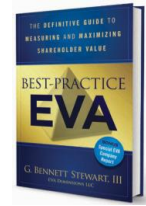


What Determines TSR – Executive Summary

By Bennett Stewart, CEO, EVA Dimensions LLC, Author of Best-Practice EVA

(Download the full report at www.evaDimensions.com/EVA2TSR/report)



Total shareholder return has become a more important metric in recent years, chiefly because Institutional Shareholder Services (ISS) has announced that it is using TSR to test executive pay plans. But TSR offers no insights into the business performance that is driving it, so it gives managers no real guidance on how to do better. A proxy measure is needed, one that is strongly linked with TSR and that also provides management teams with a practical way to make decisions that will improve it.

I believe the solution lies in using EVA, or economic value added, which is the term I use to describe a firm's economic profit—its profit measured according to economic principles and for the purpose of maximizing value, not following accounting rules. It is the performance measure that correlates most highly with the TSRs they generate and is one that managers can actually manage. It is also a terrific metric to use in bonus plans.

In brief, EVA measures quality earnings after deducting a priority return for owners, including the shareholders. Put another way, it measures profit net of a full weighted-average cost-of-capital charge on the firm's net business assets. It rewards management for lean operations and rapid asset turns that free up expensive capital. And unlike ROI, it gives credit for all growth and all investments that return above the cost of capital, even if the returns are not as high as what the company is currently earning. In short, it gets the incentive right at the margin, and makes each decision stand or fall on its own merits and against a relevant, market-set standard of excellence.

EVA also tracks value more closely, and generates better incentives for managers, by clearing up numerous accounting distortions. One example: instead of expensing outlays for innovation (R&D) and brand-building advertising, the spending is written off over time, and interest on the unamortized balance is charged at the cost-of-capital rate. That discourages managers from myopically cutting the spending just to make a budget goal, and it motivates them to increase investments in innovation and market presence if they think it will generate a decent return over the cost of capital. Another example is that charges incurred to restructure a business and streamline costs are added back to earnings and added to balance sheet capital, subject to the capital charge. That way, managers want to fail fast—no charge stands in their way of exiting a losing proposition—and to fail well—to make sure any new money invested in a restructuring covers the cost of the capital, just like any other investment. Other adjustments make EVA an even better and more comparable measure of real economic profit that has a surer connection with value.

EVA drives TSR because it has a wholly predictable, actually *mathematical*, link with creating value. The link is net present value. As finance theory holds, the intrinsic value of every company is the net present value, or NPV, of the future cash flows it will generate. That is well known. What is not so well known, but crucial, is that for any given set of assumptions about future operations, the present value of forecasted EVA always is *exactly the same* as the net present value of forecasted cash flows. That is because EVA automatically sets aside the return that must be earned in each period to recover the value of the capital that has been or will be invested. As a result, EVA always discounts to the value *added* to the invested capital, which is the same thing as the *net* present value. And it is only by increasing the firm's net present value that the shareholders are rewarded with an outstanding TSR.

At the corporate level, NPV is measured with a sister metric to EVA that is called MVA, standing for market value added. MVA is the spread between a firm's market value, given its share price, and the book value of capital invested in the business. For example, if a firm has a total value of \$1 billion, and has invested \$600 million in capital, its MVA is \$400 million, the difference. The MVA spread is a very significant measure in its own right, more significant than TSR in many ways. Indeed, the main premise and finding of our paper is that TSR is simply a byproduct of maximizing MVA, which ought to be every company's most important financial goal.

The reason is that MVA measures the wealth a company has created for its owners since the start of the company. It does so by comparing the total cash that the investors have put or left in the business with the present value of the cash that they can expect to take out of it. Also, as has been said, MVA is the same thing as the corporate aggregate NPV. It is literally a summing up in the market's mind of the net present value of all investments, those the company already has made plus the present value of those deemed likely to materialize down the road. When a firm's MVA increases, it is triply significant. That shows that the owners' wealth has expanded, that the firm's NPV has increased from some improvement in its operational excellence and enlargement of its strategic opportunities, and, third, that the firm's TSR has increased, too. And what does all that boil down to? Increasing EVA. *Increasing EVA is the key to creating wealth, maximizing NPV, and generating TSR, all at the same time!*

Let's take an example of how this works. Consider a business that is just breaking even on EVA, and that it is forecast to continue just covering its cost of capital and generating no EVA forever. This is typical of many mature industries where companies are unable, for long anyway, to differentiate their offering with better value or lower cost. A firm like this may actually continue in business indefinitely and expand sales and grow accounting profits forever, and even at an impressive clip. But if it is only just covering its full cost of capital, then it will always be worth just the book value of its invested capital. No value will ever be added to the owners' investment in the business. The firm's NPV and MVA will stay stuck at zero, indefinitely. But what about TSR? Will that be zero, too? Not at all. Although no value is created, no return is lost. The TSR that is earned in this example always just matches the cost of capital. The TSR just meets the market's required return for risk, and it comes right from the return that the company is actually earning on the investments in its business.

The prior case sets the stage for the obvious conclusion. The only way that a company can enlarge its owners' wealth, and reward them with a premium value on their investments, and give them a superior TSR that is over the basic market-expected rate, is to do better than break even on EVA. It must produce positive EVA profits by making investments that generate returns over the cost of capital and that thus outperform what the investors could otherwise expect to earn on their own. And the more EVA profit the firm produces, and the faster the EVA grows, and the longer and surer it expands, the greater will be the wealth creation, the NPV, and the TSR, all at the same time.

The implications of this are enormous. Because managing for the highest possible EVA is the same thing as managing for the highest NPV and MVA at the corporate level, maximizing EVA has to produce the highest TSR over time *as a strictly mathematical matter*. TSR is at root a function not of creating value, but of creating more value than the capital that has been invested. It is always a function of producing and increasing NPV and MVA, which is always a function of earning and increasing EVA. It looks like shareholder returns come from dividends and changes in share price. But that is only how the return is measured, how it is defined, and is not the underlying cause of it. In truth, dividends and share gains are just messengers. They only transmit the shareholder return that is determined by a firm's ability to earn EVA and to increase its EVA as a means to increase its MVA.

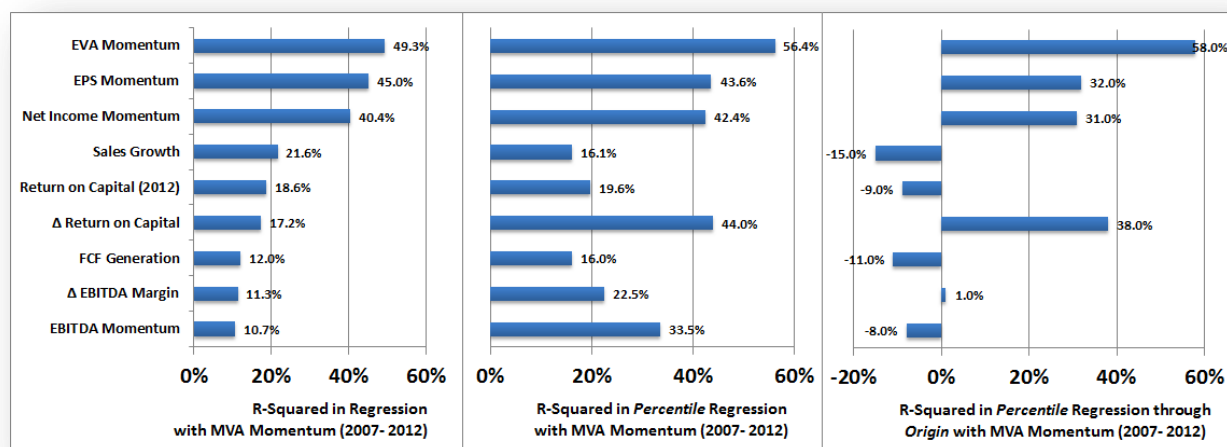
The full report lays out the algebraic derivation in easy-to-follow steps. It begins by showing how, if one starts by defining TSR as dividends and price appreciation, that TSR is really a function of three things, each of which is expressed as a yield on the firm's initial market cap. The first is getting back the cost of capital deducted in the capital charge (which is what allows even a zero EVA firm to produce an acceptable TSR for the risk). The second is earning EVA, like a dividend, and the third is increasing MVA, like a capital gain. Above just generating a commodity return, TSR is always a function of earning economic profit and increasing NPV and enhancing owner wealth. We tested this formula using actual data on the S&P 500, and found that the correlation is perfect. It is 100%. The math works. The derivation is indeed true by definition. This is sensible and reassuring. It says that TSR is potentially manageable and conforms to basic economic principles.

The next step in the study was to examine what drives the changes in MVA, which is the third and most elusive component in the TSR formula. Unlike EVA, which is computed right from corporate financial statements, the change in MVA is a market measure that is subject to the vagaries of investor perceptions and market conditions, and thus it is not directly under management's control. Hence the need for a corporate performance metric that is a strong proxy for the change in a firm's aggregate NPV, and that can be used to guide decisions and develop bonuses that will lead managers on the path to earning a higher TSR. There is every reason to expect that changes in EVA will best explain the changes in MVA, for EVA discounts to MVA as a mathematical matter, and there is no reason to expect any other measure will explain it, since there is no logical or economically grounded formula that connects them to MVA.

To answer the question empirically, we asked which financial measure best explained the increase in MVA, that is, the increase in the firms' market values net of the increases in their invested capital, expressed as a percent of their base period sales to make it a comparative ratio statistic. The ratio statistic is called MVA Momentum, and it is a measure of the rate of growth in the firm's aggregate NPV over the five-year interval. It is the determinant of TSR that needs to be explained. We tested growth in EVA, EPS, EBITDA, and sales, plus profit margins, return on capital and changes in the returns, and free cash flow generated net of investment spending. Of all these, the growth in EVA—what we refer to as EVA Momentum (it's the change in EVA over the 2007 to 2012 interval, divided by 2007 sales)—was the clear winner, with the greatest explanatory power.

The variables were regressed one by one against MVA growth in three ways. The first used the raw values. In the second, the variables were first ranked and the regression was performed on the percentile values. The third also used the percentile rank values but with the added requirement that the regression pass through the origin, that is, that the zero percentile scores for both variables must be the starting point on the regression line.

The percentile regressions test the ability of each variable to rank order MVA Momentum (and thus TSR) as opposed to literally predicting each observation. Requiring the percentile regression to pass through the origin sensibly asks how well the percentiles scores line up when they are forced to intersect at the starting percentile ranks and not arbitrarily along the way. That is the strictest test of alignment and will be accorded the most significance. After all, ISS will use TSR to rank pay versus performance versus peers, so the real question is which corporate performance variable is best rank correlated with the change in NPV and thus TSR. The slope of that regression line will also be telling. The closer it is to 1.0, the more MVA Momentum and the explanatory variable are aligning all through the percentile ranks. The findings are summarized in the chart and table below.



Metric	Raw Regression	Percentile Regression	Percentile through Origin	
			Origin	Slope
EVA Momentum	49.3%	56.4%	57.7%	1.00
EPS Momentum	45.0%	43.6%	32.0%	0.97
Net Income Momentum	40.4%	42.4%	31.0%	0.95
Sales Growth	21.6%	16.1%	-15.0%	0.89
Return on Capital (2012)	18.6%	19.6%	-9.0%	0.89
Δ Return on Capital	17.2%	44.0%	38.0%	0.89
FCF Generation	12.0%	16.0%	-11.0%	0.85
Δ EBITDA Margin	11.3%	22.5%	1.0%	0.86
EBITDA Momentum	10.7%	33.5%	-8.0%	0.85

EVA Momentum consistently has the highest explanatory power as indicated by R-squared. It explained from 50% to 58% of the variation in MVA growth rates across the broad universe of companies. While that is obviously quite impressive—one performance variable was able to explain more than half the variation in the rate of wealth creation across companies operating in very different businesses—the correlation was not perfect, and realistically, could never be. That is because the MVA at the end of the five year period (which governs the change in MVA over the period) is the present value of the market’s *forecast* for EVA extending beyond that period. In other words, MVA is influenced by changes in the firm’s business prospects extending well into future periods, and past trends in EVA (or anything else) can never fully predict that.

EVA Momentum is also by far the best at the percentile regression, which means it’s the very best measure to rank order TSR. Moreover, the slope of the EVA Momentum percentile regression with MVA Momentum is exactly 1.0 where all other measures have slopes less than 1.0. EVA is not only the best at explaining the rank order of wealth creation. It is the most correctly aligned with it as well.

Skeptics may find it hard to believe that TSR is determined by EVA when investors do not in the main seem to focus on EVA. But it is not necessary that investors focus on EVA per se (although increasingly, they are). So long as investors are pricing stocks based on discounting cash flows, it will be true that EVA will be the best period measure of a firm’s progress at increasing its net present value and driving TSR, for the two always discount to the same thing. To see why, consider your choice to pay back a \$1,000

loan. You could pay it back right away or pay it back over time with interest. As long as you pay it back with a market rate of interest on the outstanding balance, the present value is the same.

What is the analogy? Cash flow deducts a company's capital investments as spent, right up front. It concentrates the investment cost in one period. EVA, in contrast, deducts capital investment over time, through cost of goods sold flowing out of inventories and with the depreciation of the fixed assets. But in exchange, EVA also deducts in each period the market rate of interest—the cost of capital—on the outstanding and as yet un-recouped capital balance appearing on the balance sheet. The present value is *always* the same either way. Yet EVA is better than cash flow as a measure of the added value (and as a management tool) because it better matches the timing of cost and benefit. It meters out the total principal and interest charge for capital over the time horizon that the capital is expected to contribute to profits, just as if the balance sheet assets have been rented, which means that the period-to-period change in EVA is a far more reliable indication of whether a firm's net present value, and hence its MVA, is expanding or contracting.

Returning to the study, one example where EVA gave the right answer and all the other measures were wrong is Amazon. AMZN aggressively invested so much money in growth over the five-year period studied that its net cash flow was negative and its return on capital declined. To top it off, management hiked the firm's advertising and R&D budgets from 7.5% of sales to 11% in recent years, a bold strategic move that sent the company's reported earnings into the red in 2012. By every conventional measure, Amazon looked like it was failing, and yet, by accounting for the spending as investments and judging returns against the cost of capital, EVA showed that Amazon was really winning. EVA increased each year and in hand with tremendous stock price appreciation.

First Solar represents the opposite case. Over the five years ending in 2012, EPS exploded from \$1.87 to \$5.74 and yet the firm's EVA plummeted from an \$81 million win to a \$7 million loss. How did First Solar's MVA respond? It shrank, considerably. It followed EVA down, not EPS up. First Solar lost a whopping \$19 billion in owner wealth over the interval, and generated a very negative TSR in the process. First Solar is admittedly an extreme example of how EPS can go wrong in characterizing corporate performance and explaining TSR. But in our study we found numerous examples of companies that had inflated their book earnings. In fact, out of a total of 198 companies in the S&P 500 that had produced the most significant growth in EPS over the five years, 33 of them, or one out of six, produced negligible EVA Momentum or worse. And of those 33 firms where EPS Momentum was strongly positive and significantly overstated EVA Momentum, 23 suffered declines in MVA. They destroyed owner wealth even as their EPS increased materially. Of the remaining 10 firms, 2 generated less MVA Momentum than the S&P 500 average and 5 just matched the average.

How did EPS get it so wrong so often? For some, including First Solar, it was balance sheet investments that failed to cover the full cost of capital, or just to match it. Others had borrowed to buy back stock or to finance an acquisition, and temporarily used a cheap funding source to goose EPS. Still others used a restructuring to erase on-going costs that EVA did not ignore. And so on. Put simply, EVA is the best measure to look consistently through distortions like those and to measure the real economic substance of business performance. By considering the full cost of capital and repairing accounting deficiencies, EVA provides the best period-to-period measure of corporate success in ways that directly contribute to increasing NPV and driving TSR. This is true in principle, and now, confirmed in practice.

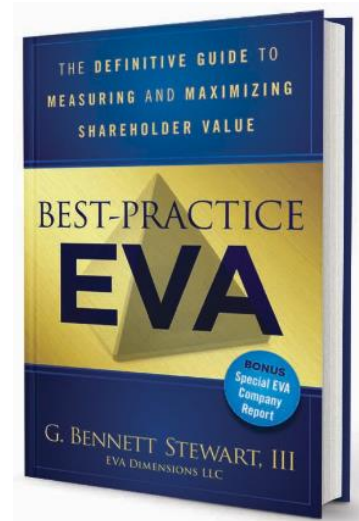
This is actually remarkably good news. Boards can indeed reward managers for increasing EVA and be highly confident that their incentive plans will align pay with TSR, and that they are at the same time motivating managers for making the best decisions. With EVA as the carrot, directors prod managers to

cut costs relentlessly but also intelligently, to invest capital carefully and with accountability, to use assets wisely and leanly, and to drive for all the profitable growth opportunities over the cost of capital that exist and not just to milk businesses for high margins and returns. Those are all the key messages that need a voice, wrapped up in one measure. As important, EVA, or actually, EVA Momentum, is the pinnacle score in a management framework that can provide every manager with the practical, easy-to-understand information they need to make the most value-enhancing decisions.

The bottom line is this. If TSR is the question, EVA is the answer.



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EVA Dimensions has transformed EVA into a complete ratio-based management and valuation framework under the banner of EVA Momentum, which is a special way to measure the growth rate in economic profit. The new Momentum measure accurately consolidates overall improvements in business model productivity and the pace of profitable growth, and it unfolds in steps to reveal all the underlying factors that managers can use to improve performance and increase shareholder value and drive total shareholder return. The new EVA ratios replace other ratio indicators – such as profit margins, growth rates and return on investment -- with a management framework that is simpler to understand, more informative, and more inherently value-based.

EVA Dimensions' software tools, global data bases, and valuation and stock rating models, coupled with its training and support services, provide corporate clients with better techniques to increase shareholder value and institutional fund managers an edge in earning alpha.