

EVA: to promote value-maximizing behavior in Corporate Managers

Rahul Verma
Faculty member
Skyline Institute of Engineering and Technology,
Greater Noida, UP

Abstract

An accepted financial axiom is that the role of managers is to maximize the wealth of shareholders by the efficient allocation of resources. In order to operationalise this objective, shareholder wealth is traditionally proxied by either standard accounting magnitudes (such as profits, earnings and cash flows from operations) or financial statement ratios (including earnings per share and the returns on assets, investment and equity). This financial statement information is then used by managers, shareholders and other interested parties to assess current firm performance, and is also used by these same stakeholders to predict future performance.

Unfortunately, the empirical literature to date suggests that there is no single accounting based measure upon which one can rely to explain changes in shareholder wealth. This is despite the fact that such a measure would prove invaluable to the various parties interested in aspects of firm performance.

For years, investors and corporate managers have been seeking a timely and reliable measurement of shareholders' wealth. With such a measure, investors could spot overpriced stocks, lenders could gauge the security of their loans and managers could monitor the profitability of their factories, divisions and firms. One professedly recent innovation in the field of internal and external performance measurement is a trade-marked variant of residual income (net operating profits less a charge for the opportunity cost of invested capital) known as economic value-added (EVA®).

Key Words: EVA, Priced Stocks, Accounting Magnitude, Residual Income

The Concept of Economic Value-Added (EVA)

Despite the relatively recent adoption of EVA® as an internal and external financial performance measure, its conceptual underpinnings derive from a well-established microeconomic literature regarding the link between firm earnings and wealth creation . For much of this history, at least since Alfred Marshall's *Principles of Economics*, the focus of analysis has been on adjustments to accounting earnings to reflect the opportunity cost of capital, primarily because the unadjusted measure can be a misleading indicator of performance in both theory and practice.

In the seminal contribution, Marshall (1920) concluded, “the gross earnings of management which a man is getting can only be found after making up a careful account of the true profits of his business, and deducting interest on his capital”. Later, the desirability of quantifying ‘economic profit’ as a measure of wealth creation was operationalised “as the difference between two quantities, net earnings and the cost of capital”. This measure of ‘residual income’ is then defined in terms of after-tax operating profits less a charge for invested capital which reflects the firm’s weighted average cost of capital. Close parallels are thereby found in the related (non-trademarked) concepts of ‘abnormal earnings’, ‘excess earnings’, ‘excess income’, ‘excess realizable profits’ and ‘super profits’ .

EVA is based upon something we have known for a long time: What we call profits, the money left to service equity, is usually not profit at all. Until a business returns profit that is greater than its cost of capital, it operates at a loss. Never mind that it pays taxes as if it had a genuine profit.

The enterprise still returns less to the economy than it devours in resources... Until then it does not create wealth; it destroys it. Just as EVA® bears a close semblance to non-trademarked financial performance measures, it is also closely related to performance metrics offered by other consultants. For example, the Chicago-based Boston Consulting Group, Price Waterhouse and HOLT Value Associates employ variations of Cash Flow Return on Investment or CFROI. CFROI is typically calculated in two steps. First, the inflation-adjusted cash flows available to all capital owners in the firm are measured and compared with the inflation-adjusted gross investment made by the capital owners. Second, the gross

cash flow to gross investment is translated into an internal rate of return by adjusting for the finite economic life of depreciating assets and the residual value of non-depreciating assets (such as land and working capital).

In addition, there are many other value-based metrics that are even more closely related to EVA®. In fact, the legal conflict between Stern Stewart's EVA® and KPMG's 'Economic Value Management' over the proprietary nature of EVA® suggests even closer, less discernible differences in these products .

The fact is, EVA, CFROI, and all the others are premised on fundamental economics that 20 years ago was called residual income". It is this perception of EVA® as "a practical and highly flexible refinement of the economists' concept of 'residual income' - the value that is left over after a company's stockholders (and all other providers of capital) have been adequately compensated" that provides the basis for the following discussion.

Calculating Economic Value-Added

Economic value-added (EVA®) is an accounting-based measure of operating performance. It thereby has close parallels with two sets of alternative performance measures. The first set consists of closely related, value-based measures and includes, most notably, the Stern Stewart measure of Market Value-Added or MVA®. Stern Stewart calculates MVA "...by adding the capital taken in by a company during its lifetime through securities offerings, loans, and retained earnings, [making] some EVA-like adjustments (such as capitalizing and amortizing R&D expenditures), and subtract[ing] the total from the current value of the company's stock and debt". The main distinguishing feature of MVA® is that it is largely a cumulative measure and therefore communicates the market's present verdicts on the net present value (NPV) of all the firms' past, current and contemplated capital investment projects .However, in contrast to MVA®, EVA® is a measure that focuses on firm performance over a specific period. It therefore has a similar time perspective to the second set of firm performance measures; namely, earnings before extraordinary items (*EBEI*), net cash flow from operations (*NCF*) and residual income (*RI*).

Starting with *EBEI* as the most basic indicator of firm value we have:

Economic Value-Added: A Review of the Theoretical and Empirical Literature

$$EBEI = NCF + ACC \quad (1)$$

Where *EBEI* is the sum of net cash flow from operations (*NCF*) and accruals (*ACC*), *ACC* is defined as total accruals relating to operating activities and is composed of depreciation, amortisation, changes in non-cash current assets, changes in current liabilities, and changes in the non-current portion of deferred taxes.

Net operating profit after tax (*NOPAT*) is a closely related indicator of current and future firm performance and is calculated by adding after-tax interest expense (*ATI*) to *EBEI*

1. $NOPAT = EBEI + ATI = NCF + ACC + ATI$
2. As indicated, the most significant difference between *EBEI* (1) and *NOPAT* (2) is that the latter separates operating activities from financing activities by including the after-tax effect of debt financing (interest expense). As a measure of operating profit, no allowance is therefore made in (2) for the financing activities (both debt and equity) of the firm. One measure that does is residual income (*RI*) where operating performance is reduced by a net charge for the cost of all debt and equity capital employed: $RI = NOPAT - (WACC \times CAP) = NCF + ACC + ATI - CC$
3. where *WACC* is an estimate of the firm's weighted average cost of capital, and capital (*CAP*) is defined as assets (net of depreciation) invested in going-concern operating activities, or equivalently, contributed and retained debt and equity capital, at the beginning of the period. The product of the firm's *WACC* and the amount of contributed capital thereby forms a capital charge (*CC*) against which *NOPAT* is reduced to reflect the return required by the providers of debt and equity capital. A positive (negative) *RI* indicates profits in surplus (deficit) of that required by the suppliers of debt and equity capital and is associated with an increase (decrease) in shareholder wealth. The primary point of departure for *EVA* from *RI* is the adjustment of both *NOPAT* and *CAP* for purported 'distortions' in the accounting model of performance. *EVA*-type adjustments are made to both accounting measures of operating profits (*NOPAT*), and accounting measures of capital (*CAP*).

- EVA® thereby reflects adjustments to GAAP in terms of both operating and financing activities. Simplifying, *EVA* is thus determined by $EVA = NCF + ACC + ATI - CC + AD$
4. The total *EVA* accounting adjustment (*ADJ*) is the net figure of adjustments to *NOPAT* ($NCF + ACC + ATI$) less the adjustment to capital in determining *CC* ($WACC \times CAP$).

For calculation of EVA the following elements are needed as inputs: -

Beta (β)

Market Return (R_m)

Risk free rate of return (R_f)

Cost of equity (K_e)

Cost of Debt (K_d)

Weighted average cost of capital ($WACC$)

Total borrowings

Weightage of debt in total capital employed (W_d)

Weightage of net worth in total capital employed (W_e)

Capital employed = debt + net worth (equity + reserve and surplus)

Calculation of NOPAT (Net Operating Profit After Tax)

Profit before tax (PBT)

Add: Interest (incl. forex fluctuation)

Less :Profit on sale of Fixed Asset

Net operating Profit before tax

Less :Cash operating tax on PBT

Less :Cash operating tax on interest

Add :Tax Adjustments

Calculation of WACC (Weighted Average Cost of Capital)

Using CAPM we can get cost of equity (K_e) = $(R_f + b(R_m - R_f))$

Now $WACC = K_e * W_e + K_d * W_d$

EVA is the excess of operating profits over the cost of capital

employed. It is calculated as:

$EVA = NOPAT - (WACC \times CE)$

Where $NOPAT$ = Net Operating Profit After Taxes

$WACC$ = Weighted Average Cost of Capital

CE = Total Capital Employed

The steps appear straightforward and simple. But looks can be deceiving. For starters, $NOPAT$ hardly represents a reliable indicator of shareholder wealth. A firm $NOPAT$ might show profitability according to the GAAP (generally accepted accounting principles), but standard accounting profits rarely reflect the amount of cash left at year end for shareholders. According to Stern Stewart, literally dozens of adjustments to earnings and balance sheets - in areas like R&D, inventory, costing, depreciation and amortization of goodwill - must be made before the calculation of standard accounting profit can be used to calculate EVA. To protect its trademark, Stern Stewart doesn't fully disclose the adjustments - making the job of using the metric even more difficult.

Figuring out the cost of capital ($WACC$) is even more thorny. $WACC$ is a complex function of the capital structure (proportion of debt and equity on the balance sheet), the stock's volatility measured by its beta, and the market risk premium. Small changes in these inputs can result in big changes in the final $WACC$ calculation. That said, if carried out consistently, EVA should help us identify the best investments, that is, the companies that generate more wealth than their rivals. All other things being equal, firms with high EVAs should over time outperform others with lower or negative EVAs.

But the actual EVA level matters less than the change in the level. According to research conducted by Stern Stewart, EVA is a critical driver of a company's stock performance. If

EVA is positive but is expected to become less positive, it is not giving a very good signal. Conversely, if a company suffers negative EVA but is expected to rise into a positive territory, a good buying signal is given.

Of course, Stern Stewart is hardly unbiased in its assessment. New research challenges the close relationship between rising EVA and stock price performance. Still, the growing popularity of the concept reflects the importance of EVA's basic principle: the cost of capital should not be ignored but kept at the forefront of investors' minds. Best of all, EVA gives analysts and anyone else the chance to look skeptically at EPS reports and forecasts

The Role of Accounting Adjustments

The calculation of EVA® itself therefore consists of two separate but related steps. The primary adjustment is where a capital charge is subtracted from net operating profit after-tax (*NOPAT*). The capital charge is derived from multiplying the firm's overall financing cost, as reflected in the weighted average cost of capital (WACC), by the amount of invested capital.

Invested capital in turn is defined as total assets, net of non-interest bearing current liabilities. In this form, EVA® is essentially the same as residual income, though the latter measure is normally expressed as net income less a charge for the cost of equity capital (with the cost of debt already included in the calculation of net income).

The second and more controversial step consists of a series of adjustments to GAAP-based numbers. Consisting of some 120 to 150 possible adjustments, these changes are made on the empirical and theoretical concerns.

First, it is argued that adjustments to accounting numbers are required in order "...to achieve higher correlations between the short-term measure (in this case EVA), and share prices, which in turn can lead to more congruent goals for divisional managers and shareholders as well as a more reliable indicator of corporate performance for security analysts and portfolio managers.

Second, at its root is the argument that not only are accounting earnings an inappropriate proxy for value creation, but that managers who are evaluated and compensated on the basis of earnings "...may take actions that increase earnings but destroy value, or fail to take actions that may reduce earnings but create value".

These adjustments aim to:

- 1) Produce an EVA figure that is closer to cash flows, and therefore less subject to the distortions of accrual accounting;
- 2) Remove the arbitrary distinction between investments in tangible assets, which are capitalized, and intangible assets, which tend to be written off as incurred;
- 3) Prevent the amortization, or write-off, of goodwill
- 4) Eliminate the use of successful efforts accounting;
- 5) Bring off-balance sheet debt into the balance sheets; and
- 6) Correct biases caused by accounting depreciation.

Literature Review

EVA[®] (Economic Value Added) was developed by a New York Consulting firm, Stern Steward & Co in 1982 to promote value-maximizing behavior in corporate managers. It is a single, value-based measure that was intended to evaluate business strategies, capital projects and to maximize long-term shareholders wealth. Value that has been created or destroyed by the firm during the period can be measured by comparing profits with the cost of capital used to produce them. Therefore, managers can decide to withdraw value-destructive activities and invest in projects that are critical to shareholder's wealth. This will lead to an increase in the market value of the company. However, activities that do not increase shareholders value might be critical to customer's satisfaction or social responsibility. For example, acquiring expensive technology to ensure that the environment is not polluted might not be of high value from a shareholder's perspective. Focusing solely on shareholder's wealth might jeopardize a firm reputation and profitability in the long run.

EVA sets managerial performance target and links it to reward systems. The single goal of maximizing shareholder value helps to overcome the traditional measure problem, where different measures are used for different purposes with inconsistent standards and goal. Rewards will be given to managers who are able to turn investor's money and capital into profits efficiently. Researches have found that managers are more likely to respond to EVA incentives when making financial, operational and investing decision (Biddle, Gary, Managerial finance 1998), allowing them to be motivated to behave like owners. However this behavior might lead to some managers pursuing their own goal and shareholder value at the expense of customer satisfaction.

Unlike simple traditional budgeting, EVA focuses on ends and not means as it does not state how manager can increase company's value as long as the shareholders wealth are maximised. This allowed managers to have discretion and free range creativity, avoiding any potential dysfunctional short-term behaviour. Rewards such as bonuses from the attainment of EVA target level are usually paid fully at the end of 3 years. This is because workers' performance is monitored and will only be rewarded when this target is maintained consistently. Hence, it leads to long-term shareholders' wealth. Most companies refer to stock price increase as an outcome of implementing EVA. However, empirical studies have found that traditional accounting measure have provided a similar, or even better result in increasing stock performance .

EVA is a financial measure based on accounting data and is therefore historical in nature. It has the same limitations as other traditional accounting measures and cannot adequately replace all measures within the company especially the non-financial ones. Due to the historical nature of EVA, manager can benefit in terms of rewards or be punished by the past history of the organization.

Importance of study

As the competition among various companies is increasing every day, hence in such situation for companies to improve their efficiency & effectiveness have Reduce the cost of capital. Hence it becomes extremely important to study the effect of this implementation on companies success. This research gives an idea to organizational management by focusing on the core aspect of EVA can give companies a better focus on how they are performing, its true value comes in using it as the foundation for a comprehensive financial management

system that encompasses all the policies, procedures, methods and measures that guide operations and strategy. The EVA system covers the full range of managerial decisions, including strategic planning, allocating capital, pricing acquisitions or divestitures, setting annual goals-even day-to-day operating decisions. EVA provides for better assessment of decisions that affect balance sheet and income statement or tradeoffs between each through the use of the capital charge against NOPAT.

Limitations of EVA

EVA also has its critics. The biggest limitation is that the only major publicly-available sample evidence on the evidence of EVA adoption on firm performance is an in-house study conducted by Stern Stewart and except that there are only a number of single-firm or industry field studies.

Limitations to EVA:

- EVA does not control for size differences across plants or divisions
- EVA is based on financial accounting methods that can be manipulated by managers
- EVA may focus on immediate results which diminishes innovation
- Given the emphasis of EVA on improving business-unit performance, it does not encourage collaborative relationship between business unit managers
- EVA although a better measure than EPS, PAT and RONW is still not a perfect measure

Brewer et al (1999) recommend using other performance measures along with EVA and suggest the balanced scorecard system. Other researchers have noted that EVA does not correlate as strongly with stock returns as its proponents claim. Chen & Dodd (1997) found that, while EVA provides significant information value, other accounting profit measures also provide significant information and should not be discarded in favor of EVA alone. Biddle, Brown & Wallace (1997) found only marginal information content beyond earnings and suggest a greater association of earnings with returns and firm values than EVA, residual income, or cash flow from operations.

Finally, a key criticism of EVA is that it is simply a retreaded model of residual income and that the large number of "equity adjustments" incorporated in the Stern Stewart system may

not be necessary .EVA and residual income variables are highly correlated and are almost identical in terms of association to stock return.

Conclusion

When examining existing theoretical and empirical research in this area, a number of salient points emerge.

As a qualifying criterion to grant rewards such a variable pay, stock options and performance bonuses.

First, despite the relatively recent adoption of EVA® as an internal and external financial performance measure, its conceptual underpinnings derive from a well established microeconomic literature regarding the link between firm earnings and wealth creation.

Second, the GAAP-related adjustments themselves accordingly comprise the most unique and contentious aspect of EVA®.

Third, the empirical evidence concerning EVA® has been mixed. Used relative and incremental information tests examine whether stock returns were more highly associated with EVA®, residual income or cash flow from operations.

Finally, and from a stock selection perspective, concluded that the residual income valuation model (including EVA®) “appears to have been very effective in uncovering firms whose stock is under priced when considered in conjunction with expectations for strong earnings and growth”. Nevertheless, the bulk of empirical evidence indicates that the superiority of EVA® vis-à-vis earnings (as variously defined) has not been forthcoming.

An findings of this study is to examine more closely which components of EVA® and earnings contribute to, or subtract from, information content”. Put differently, given that EVA consists of nearly 160 potential changes to accounting figures grouped across adjustments to accounting measures of operating profits and capital, there is the requirement to quantify the contribution of these sub-components to overall firm performance.

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