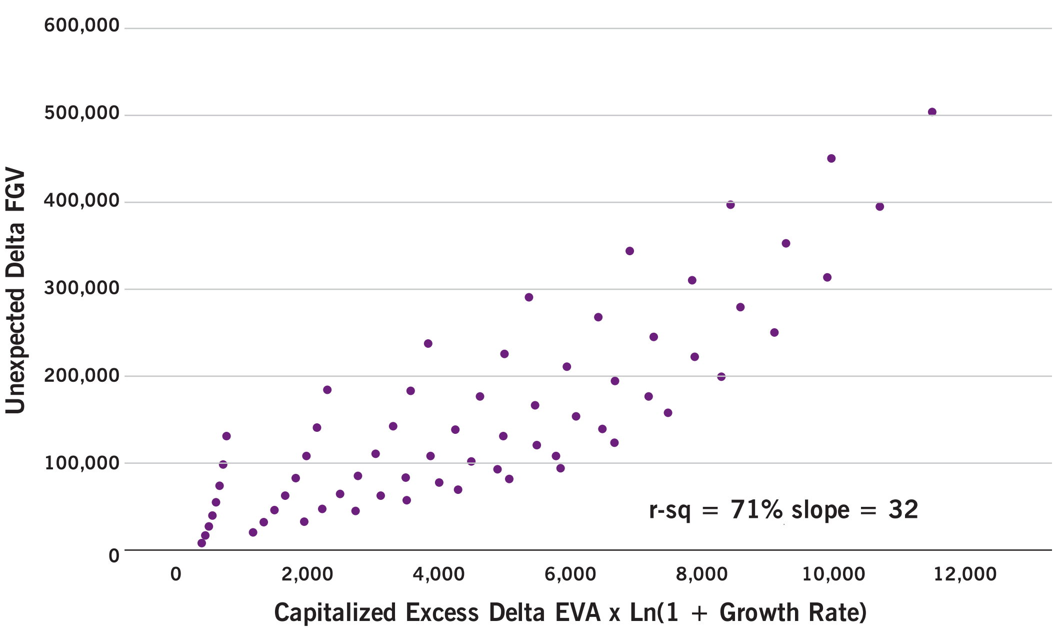


Figure 7 **Delta FGV vs Delta EVA x Logarithmic Capital Growth Factor**



would drive EVA returns to zero over time, the regression equations typically imply that positive EVA companies fade to a "sustainable" return above zero, and negative EVA companies fade to a "sustainable" return below zero. A return level is sustainable when the predicted return from the fade equation is equal to the input (prior year) return. For example, Household and Personal Products has a sustainable EVA+ return of 6.69% (since .0669 = .0122 + .8182 x .0669) and a sustainable EVA- return of -0.87% (since -.0087 = -.0036 + .5855 x (-.0087)).

We normally define current operations value as the sum of capital and the present value of current EVA valued as a perpetuity. If we calculate the present value of current EVA while assuming fade in the EVA rate of return and no growth in capital, then current operations value increases for negative EVA companies and decreases for positive EVA companies. This, in turn, means that FGV is understated for negative EVA companies and overstated for positive EVA companies. When we adjust for fade, we find that the correlation between ΔEVA- and ΔFGV and the correlation between ΔEVA+ and ΔFGV both improve. Across all five-year periods, the correlation of ΔEVA- and ΔFGV increases from -0.45 to -0.09, and the correlation of ΔEVA+ and ΔFGV improves from 0.07 to 0.42.

While we can calculate a current operations value (and associated future growth value) using a non-perpetuity present value, it's important to realize that the EVA math equations only apply when future growth value is calculated from the conventional current operations value, that is, capital plus the present value of current EVA valued as a perpetuity. To make this clearer, let's use "adjusted FGV" for the future growth value calculated from a current operations value calculated using a non-perpetuity present value. EI needed to provide a cost of capital return on market enterprise value (the second component of the EVA math) remains EI = [(WACC x FGV) – ΔFGV]/[(1 + WACC)/WACC], not EI = [(WACC x adjusted FGV) – Δadjusted FGV]/[(1 + WACC)/WACC].

Taking account of fade is useful in 21 of the 24 GICS industry groups because our ΔFGV drivers such as R&D, advertising and sales do a better job explaining changes in adjusted FGV than changes in conventional FGV. But the change in adjusted FGV is only part of the total change in conventional FGV. When current EVA is valued with fade, the present value of faded EVA changes over time, declining in value when current EVA is positive and increasing in value (that is, becoming less negative) when current EVA is negative. This future change in current capital EVA implies an offsetting change in FGV because the updated EVA math assumes that current market enterprise value is known. We need to take this change in FGV—which we'll call "ΔFGV from fade"—into account when we calculate EI. The EI formula becomes EI = [(WACC x FGV)—predicted Δadjusted FGV – ΔFGV from fade]/[(1 + WACC)/WACC].

Another contributor to the negative correlation between ΔEVA and ΔFGV is the "delayed productivity of capital." Business strategies with positive NPVs that require several years to build a customer base or achieve high capacity utilization will commonly show, at least during the initial development period, increasingly negative EVA offset by increasingly positive FGV. And this shows up as a negative correlation of ΔEVA and ΔFGV. In this situation, deferring the capital charge provides a better matching of NOPAT and capital cost.

To quantify the benefit of also deferring the capital charge, we calculated an adjusted EVA for every S&P 1500 company by adding a two-year deferral of any increase in the capital charge. In other words, in any year in which there was an increase in capital, we deferred the increase in the capital charge (with interest at WACC) for two years and then recovered the deferred charge over the following two years. With this adjusted EVA, the correlation of ΔEVA- and ΔFGV, taking account of fade, improves from -0.45 to -0.02, and the correlation of ΔEVA+ and ΔFGV improves from 0.07 to 0.32.

But if recognizing fade and deferring the capital charge improves the correlations of ΔEVA- and ΔEVA+ with ΔFGV, neither adjustment makes ΔEVA- or ΔEVA+ a good proxy for ΔFGV. For ΔEVA-, recognizing fade or deferring the capital charge largely eliminates the negative correlation with ΔFGV, but that doesn't make ΔEVA- a useful proxy for ΔFGV. For ΔEVA+, recognizing fade improves the correlation to 0.42, but that means that ΔEVA+ still explains less than 18% of the variation in ΔFGV. Moreover, adding the capital charge deferral wipes out some of the benefit of taking account of fade, which leaves ΔEVA+ explaining less than 11% of the variation in ΔFGV.

In sum, to come up with a good proxy for ΔFGV, we need to do more than refine the EVA measure or the FGV calculation. We need to develop a model of ΔFGV.

Journal of Applied Corporate Finance (ISSN 1078-1196 [print], ISSN 1745-6622 [online]) is published quarterly by Wiley Subscription Services, Inc., a Wiley Company, 111 River St., Hoboken, NJ 07030-5774.

Postmaster: Send all address changes to JOURNAL OF APPLIED CORPORATE FINANCE, John Wiley & Sons Inc., C/O The Sheridan Press, PO Box 465, Hanover, PA 17331.

Information for Subscribers
Journal of Applied Corporate Finance is published in four issues per year. Institutional subscription prices for 2016 are:
Print & Online: US$645 (US), US$772 (Rest of World), €501 (Europe), £395 (UK). Commercial subscription prices for 2016 are: Print & Online: US$860 (US), US$1025 (Rest of World), €666 (Europe), £525 (UK). Individual subscription prices for 2016 are: Print & Online: US$121 (US), £67 (Rest of World), €100 (Europe), £67 (UK). Student subscription prices for 2016 are: Print & Online: US$43 (US), £24 (Rest of World), €36 (Europe), £24 (UK). Prices are exclusive of tax. Asia-Pacific GST, Canadian GST/HST and European VAT will be applied at the appropriate rates. For more information on current tax rates, please go to www.wileyonlinelibrary.com/tax-vat. The price includes online access to the current and all online back files to January 1st 2012, where available. For other pricing options, including access information and terms and conditions, please visit www.wileyonlinelibrary.com/access.

Delivery Terms and Legal Title
Where the subscription price includes print issues and delivery is to the recipient's address, delivery terms are Delivered at Place (DAP); the recipient is responsible for paying any import duty or taxes. Title to all issues transfers FOB our shipping point, freight prepaid. We will endeavour to fulfil claims for missing or damaged copies within six months of publication, within our reasonable discretion and subject to availability.

Journal Customer Services: For ordering information, claims and any inquiry concerning your journal subscription please go to www.wileycustomerhelp.com/ask or contact your nearest office.
Americas: Email: cs-journals@wiley.com; Tel: +1 781 388 8598 or +1 800 835 6770 (toll free in the USA & Canada).
Europe, Middle East and Africa: Email: cs-journals@wiley.com; Tel: +44 (0) 1865 778315.
Asia Pacific: Email: cs-journals@wiley.com; Tel: +65 6511 8000.
Japan: For Japanese speaking support, Email: cs-japan@wiley.com; Tel: +65 6511 8010 or Tel (toll-free): 005 316 50 480.
Visit our Online Customer Help available in 7 languages at www.wileycustomerhelp.com/ask

Production Editor: Amit Bansal (email: ambansal@wiley.com).

Back Issues: Single issues from current and recent volumes are available at the current single issue price from cs-journals@wiley.com. Earlier issues may be obtained from Periodicals Service Company, 351 Fairview Avenue – Ste 300, Hudson, NY 12534, USA. Tel: +1 518 537 4700, Fax: +1 518 537 5899, Email: psc@periodicals.com

View this journal online at wileyonlinelibrary.com/journal/jacf.

Access to this journal is available free online within institutions in the developing world through the AGORA initiative with the FAO, the HINARI initiative with the WHO, the OARE initiative with UNEP, and the ARDI initiative with WIPO. For information, visit www.aginternetwork.org, www.who.int/hinari/en/, www.oaresciences.org, www.wipo.org/int/ardi/edn.

Journal of Applied Corporate Finance accepts articles for Open Access publication. Please visit http://olabout.wiley.com/WileyCDA/Section/id-406241.html for further information about OnlineOpen.
Wiley's Corporate Citizenship initiative seeks to address the environmental, social, economic, and ethical challenges faced in our business and which are important to our diverse stakeholder groups. Since launching the initiative, we have focused on sharing our content with those in need, enhancing community philanthropy, reducing our carbon impact, creating global guidelines and best practices for paper use, establishing a vendor code of ethics, and engaging our colleagues and other stakeholders in our efforts.

Follow our progress at www.wiley.com/go/citizenship

Abstracting and Indexing Services
The Journal is indexed by Accounting and Tax Index, Emerald Management Reviews (Online Edition), Environmental Science and Pollution Management, Risk Abstracts (Online Edition), and Banking Information Index.

Linking Average Employee Pay Practices

to Long-Term Value

September 18, 2017

Stephen F. O'Byrne

Shareholder Value Advisors Inc.

Introduction

- The objective of this presentation is to show that two dimensions of average employee pay – pay alignment and the pay premium at zero company value added – have a significant impact on a measure of long-term value called “future growth value”.
- The presentation has three sections:
  - **The EVA Math** explains that future growth value, or “FGV”, is the value of a company that is not reflected in current earnings and book capital.
    - FGV is the present value of expected future economic profit improvement, where
    - Economic profit is profit after a charge for debt *and* equity capital.
  - **Operating Drivers of ΔFGV** reviews several efforts, including the Balanced Scorecard, to define drivers of future value and presents a set of drivers, falling into three broad categories, that can be calculated from Compustat data: measures of customer value, measures of organization strength and measures of EVA fade.
  - **Linking Average Employee Pay to ΔFGV** explains how to calculate three dimensions of average employee pay: pay alignment, pay leverage and the pay premium at zero company value added, and then shows that alignment and the pay premium have statistically and economically significant effects on ΔFGV.

1. THE EVA MATH
2. OPERATING DRIVERS OF ΔFGV
3. LINKING AVERAGE EMPLOYEE PAY TO ΔFGV

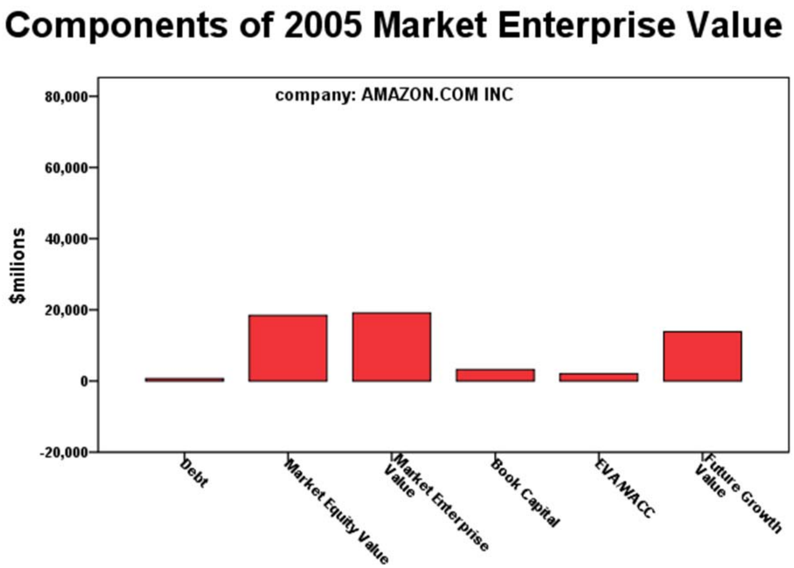
Economic Value Added (EVA) - or economic profit (EP) - is profit after the cost of debt *AND* equity capital

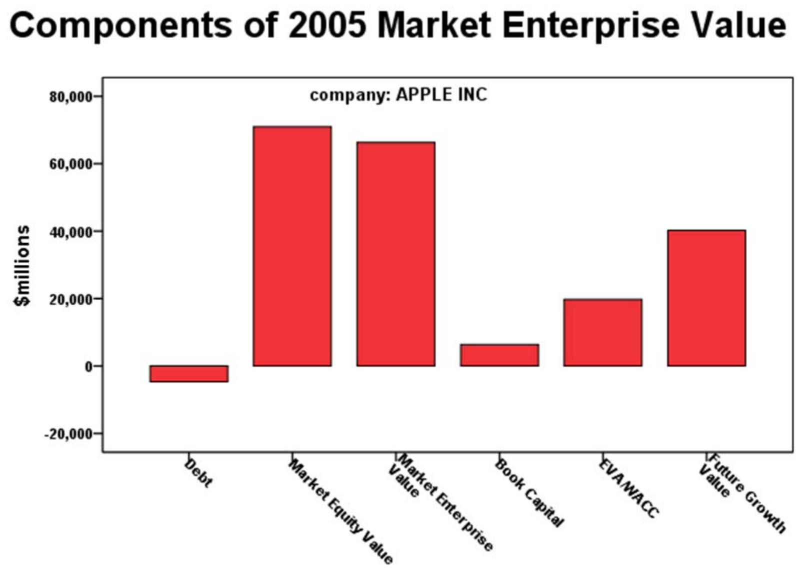
Sales		100
Cost of goods sold		(80)
Gross profit		20
SG&A		(6)
Pre-tax operating profit		14
Taxes		(5)
Net operating profit after-tax (NOPAT)		9
Total assets	60	
Current liabilities (non-interest bearing)	(20)	
Capital	40	
x Cost of capital	10%	
Capital charge		(4)
EVA		5

"Market value = discounted cash flow value" implies that market enterprise value = capital + EVA/WACC + *future growth value*

- Free cash flow is the simplest link between market enterprise value and operating performance:
  - DCF value = market equity value + debt = present value of future free cash flow
  - Free cash flow = FCF = Net Operating Profit After-Tax - Δcapital = NOPAT - Δcapital
  - Earnings don't tie to market enterprise value because they don't adjust for the capital required to produce the earnings.
- FCF is a measure of operating performance, but not a very useful one because negative FCF is found in profitable, but rapidly growing, businesses as well as in distressed businesses.
- Economic profit (or "EVA") is a more complicated link between value and operating performance that leads us to the critical concept of *future growth value*:
  - Economic profit = Economic Value Added = EVA = NOPAT – WACC x capital
    - WACC = weighted average cost of capital = weighted average of cost of equity & after-tax cost of debt
  - Market enterprise value = capital + PV of future EVA =
    - capital + EVA/WACC + PV of future ΔEVA
    - capital + EVA/WACC + future growth value
    - current operations value (COV) + future growth value (FGV)
    - ***quantifying the drivers of ΔFGV is the key to better performance measurement***

FGV is important – for example, in 2005, more than half of market enterprise value at both Amazon and Apple was future growth value





The left panel shows the components of 2005 market enterprise value for Amazon, while the right panel shows the components of 2005 market enterprise value for Apple.

The first two bars in each panel show market enterprise value from a financing perspective, i.e., debt + market equity value = market enterprise value. The last three bars in each panel show market enterprise value from an operating perspective, market enterprise value = capital + EVA/WACC + future growth value.

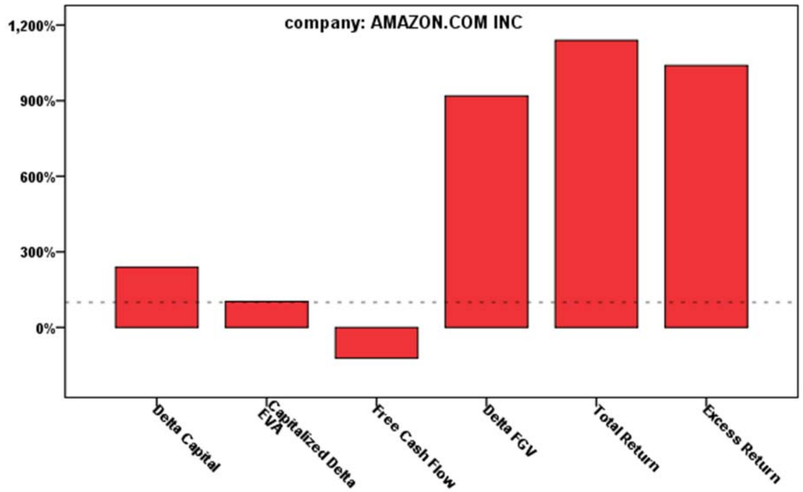
For both companies in 2005, future growth value was more than 50% of market enterprise value. Amazon's future growth value of $13.9 billion was 73% of its market enterprise value, while Apple's future growth value of $40.3 billion was 61% of its market enterprise value of $66.3 billion.

The EVA math helps us improve performance measurement

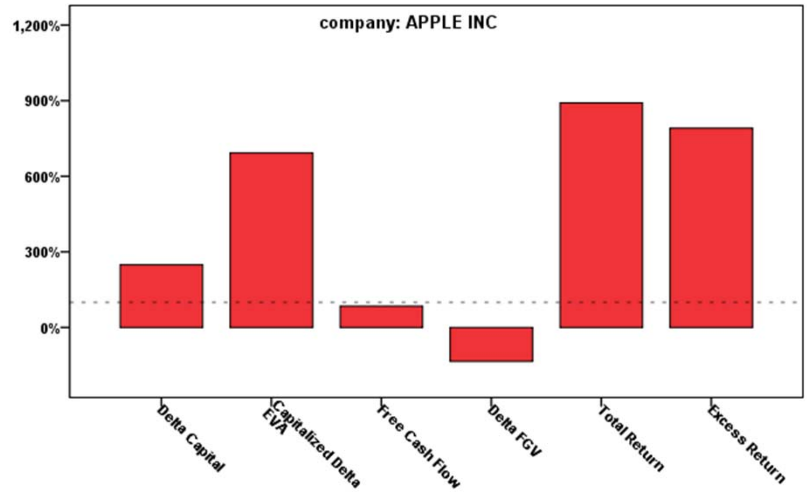
- The EVA math splits market enterprise value into current operations value and future growth value.
  - Current operations value = capital + EVA/WACC
  - Future growth value = market enterprise value – current operations value
    - = PV of future EVA improvement over EVA_0
    - = capitalized PV of future annual EVA improvements (i.e., EVA_n – EVA_{n-1})
- The EVA math tells us that a model of ΔFGV is the key to target setting, i.e., setting expected EVA improvement or what we call “EI”:
  - Investors receive a cost of capital return on market value if and only if capitalized EI + ΔFGV equals WACC x FGV.
  - If we have a model that gives us predicted ΔFGV, we can solve for EI (= WACC x FGV – predicted ΔFGV)/[(1 + WACC)/WACC].
- The EVA math gives us a way to measure the success of operating performance measurement:
  - It tells us that investors’ dollar excess return is the sum of capitalized excess ΔEVA and the unexpected change in FGV.
  - Our goal in operating performance measurement is to minimize the portion of the excess return “explained” by the unexpected change in FGV.

∆FGV can be a big component of investor return

Components of the 10 Yr Excess Return



Components of the 10 Yr Excess Return



From the expression of market enterprise value as [capital + EVA/WACC + FGV], we can see that a company's total investor return is the sum of four components: ∆capital + ∆EVA/WACC + ∆FGV + FCF.

The graphs above show the four components of the total return, the total return and the excess return as percentages of the expected return, i.e., beginning market enterprise value x [(1 + WACC)^n – 1]. The dashed line shows 100% of the expected return. If the total return is above the dashed line, the company has a positive excess return. The 10 year expected return was $17 billion for Amazon and $55 billion for Apple.

The left panel for Amazon shows that Amazon had a huge positive excess return, largely from ∆FGV, even though FCF was negative. The right panel for Apple shows that Apple had a huge positive excess return, largely from ∆EVA/WACC, even though ∆FGV was negative. The dollar excess return was $238 billion for Amazon and $628 billion for Apple.

A model of ΔFGV is the key to setting target ΔEVA and linking the excess return to current operating performance

<table>
<tr><th>Value</th><th>Operating Expression</th></tr>
<tr><td>Expected investor return</td><td>

- WACC x market enterprise value
- WACC x current operations value + WACC x FGV
  - NOPAT [with WACC return on new capital]
  - (1+WACC)/WACC x EI + expected ΔFGV
- EI = expected ΔEVA =
  - (WACC x FGV – **expected ΔFGV**)/((1 + WACC)/WACC)
  - If expected ΔFGV = 0, EI = WACC x FGV/((1+WACC)/WACC)
- Multi-year EI =
  - (((1 + WACC)^n – 1) – expected ΔFGV)/[(1 + WACC) + … + (1 + WACC)n-1)

</td></tr>
<tr><td>Excess investor return</td><td>

- Actual investor return – expected investor return
  - Actual investor return = (ending market enterprise value – beginning market enterprise value) + future value of free cash flow.
  - Expected investor return = beginning market enterprise value x [((1 + WACC)^n) – 1]
- Capitalized value of excess ΔEVA + unexpected ΔFGV
  - Excess ΔEVA = ΔEVA – expected improvement ("EI")
  - EI = ΔEVA required to provide a WACC return on FGV
  - Unexpected ΔFGV = actual ΔFGV – **expected ΔFGV**

</td></tr>
</table>

We need a model of ΔFGV to estimate expected EVA improvement (or "EI")

Subject	EVA Math Com-ponent	Equation
Market enterprise value	#1	= capital + EVA/WACC + future growth value = capital + EVA/WACC + FGV
predicted ΔFGV		$= \beta_1$ x Δsales + β_2 x ΔR&D + β_3 x Δadvertising
A cost of capital return on future growth value	#2	WACC x FGV = (1 + WACC)/WACC x ΔEVA + ΔFGV
Expected EVA improvement (or "EI")		EI = [WACC x FGV – ***predicted ΔFGV***] x WACC/(1 + WACC)
Excess return on market enterprise value	#3	= (1 + WACC)/WACC x FV of [ΔEVA – EI] + unexpected ΔFGV = (1 + WACC)/WACC x FV of [ΔEVA – EI] + [ΔFGV – ***predicted ΔFGV***]
Excess ΔEVA with dynamic EI		ΔEVA – EI where EI is adjusted at the end of each period to reflect changes in predicted ΔFGV

If our model of ΔFGV is perfect, unexpected ΔFGV is zero and 100% of the excess return ties back to current period operating metrics.

On rare occasions, ΔEVA and the capital growth rate provide a good model of ΔFGV, but generally we need to look beyond them

- In stylized projections often used for corporate finance training, ΔEVA and the capital growth rate provide a perfect proxy for ΔFGV:
  - If the prospective EVA return on capital and the capital growth rate are constant:
    - FGV = ΔEVA x (1 + g)/(WACC - g) where g is the capital growth rate
    - ΔFGV = g x ΔEVA/(WACC - g)
- In practice, ΔEVA and the capital growth rate are very poor proxies for ΔFGV for two main reasons:
  - New capital often has delayed productivity, i.e., new capital becomes more productive over time due to economies of scale, experience effects and weaknesses of conventional accounting such as straight line depreciation.
  - High returns on old capital typically decay or "fade" due to competition.
- To develop a good model of ΔFGV, we need to look more broadly to:
  - Current measures that are proxies for *future customer value* such as customer satisfaction, sales, R&D and advertising,
  - Current measures of *organization strength* that are proxies for future productivity such as employee satisfaction, training and turnover and employee pay alignment with the joint value added of labor and capital, and
  - Drivers of *fade* in the EVA return on capital.

1. THE EVA MATH
2. OPERATING DRIVERS OF ΔFGV
3. LINKING AVERAGE EMPLOYEE PAY TO ΔFGV

ΔEVA and Δcapital are good proxies for ΔFGV in a simple projection with constant ROIC and capital growth

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
ROIC	15%						
Cost of capital	10%						
Capital growth	3%						
Beginning capital		100,000	103,000	106,090	109,273	112,551	115,927
NOPAT		15,000	15,450	15,914	16,391	16,883	
Capital charge		(10,000)	(10,300)	(10,609)	(10,927)	(11,255)	
EVA		5,000	5,150	5,305	5,464	5,628	
ΔEVA			150	155	159	164	
Growth rate in ΔEVA				3%	3%	3%	

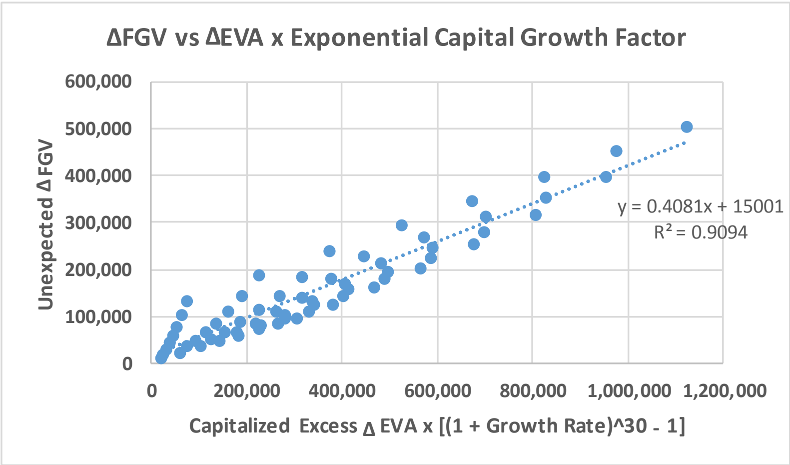
CALCULATION OF TOTAL RETURN FROM ΔMARKET VALUE AND FCF SHOWING ACTUAL RETURN = EXPECTED RETURN

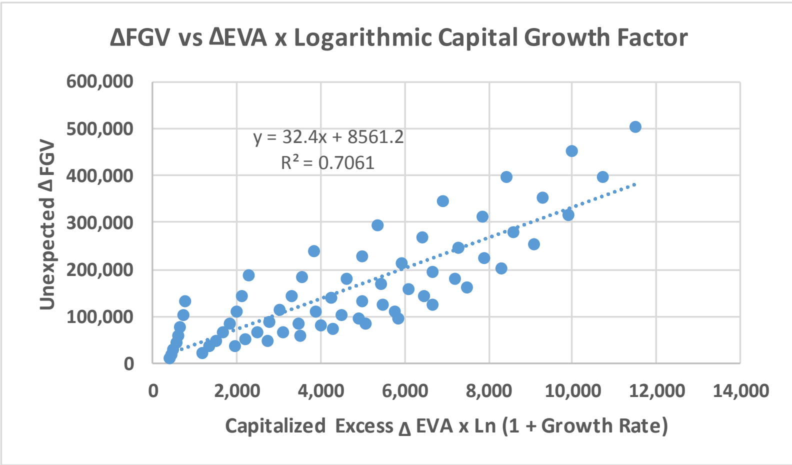
	Year 1	Year 2	
Present value of future ΔEVA	2,143	2,207	
= next year's ΔEVA/(WACC - growth rate)			
Capitalized present value of future ΔEVA (= FGV)	23,571	24,279	
= (1 + WACC)/WACC x PV of future ΔEVA			
Present value of current EVA (= EVA/WACC)	50,000	51,500	
Ending capital	103,000	106,090	
Market value	176,571	181,869	
Increase in market value		5,297	A
NOPAT		15,450	
Change in ending capital		3,090	
Free cash flow		12,360	B
Actual return = Δmarket value + free cash flow (= A + B)		17,657	= A + B
Expected return (= WACC x market value)	17,657		

CALCULATION SHOWING ΔEVA AND ΔFGV PROVIDE EXPECTED RETURN ON FGV

	Year 1	Year 2		
Expected return on FGV (= WACC x FGV)	2,357			
Capitalized value of ΔEVA		1,650	C	= [(1 + WACC)/WACC] x ΔEVA
Change in FGV		707	D	
Actual return on FGV (= C + D)		2,357	= C + D	

In our example, ΔFGV is well explained by two *current* period measures: ΔEVA and Δcapital





Note: plot points use ROIC of 16% to 30% and capital growth rates of 3.5% to 7.0%

Note: plot points use ROIC of 16% to 30% and capital growth rates of 3.5% to 7.0%

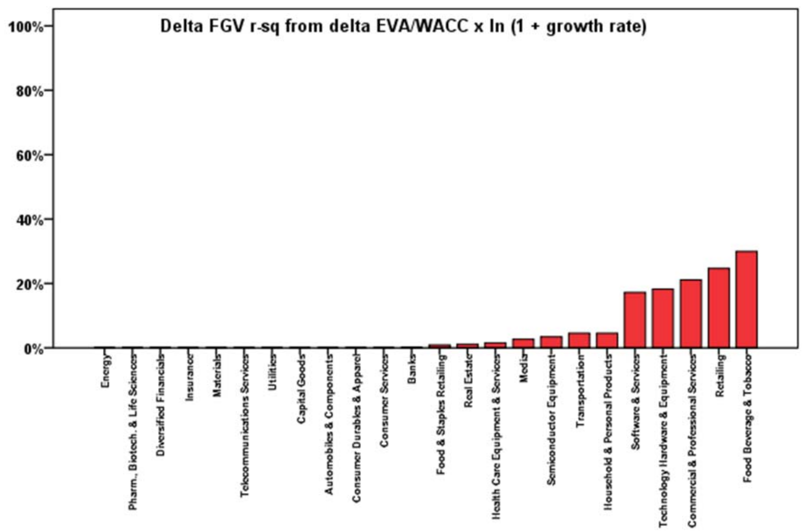
The plot points in the two graphs above are derived from the example on the previous page. The example starts with a basic case valuation - assuming 15% ROIC, 3% capital growth and 10% cost of capital – and then calculates the change in FGV associated with an increase in ROIC and capital growth. The graph plots capitalized excess ΔEVA and unexpected ΔFGV for 64 scenarios with new ROIC ranging from 16% to 30% and new capital growth rate ranging from 3.5% to 7.0%.

The left panel shows that capitalized excess ΔEVA x [(1 + capital growth rate)^30 – 1] explains 91% of the variation in excess ΔFGV. We can get the r-squared closer and closer to 100% by extending the projection horizon for the capital growth rate beyond 30 years.

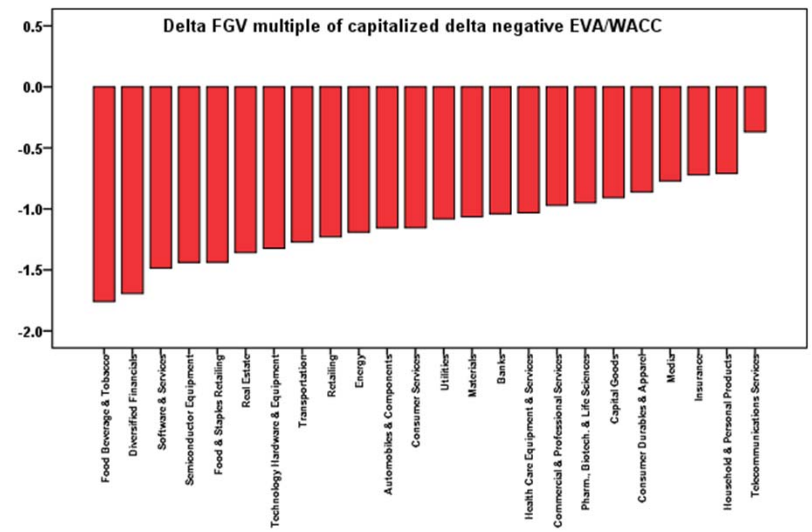
When we use historical capital growth rates as a proxies for expected capital growth rates, we find that logarithmic transformations have more explanatory power than exponential transformations because log functions dampen the noise in the historical growth rate while exponential functions compound it. The right panel uses a logarithmic growth rate to provide a comparison to the better fitting models using historical growth rates (shown on the following page). The right panel shows that capitalized excess ΔEVA x ln(1 + capital growth rate) explains 71% of the variation in excess ΔFGV.

In practice, ∆EVA x ln(1 + growth) has limited explanatory power and ∆FGV is negative when EVA increases from a negative base

Delta FGV From Delta EVA and Growth



Delta FGV From Delta Negative EVA



The left panel shows the variance in five year ∆FGV explained by ∆EVA+/WACC x ln(1 + growth rate) across the 24 GICS industry groups. The variance explained is zero in half the industry groups and only 30% in the best industry group, Food Beverage & Tobacco. The sample is five year periods ending in 1996-2015 for S&P 1500 companies. EVA+ is EVA if positive and zero otherwise.

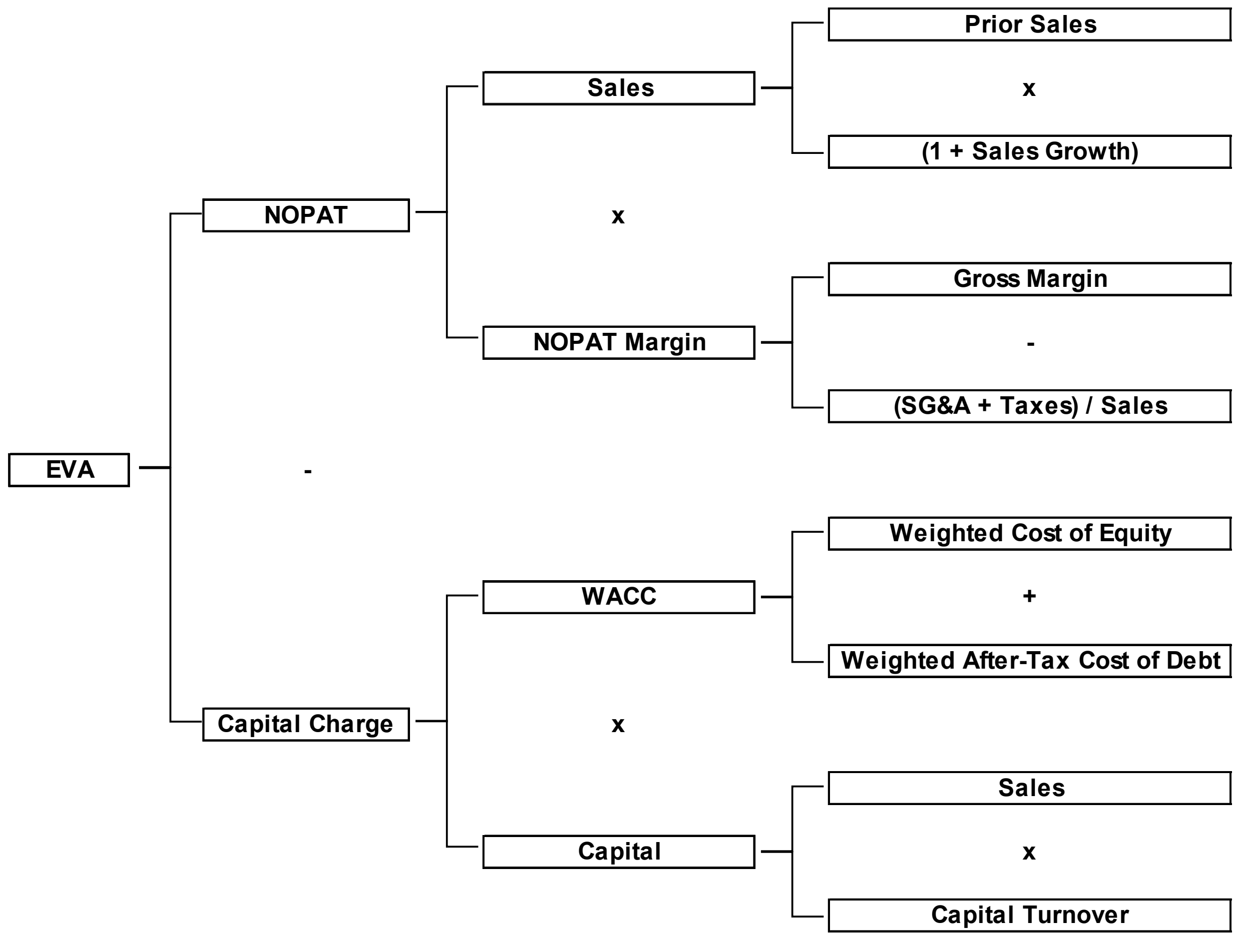
The right panel shows that improvements in EVA- [= EVA if negative, zero otherwise] *reduce* FGV in every industry group. This, of course, makes ∆EVA- a poor proxy for ∆FGV.

For the median GICS industry group, ∆EVA only explains 19% of the variation in five year excess returns vs. 31% for ∆EBITDA.

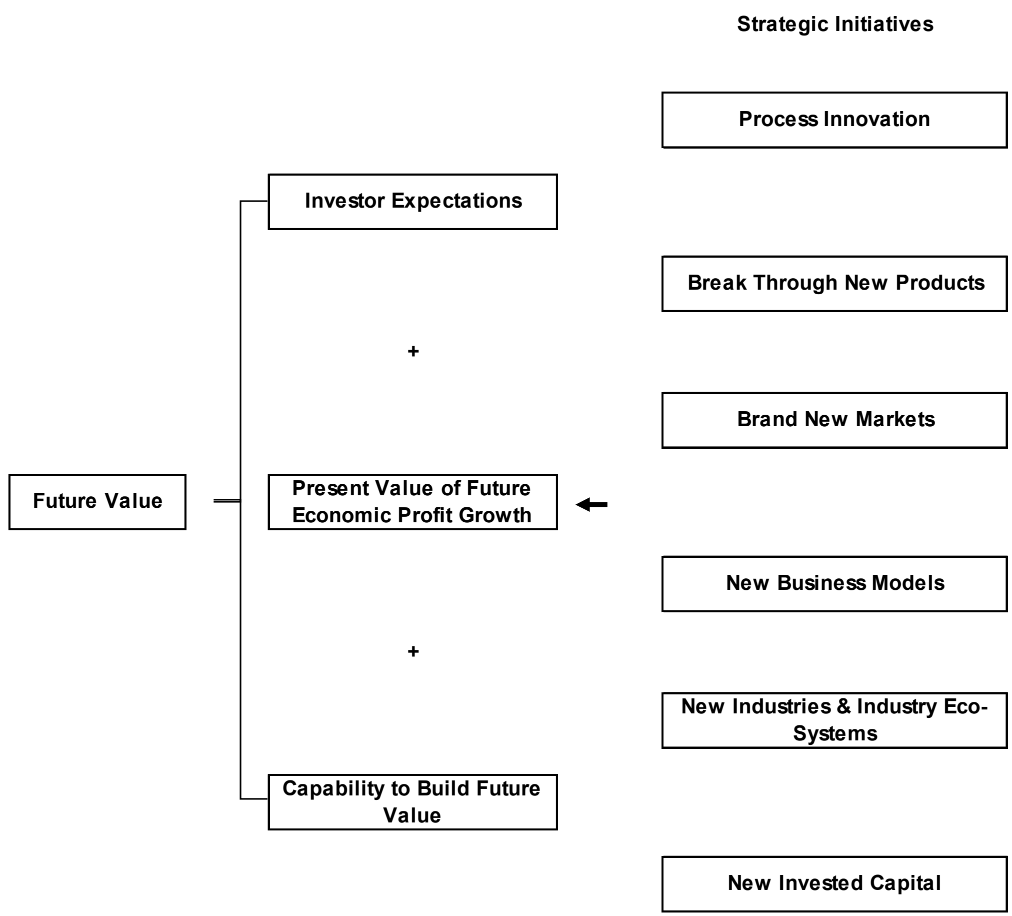
What are the current period drivers of ∆FGV?

- EVA value driver trees are common, but they typically show the current period drivers of *current* period EVA, not current period ∆FGV.
- Several sources, including the IRRCi report on the Alignment Gap, Kaplan & Norton's Balanced Scorecard and the McKinsey valuation book, have helpful discussions of future value drivers.
- Future value drivers can grouped into two broad categories: proxies for future customer value and proxies for organization strength.
- The big challenge in using future value drivers is measurement and valuation impact.
  - The McKinsey Valuation authors note: "If managers know the relative impact of their company's value drivers on long-term value creation, they can make explicit trade-offs between pursuing a critical driver and allowing performance against a less critical driver to deteriorate. This is particularly helpful for choosing between activities that deliver short-term performance and those that build the long-term health of the business." Koller, Goedhart & Wessels, Valuation, 5th edition, p. 420.
  - Our approach is to develop a statistical model of ∆FGV using, for the analysis in this report, three customer related measures (sales growth, advertising and R&D), five organization measures (employee headcount growth, sales per employee, incentive strength, alignment and fairness) and two drivers of FGV "fade" (beginning FGV and ∆EVA).
  - For a specific industry, the model of ∆FGV can be improved by incorporating additional measures, e.g., in the airline industry, customer satisfaction measured by Net Promoter Score.

Conventional value driver trees highlight the current period drivers of *current* EVA



The IRRCi report on “The Alignment Gap” presents a future value driver tree



Source: Mark Van Clieaf, Karel Leefland & Stephen O'Byrne, "The Alignment Gap Between Value Creation, Performance Measurement and Long-Term Incentive Design", IRRCi Report, November 2014, p. 25, available at www.irrci.org

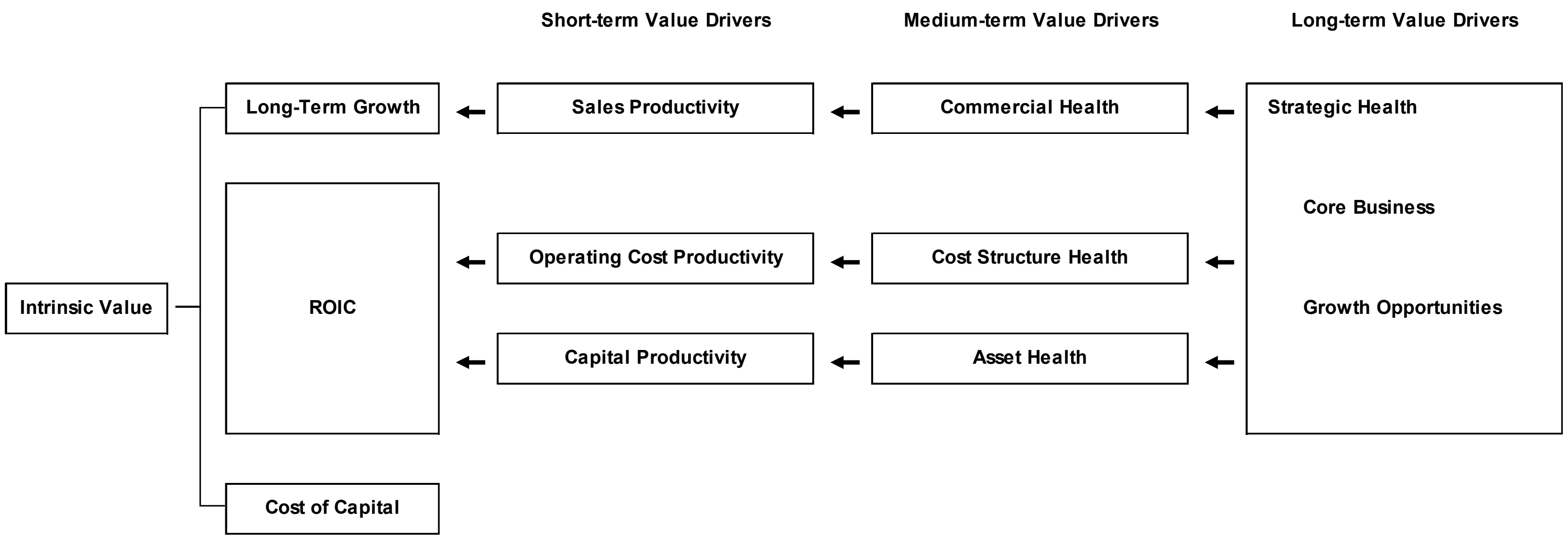
The non-financial measures in Kaplan & Norton's Balanced Scorecard are largely customer value and organization strength

Balanced Scorecard for Mobil North American Marketing and Refining

	Strategic Themes	Strategic Objectives	Strategic Measures
Financial	Financial Growth	Return on Capital Employed	ROCE
		Existing Asset Utilization	Cash Flow
		Profitability	Net Margin Rank (vs. Competition)
		Industry Cost Leader	Full Cost per Gallon Delivered (vs. Competition)
		Profitable Growth	Volume Growth Rate vs. Industry
			Premium Ratio
			Nongasoline Revenue and Margin
Customer	Delight the Customer	Continually Delight the Targeted Customer	Share of Segment in Selected Key Markets
			Mystery Shopper Rating
	Win-Win Dealer Relations	Build Win-Win Relations with Dealer	Dealer Gross Profit Growth
			Dealer Survey
Internal	Build the Franchise	Innovative Products and Services	New Product ROI
			New Product Acceptance Rate
		Best-in-Class Franchise Teams	Dealer Quality Score
	Safe and Reliable	Refinery Performance	Yield Gap
			Unplanned Downtime
	Competitive Supplier	Inventory Management	Inventory Levels
			Run-out Rate
		Industry Cost Leader	Activity Cost vs. Competition
	Quality	On Spec, on Time	Perfect Orders
	Good Neighbor	Improve EHS	Number of Environmental Incidents
			Days Away from Work Rate
Learning and Growth	Motivated and Prepared Workforce	Climate for Action	Employee Survey
		Core Competencies and Skills	Personal Balanced Scorecard (%)
		Access to Strategic Information	Strategic Competency Availability
			Strategic Information Availability

Source: Robert S. Kaplan and David P. Norton, The Strategy Focused Organization: How Balanced Scorecard Companies Thrive in the New Business Environment, p. 41.

McKinsey presents a "Value Creation Tree" that includes long-term value drivers



Source: Tim Koller, Marc Goedhart & David Wessels, Valuation: Measuring and Managing the Value of Companies, 5th Edition, p. 417

The McKinsey discussion of performance management lists many more specific drivers of future value

Advertising spending
Brand strength
Customer satisfaction
Employee retention
Market share
Product pipeline
Product price premium
R&D spending
Sales force productivity
Same store sales growth

Source: Tim Koller, Marc Goedhart, David Wessels, Valuation: Measuring and Managing the Value of Companies, 5th edition, chapter 20

We develop models of ∆FGV using measures of customer value and organization strength and drivers of FGV fade

Measures of Customer Value	Measures of Organization Strength	Drivers of FGV Fade

Used in this report

Sales growth	Employee headcount growth	Beginning FGV
Advertising	Sales per employee	Change in EVA+
R&D	Pay leverage	Change in EVA-
	Pay alignment	
	Pay fairness (i.e., the pay premium at zero value added)	

Not used in this report

Brand strength	Top 5 turnover
Brand value	Director turnover
JD Power quality measures	Talent quotient
Customer satisfaction	Employee satisfaction
Net promoter score	Safety
Customer lifetime value	
Market share	
Same store sales growth	
Product pipeline	
Product price premium	

1. THE EVA MATH
2. OPERATING DRIVERS OF ΔFGV
3. LINKING AVERAGE EMPLOYEE PAY TO ΔFGV

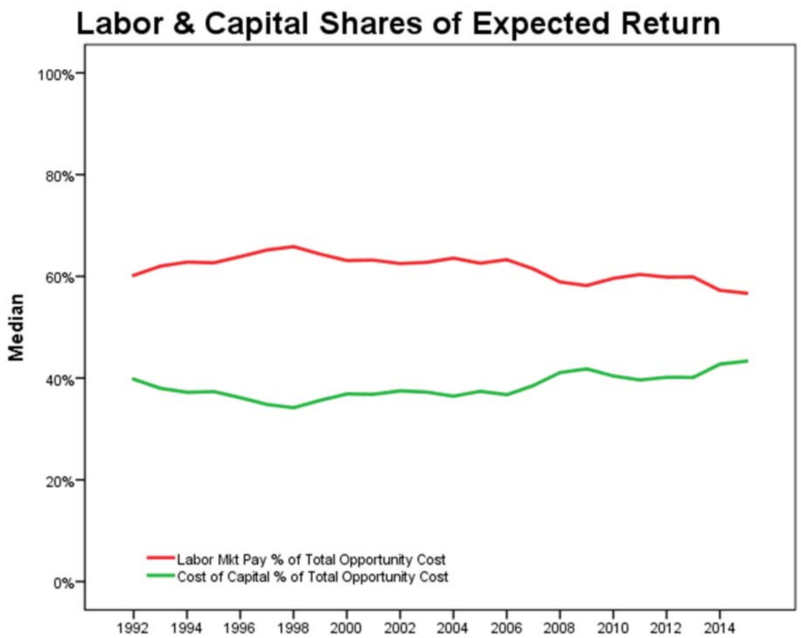
We get better measures of organization strength if we focus on the total value added available to reward investors and employees

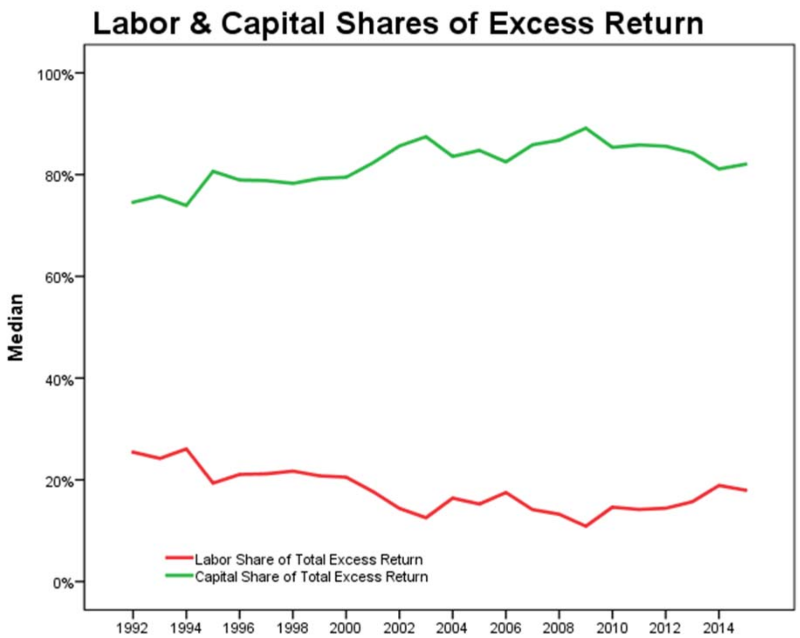
- Incentive strength, alignment with value and fairness for the average employee and the top 5 are key measures of organization strength.
- We get more accurate measures of incentive strength, alignment with value and fairness if we focus on the total value added available to reward investors and employees:
  - NOPAT + after-tax employee pay = total value available to reward investors and employees.
  - WACC x capital + after-tax market pay = opportunity cost of capital and labor.
  - Total value added = total value available to reward investors and employees – opportunity cost of capital and labor.
  - Excess pay = after-tax employee pay – after-tax market pay.
  - Incentive strength = excess pay sensitivity to total value added.
  - Alignment = excess pay correlation with total value added.
  - Unfairness = pay premium at zero total value added.

Comparing the labor shares of the expected and excess returns is a useful staring point in thinking about labor pay leverage

- The sum of NOPAT and after-tax labor expense is the total value available for payment to capital and labor providers.
- We can express capital return, labor value and total value as sums of an expected return and an excess return:
  - Expected return to capital = WACC x capital.
  - Expected return to labor = after-tax market pay.
  - Company expected return = WACC x capital + after-tax market pay for labor.
  - Excess return to capital = NOPAT – WACC x capital = EVA.
  - Excess return to labor = after-tax labor expense – after-tax market pay for labor.
  - Company excess return = excess return to labor + EVA.
- We can calculate capital and labor shares of the expected and excess returns.
  - Labor share of expected return = after-tax market pay / company expected return.
  - Labor share of excess return = labor excess return / company excess return.
- If the labor share of the excess return is significantly smaller than its share of the expected return, labor pay leverage will be low and capital return leverage will be high.

Labor provides 57% of the median company's productive resources but receives only 18% of the median company's excess return



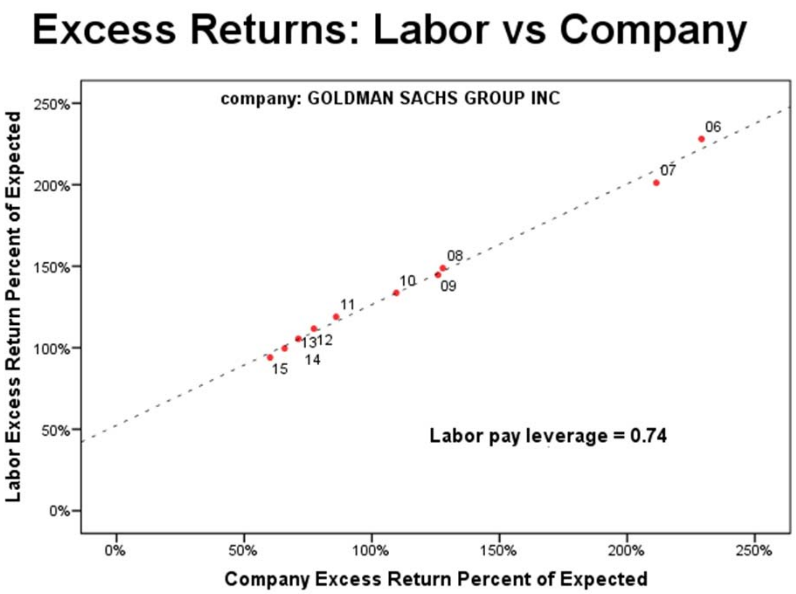


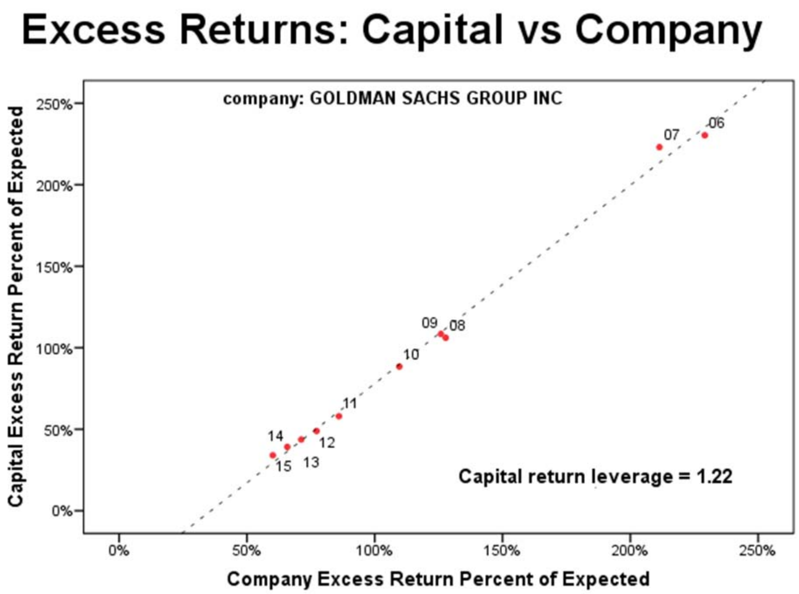
Based on data for S&P 1500 companies.

How we measure labor pay leverage and alignment and capital return leverage and alignment

- We can express the capital, labor and company excess returns as percentages of the expected returns.
  - Labor percent excess return = labor excess return / labor expected return.
  - Capital percent excess return = capital excess return / capital expected return.
  - Company percent excess return = company excess return / company expected return.
- Labor pay leverage is the sensitivity of labor percent excess return to company percent excess return, while labor pay alignment is the correlation of labor percent excess return to capital percent excess return.
- To measure labor pay leverage, we calculate the trendline relating labor percent excess return to company percent excess return using ten years of historical data.
  - We use ten years of cumulative returns rather than annual returns to minimize the impact of timing differences in the pay response to performance.
  - We do a similar calculation of capital return leverage.
  - The intercept of the regression trendline is a measure of unfairness, i.e., the pay premium at zero company excess return.
- Since the weighted average of labor and capital leverage has to equal 1, we adjust the empirical leverage estimates proportionally to make the weighted average of labor and capital leverage equal to 1.

Labor and capital leverage for Goldman Sachs

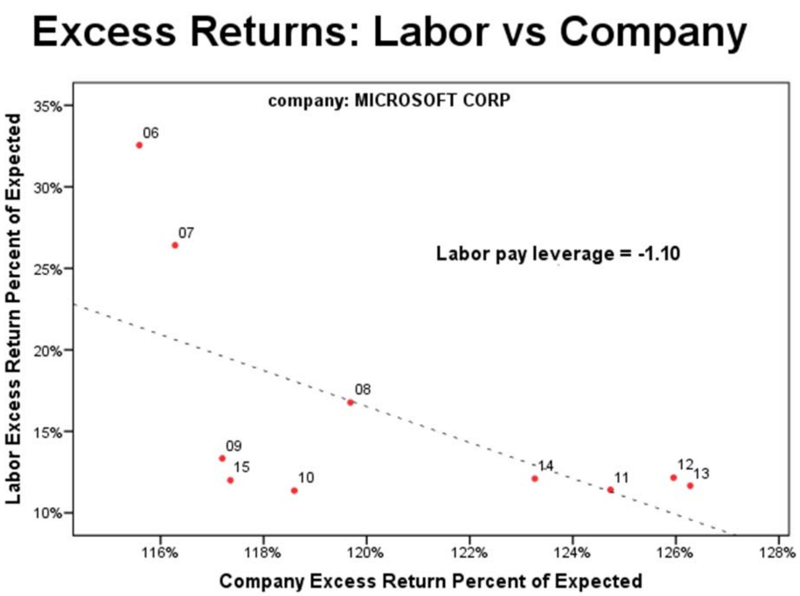


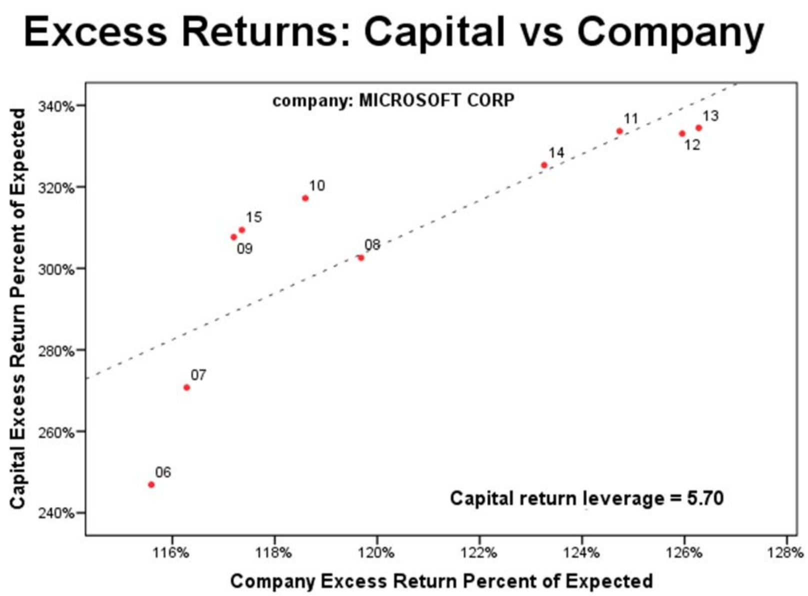


The left panel plots labor excess return on the vertical axis against company excess return on the horizontal axis. Labor excess return is expressed as a percent of labor expected return, i.e., (after-tax actual pay – after-tax market pay)/after-tax market pay, and company excess return is expressed as a percent of company expected return, i.e., ([after-tax actual pay + NOPAT] – [after-tax market pay + WACC x book capital])/(after-tax market pay + WACC x book capital). The ten observations are cumulative labor and company excess returns for the ten years 2006-2015. We use cumulative returns to minimize the impact of timing differences in the labor pay response to company performance. The slope of the trendline is labor pay leverage, i.e., the percent change in after-tax pay associated with a 1% change in company return (i.e., after-tax pay + NOPAT).

The right panel plots capital excess return on the vertical axis against company excess return on the horizontal axis. Capital excess return is expressed as a percent of capital expected return, i.e., NOPAT/WACC x capital.

Labor and capital leverage for Microsoft

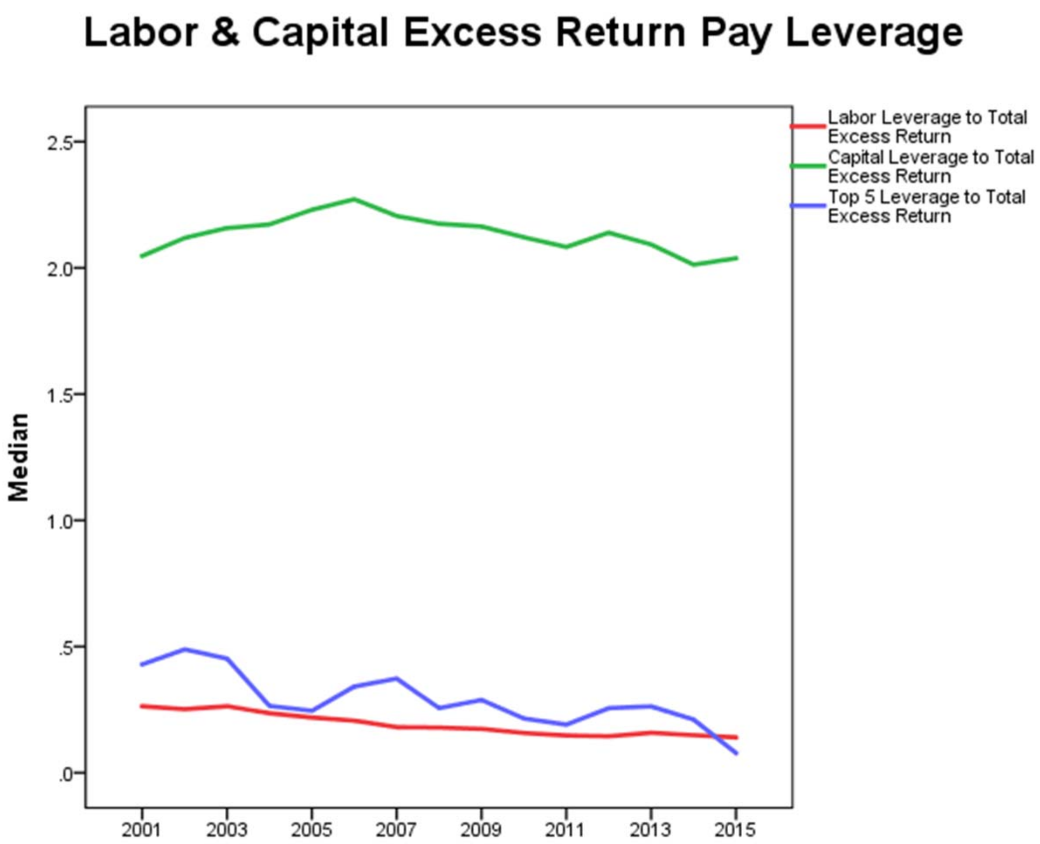




The left panel plots labor excess return on the vertical axis against company excess return on the horizontal axis. Labor excess return is expressed as a percent of labor expected return, i.e., (after-tax actual pay – after-tax market pay)/after-tax market pay, and company excess return is expressed as a percent of company expected return, i.e., (after-tax actual pay + NOPAT)/(after-tax market pay + WACC x book capital). The ten observations are cumulative labor and company excess returns for the ten years 2006-2015. We use cumulative returns to minimize the impact of timing differences in the labor pay response to company performance. The slope of the trendline is labor pay leverage, i.e., the percent change in after-tax pay associated with a 1% change in company return (i.e., after-tax pay + NOPAT).

The right panel plots capital excess return on the vertical axis against company excess return on the horizontal axis. Capital excess return is expressed as a percent of capital expected return, i.e., NOPAT/WACC x capital.

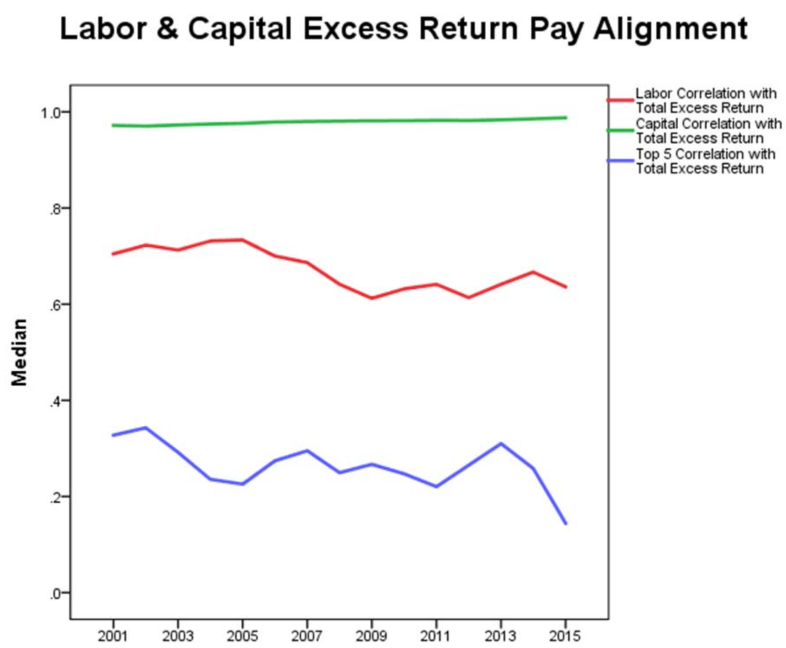
Lower sharing in the excess return makes labor pay leverage much less than capital leverage

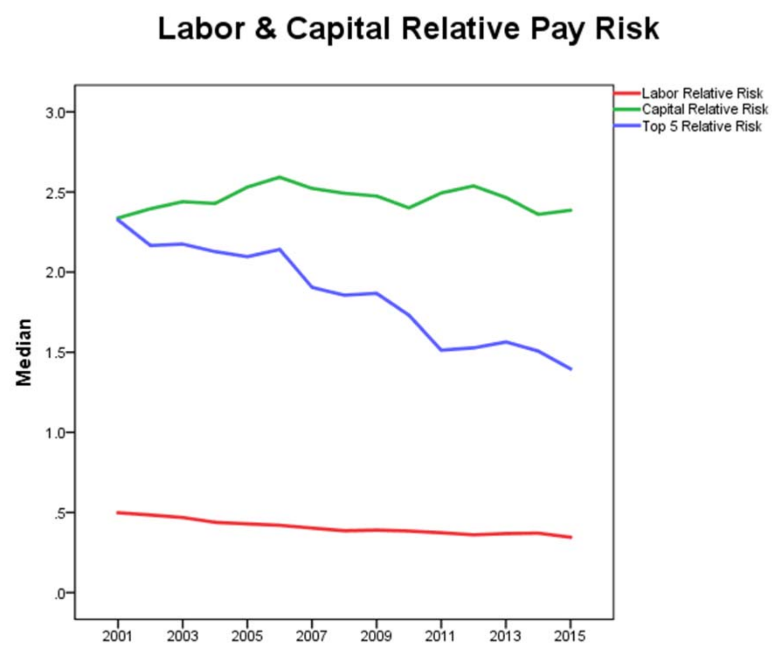


The graph shows median values of labor, capital and top 5 pay leverage for S&P 1500 companies for the past 15 years. Leverage is the slope of the trendline relating factor excess return to the company excess return, where both excess returns are expressed as percentages of the expected return. Leverage is measured over the ten years ending in the year shown.

As a regression trendline, leverage can be expressed as the product of pay alignment (or correlation) and relative pay risk (or the ratio of factor excess return standard deviation to company excess return standard deviation).

Top 5 pay leverage is low due to low alignment, while average employee pay leverage is low due to low risk



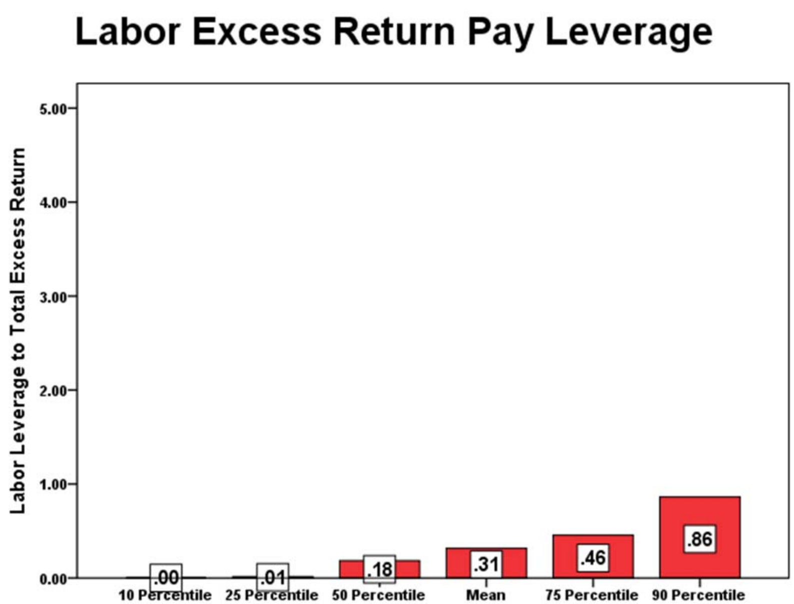


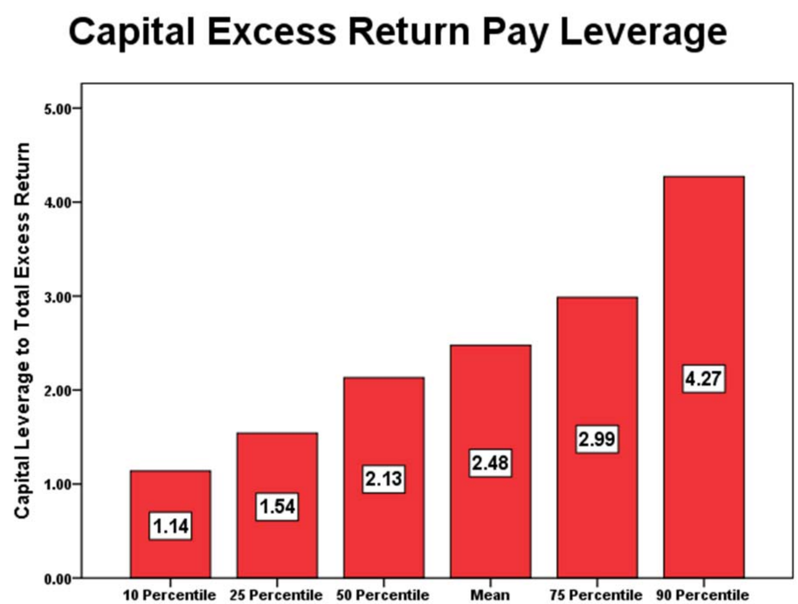
The preceding page showed that median labor and top 5 pay leverage in 2015 are both quite low, 0.14 for labor and 0.08 for the top 5. Pay leverage is the product of pay alignment and relative pay risk. The graphs on this page show that labor pay leverage is low because relative pay risk is low, while top 5 pay leverage is low because pay alignment is low.

The left panel shows the median values of labor, capital and top 5 pay alignment for S&P 1500 companies for the last fifteen years. Alignment is the correlation of the factor excess return with the company excess return, where both excess returns are expressed as percentages of the expected return. Alignment is measured over the ten years ending in the year shown.

The right panel shows the median values of relative pay risk for labor, capital and top 5 pay for S&P 1500 companies for the last fifteen years. Relative pay risk is the ratio of pay/capital return standard deviation to company (i.e., labor + capital) return standard deviation. Pay leverage = pay alignment x relative pay risk.

Labor leverage is rarely greater than capital leverage, but there is a wide range of labor pay leverage to total value added

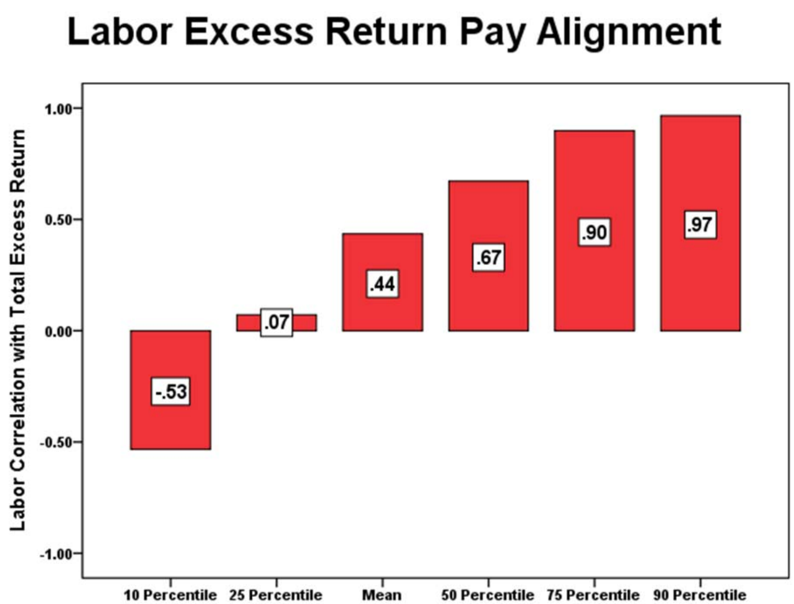


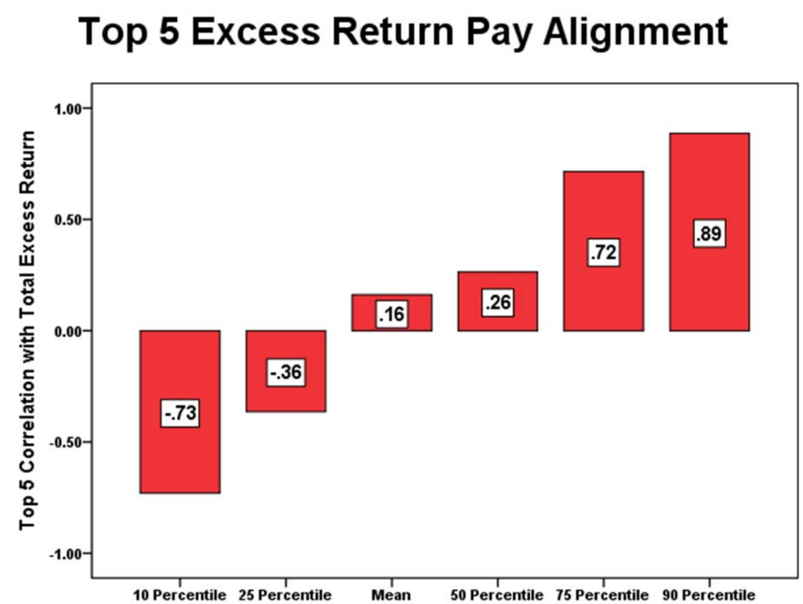


The left panel shows the percentile distribution of labor pay leverage for S&P 1500 companies for all ten year periods ending in 2001-2015.

The right panel shows the percentile distribution of capital return leverage for S&P 1500 companies for all ten year periods ending in 2001-2015.

Median alignment is low, but some companies do have high alignment for average employee pay and/or top 5 pay

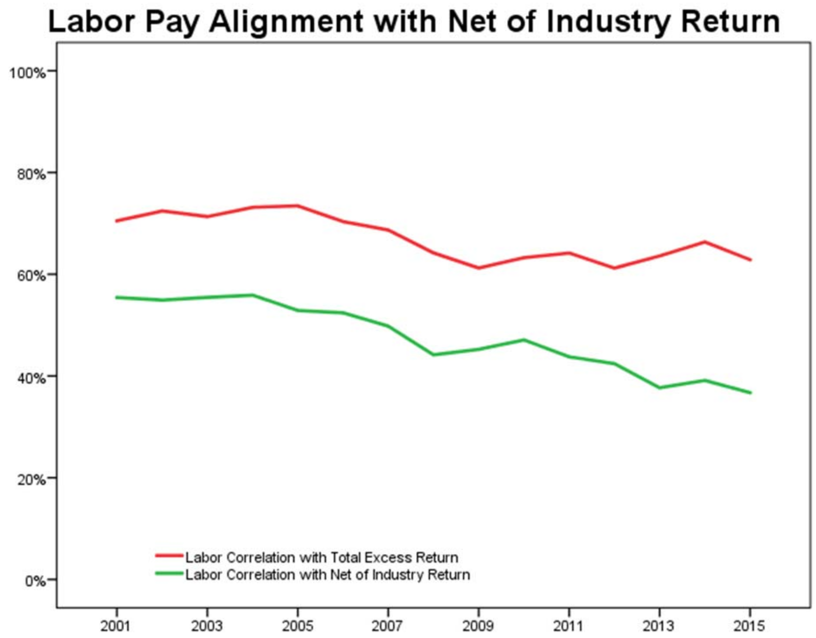


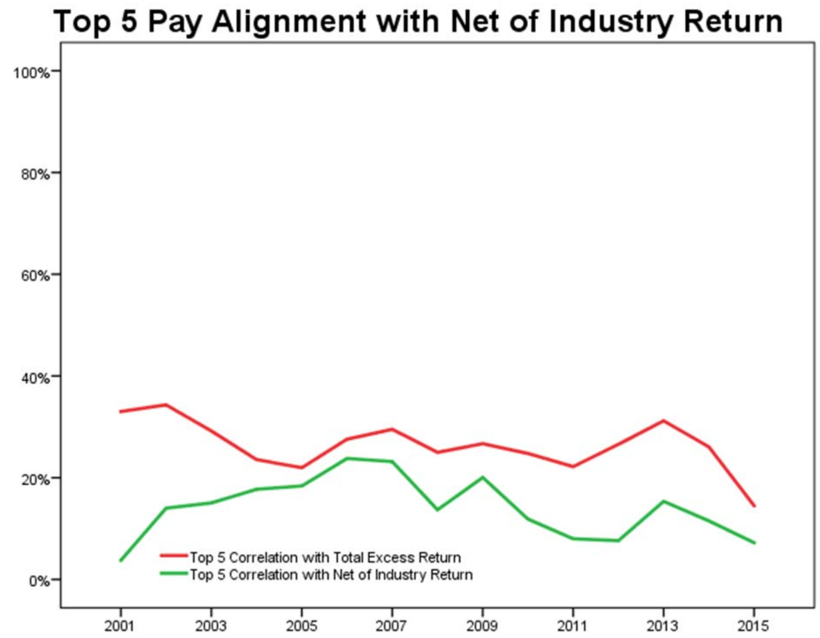


The left panel shows the percentile distribution of labor pay alignment for S&P 1500 companies for all ten year periods ending in the years 2001-2015.

The right panel shows the percentile distribution of top 5 pay alignment for S&P 1500 companies for all ten year periods ending in the years 2001-2015.

Low alignment doesn't seem to be due to insulation from industry risk – median alignment with the net of industry return is even lower





The left panel shows median labor pay alignment for S&P 1500 companies for the ten year periods ending in 2001-2015. The red line shows alignment of labor excess return with company excess return, while the green line shows alignment of labor excess return with company excess return net of industry return. The company excess return net of industry is the company excess return minus its expected return based on industry performance. The right panel shows median top 5 alignment.

To calculate a company's expected return based on industry performance, we first calculate the company's industry beta by regressing company excess returns on industry excess returns (using ten years of history data). The regression intercept is the company's excess return, but we don't use this to calculate the company's expected return because doing so would imply that the company's expected return is its excess return. Instead, we calculate the industry average intercept, which is also industry average performance at zero beta, and then calculate the company's expected return based on industry performance as the sum of industry average performance at zero beta + (company industry beta x industry performance).

What accounts for differences in employee pay leverage and alignment?

- Two broad factors affect alignment and leverage, but their impact is small.
  - Capital intensity, i.e., capital per employee, reduces alignment and leverage, and
  - Headcount growth increases alignment and leverage, but
  - They explain only 4% of the variation in alignment and 5% of the variation in leverage across a sample of 14,975 cases (where each case in a ten year period for one company).
- There are some significant industry differences in alignment (although explaining only an additional 1% of the total variation) and a few more significant industry differences in leverage (explaining an additional 8% of the total variation):
  - There are five industry differences in alignment that are greater than a quarter of average alignment (0.11 = 0.44/4): real estate (+0.18), commercial & professional services (+0.17), utilities (+0.14), banks (-0.13) and transportation (+0.13).
  - There are eight industry differences that are greater than a quarter of average leverage (0.08 = 0.31/4): real estate (+0.39), utilities (+0.28), commercial & professional services (+0.22), transportation (+0.19), food, beverage & tobacco (+0.15), diversified financial (+0.10) and semiconductors (-0.10).
- We constructed a measure of the industry risk absorbed by capital but found that that had a negative effect on alignment or leverage.
  - Our measure of industry risk absorbed by capital is the difference (if positive) between capital leverage to the industry return and capital leverage to the net of industry return.
  - This measure had a negative impact on alignment and leverage, but a modest positive effect on employee leverage to the net of industry return.

Employee alignment and pay premium have statistically & economically significant effects on FGV

- We developed a model of ten year ΔFGV using 14,844 cases (each case is one ten year period for one company). The model explains 52% of the variation in ΔFGV as a percent of beginning capital using:
  - Four measures of FGV fade:
    - ΔEVA+/WACC, ΔEVA-/WACC, FGV[-10], FGV[-10] x EVA+ Co[-10].
  - Five measures of customer value:
    - Δsales, sales x EVA+ Co[0], after-tax ΔR&D/WACC, after-tax Δadvertising/WACC and Δsales due to new employee growth (i.e., (sales/employee)[0] x Δemployees).
  - Two measures of organization strength:
    - Employee pay alignment x Δsales due to new employee growth and employee pay premium at zero excess return x Δsales due to new employee growth.
- The organization strength measures are statistically significant and economically significant:
  - The t-statistics are -9.3 for the employee pay premium and 5.5 for employee pay alignment.
  - The impact of a two standard deviation change (e.g., from -1σ to +1σ) is -71% of beginning capital for the employee pay premium and +58% of beginning capital for employee pay alignment.
  - The impact of a four standard deviation change (e.g., from -2σ to +2σ) is -143% of beginning capital for the employee pay premium and +116% of beginning capital for employee pay alignment.

Pay leverage and the pay premium at zero excess return have statistically & economically significant effects on relative TSR

- All employee and top 5 pay leverage have positive effects on 10 year relative TSR, while the all employee and top 5 pay premiums at zero excess return have negative effects on 10 year TSR.
  - The sample is 14,556 cases for S&P 1500 companies (each case is one ten year period for one company).
  - We measure all employee pay leverage as the difference between employee pay leverage and capital leverage.
    - Employee and capital leverage are mathematically related, i.e., the weighted average of the two leverages must equal 1, so it's not appropriate to treat them as two independent variables.
  - We multiply the all employee and top 5 pay premiums by the average labor percent of opportunity cost to capture the relative magnitude of labor costs.
- The four variables explain only 1.8% of the variation in ln(1 + 10 year relative TSR), but they are statistically significant and economically significant.
  - The t-statistics are -11.4 for the top 5 pay premium, 10.4 for labor pay leverage – capital pay leverage, 8.1 for top 5 pay leverage and -2.4 for the labor pay premium.
  - The impact of a two standard deviation change (e.g., from -1σ to $+1\sigma$) is -18.8% for the top 5 pay premium, +20.4% for labor pay leverage – capital pay leverage, 1.2% for top 5 pay leverage and -4.2% for the labor pay premium.
  - The impact of a four standard deviation change (e.g., from -2σ to $+2\sigma$) is -34.1% for the top 5 pay premium, +44.9% for labor pay leverage – capital pay leverage, 2.4% for top 5 pay leverage and -8.2% for the labor pay premium.

Methodology detail: how we estimate average employee pay for companies that don't report total compensation expense

- All S&P 1500 companies report the total number of employees and total stock compensation, but only 16% report total labor expense (which we need to calculate total cash compensation):
  - 67% of financials (GICS sector 40), 17% of industrials (GICS sector 20) and 12% of utilities (GICS sector 55) report total labor expense, but
  - Less than 10% of the companies in the other 8 sectors do so, ranging from 9.7% for consumer discretionary (GICS sector 25) to 3% in information technology (GICS sector 45).
- We develop a regression model to estimate cash compensation per non-top 5 employee:
  - The sample is 6,694 company years of data from companies that do report total labor expense.
  - Our explanatory variables are (1) sales per employee, (2) the cash compensation of the #5 executive and (3) dummy variables for the 11 GICS sectors, 14 of the 24 GICS industry groups and 22 of the 68 GICS industries. We limit the dummy variables to industry groups with 100+ cases and industries with 50+ cases.
  - The model explains 76% of the variation in cash compensation per average employee with sales per employee and the pay of the #5 executive explaining 56% of the variation and the dummy variables explaining an additional 20%.
  - Predicted total labor expense (= predicted cash compensation per non-top 5 employee x non-top 5 employees + total non-top5 stock compensation + top 5 total compensation) explains 99.9% of the variation in actual labor expense (in a log-log model) with a standard error of 3.4%.

Methodology detail: how we estimate average employee market pay

- Average employee pay differs from top 5 pay in four important ways:
  - It's much less variable: average employee pay has only 55% of the variability of top 5 pay (using the standard deviation of log pay),
  - It's much less sensitive to company size:
    - Size explains only 2% of the variation in average employee pay vs 44% for top 5 pay, and
    - A doubling in company size increases average employee pay by only 5% vs 38% for top 5 executives.
  - It's much more sensitive to industry: industry explains 64% of the variation in average employee pay vs 9% for top 5 pay.
  - It's experienced much less pay inflation over the past 24 years: inflation adjusted pay, controlling for company size, is 27% higher than it was in 1992 vs 200% for top 5 executives.
- To calculate average employee market rates, we do separate regressions for each of the 68 GICS industries using inflation adjusted sales and dummy variables for time to explain inflation adjusted average employee pay.
  - Company size has a negative impact on pay in 11 of the 68 GICS industries. In these industries, we drop sales from the market rate model.

Steve O'Byrne and Shareholder Value Advisors

- Stephen F. O'Byrne
  - President of Shareholder Value Advisors since 1998
  - Senior Vice President, Stern Stewart & Co., 1992-1998
  - Consultant and Principal, Towers Perrin, 1979-1992
- Shareholder Value Advisors is a consulting firm that:
  - Helps companies increase shareholder value through better performance measurement, incentive compensation and valuation analysis, and
  - Has a strong commitment to research and writing:
    - *EVA and Value-Based Management* by Professor S. David Young of INSEAD and O'Byrne (McGraw-Hill 2001)
    - A Better Way to Measure Operating Performance (Or Why the EVA Math Really Matters), O'Byrne, *Journal of Applied Corporate Finance* (Summer 2016)
    - Measuring and Improving Pay for Performance: Board Oversight of Executive Pay in *The Handbook of Board Governance* (Wiley 2016)
    - The Alignment Gap Between Creating Value, Performance Measurement and Long-Term Incentive Design by Mark Van Clieaf, Karel Leeflang and O'Byrne, *IRRCi* (Nov 2014)
    - Three Versions of Perfect Pay for Performance (Or The Rebirth of Partnership Concepts in Executive Pay), O'Byrne, *Journal of Applied Corporate Finance* (Winter 2014)
    - The Three Dimensions of Pay for Performance, *WorldatWork Journal* (4^{th} Quarter 2013)
    - How "Competitive Pay" Undermines Pay for Performance (and What Companies Can Do to Avoid That), O'Byrne and Mark Gressle, *Journal of Applied Corporate Finance* (Spring 2013)
    - Achieving Pay for Performance, *Conference Board Director Notes* (December 2012)