**ECONOMIC VALUE ADDED (EVA)**

In the past few years, many companies have adopted value-added measures to evaluate the performance of their management based on the management success in adding value to the firm.

Successful companies like Coco-Cola, Quaker Oates, CSX, Pagenet, Boise-Cascade and et al. have tied incentive compensation plan based on Economic value-added (EVA) and Market Value -added (MVA) pioneered by Stern and Stewart1.

An appealing characteristic of these two methods is that they are closely related to the capital budgeting techniques in corporate finance.

Specifically, EVA focuses on managerial effectiveness in a given year. In general, we evaluate the annual performance of management by comparing the firm's net operating profit after taxes (NOPAT) to the firm's total cost of capital in dollar terms, including the cost of equity.

In this analysis, if the firm's NOPAT during the year exceeds its dollar cost of capital, it has a positive EVA for the year and has added value for its stockholders.

**Economic Value Added (EVA):** A fundamental measure of corporate performance, it is computed by taking the spread between the return on invested capital (ROIC) and the cost of capital (WACC), and multiplying by the capital outstanding at the beginning of the year (or the average over the year if that was used in computing the return on capital).

EVA = Capital (ROIC - WACC) where ROIC = NOPAT/Invested Capital

**or**

**EVA = NOPAT- (Capital \* WACC)**

**Example**

Suppose a company is earning Net Operating Profits (NOPAT) of $360 and Capital employed is $2000. Then, the rate of return on capital invested, (NOPAT/Beg. Capital) or ROIC, is 18 percent ($360/2000). With a cost of capital (WACC) of 12 percent, EVA is $120.

EVA = (ROIC – WACC) x Capital

EVA = (18% - 12%) x $2,000 =$120

Positive EVA indicates management has created value with the capital placed at its disposal.

Now let's consider the effect of the three value creation strategies on EVA.

First, if management could improve NOPAT to $400 without requiring any more Capital, rate of return increases to 20 percent (400/2000) and EVA becomes $160.

EVA = (ROIC – WACC) x Capital

EVA = (20% - 12%) x $2,000 =$160

EVA fully reflects an improvement in value arising from an increase in economic earnings.

Second, suppose management undertakes a new project requiring a Capital outlay of $2,000 and providing a return of 15 percent. The NOPAT earnings derived from the investment is $300 (15 percent of $2,000 of Capital). Building upon our previous case, pro forma NOPAT would be $660, Capital, $4,000, and rate of return, 17 percent. EVA would increase from $160 to $200 despite the fact that accepting the project would decrease the overall rate of return.

EVA =(ROIC - WACC) x Capital

EVA = (17% - 12%) x $4,000 =$200

EVA would increase by a new project as long as the new investment generates incremental value. This makes EVA far superior to rate of return as a measure of performance and value.

**Defining the Key Drivers**:

**Return on Capital Invested Capital (ROIC): A** measure of the periodic, after-tax, cash-on-cash yield earned in the business, it is computed by taking net operating profits after taxes, or NOPAT, and dividing by capital outstanding at the beginning of the fiscal year, or by the simple year-to-year average of capital if assets declined by more than 20% over the year of acquisition expenditures totaled more than 20% of average assets. For this purpose, NOPAT is defined as:

**NOPAT=**

**Reported net operating profits before tax**

 plus the increase in bad debt reserve

 plus the increase in the LIFO reserve

 plus the amortization of goodwill

 plus the increase in net capitalized R&D

 plus other operating income (excluding passive investment income)

less cash operating taxes, i.e., taxes payable, in cash, on the company’s net operating profits (as adjusted), defined as the provision for income taxes

 less the increase in the deferred income tax reserve

plus the tax saved by deducting any unusual loss (gain) at a marginal corporate income tax rate

 plus the tax saved by deducting interest expense at a marginal rate

 less the tax imposed on passive investment income at a marginal rate

**ROIC = NOPAT/ Beg. Capital**

**Cost of Capital (WACC):** As the minimum rate of return on capital required compensating debt and equity investors for bearing risk, it is the cutoff rate to create value. The cost of capital is computed by weighting the after-tax cost of debt and equity by the relative proportions employed in the firms capital structure on average over the trailing three years. The before-tax cost of debt is determined by the yield prevailing on long-term bonds issued by companies of equivalent credit risk. The after-tax cost is the before-tax cost times 1 less the marginal corporate income tax rate (1-tax rate). The cost of equity is computed by adding a premium for risk to the 1-year average of the daily yield-to-maturity on long-term government bonds. The risk premium is estimated by multiplying beta, a measure of stock volatility relative to the market, by 6%, the risk premium typical of common equities in general.

**Capital:**  There are two ways to define the capital. From asset (investment) side or from debt and equity (financing) of the balance sheet. We will define both methods below. An approximation of the economic book value of all cash invested in going-concern business activities, capital is essentially a company's net assets (total assets less non-interest-bearing current liabilities), but with three adjustments:

1. Marketable securities are subtracted.

2. The present value of lease obligations is added to net property, plant, and equipment.

3. Certain equity equivalent reserves are added to assets:

1. Bad debt reserve is added to receivables.
2. LIFO reserve is added to inventories.
3. The cumulative amortization of goodwill is added back to goodwill.
4. R&D expense is capitalized as a long-term asset and smoothly depreciated over 5 years (a period chosen to approximate the economic life typical of an investment in R&D).
5. Cumulative unusual losses (gains) after taxes are considered to be a long-term investment.

Capital can also be approximated from financing side of the balance sheet:

Loans and notes payable

Current portion of long-term debt

Long-term debt

Deferred income taxes

Book Value of Equity

Accumulated (comprehensive) losses

Accumulated goodwill amortization

Less: marketable securities

**Capital**

**EVA and Value Creation**

 In addition to being a comprehensive measure of performance, EVA directly determines value. The value of any business is equal to the value of its assets as capital assets, plus a premium, or possibly less a discount, for the quality of EVA capitalized:

*Value = Capital + The Present Value of Expected Future EVA*

Thus, companies earning a generous spread over their cost of capital create EVA, and sell at a premium to capital employed; those returning less than required destroy EVA and sell at a discount.

**Change in EVA:** A company's internal progress in creating value is measured by taking the change in EVA over the prior 5- and 10-year periods. EVA will increase if profits improve without tying up any more capital, if new capital is invested in projects that earn attractive rates of return, and if capital is withdrawn from uneconomic activities yielding less than the cost of capital. Changes in capital structure and in the level of the interest rates also can influence EVA by altering the cost of capital.

**INCENTIVE COMPENSATION**

EVA is the comprehensive measure of value creation. When EVA is used as a performance objective, operating managers are encouraged to choose actions that will most readily create value without tying them to a specific business plan. Perhaps its greatest application, then, is as the basis for bonus plans linking managers' incentives directly to the engine that creates value for shareholders.

It is the residual income that remains after operating profits cover a full and fair return on capital (i.e., the cost of capital). In theory, a company 's market value added at a point in time is equal to the discounted present value of all the EVA it can be expected to generate in the future. To the extent that it is unanticipated, a change in EVA will tend to explain a contemporaneous change in MVA. Often, however, a change in MVA will anticipate a subsequent change in EVA.

**Enhancing Shareholder Wealth**

There are six factors that fully account for a company's market value. But two factors- relationship between the rate of return and cost of capital-are so important that together they often account for a large portion of a Company’s market value. This relationship is expressed by the "fundamental principle of Valuation":

 **Corporate Return = Market Value**

 **Investor's Required Return Capital**

 **ROIC = Market Value**

 **WACCCapital**

***R*OIC/ WACC-** The ratio of the rate of return on invested capital (ROIC) divided by the cost of capital (WACC) is an index of the productivity of capital relative to risk. Abstracting from growth, cycles, or turnaround potential, the R WACC ratio should account for the ratio of value-to-capital.

**Value to Capital:** the ratio of market capital divided by capital is a measure of the efficiency with which capital translates into market value.

The above relationship implies:

 R > **WACC**MV > Capital implies Value creation

 R = **WACC** MV = Capital implies No Value creation

 R < **WACC**MV < Capital implies Value destroy

**Market Value:** An approximation of the fair market value of a company's entire debt and equity capitalization (net of passive investments). It is computed as:

1. The actual market value of common equity (approximated by taking the closing stock price as of December 31 times the number of shares outstanding for the quarter end closest to December 31.

2. Plus the book value (as of the fiscal reporting date closer to December 31) of:

1. Preferred stock
2. Minority interests
3. Long-term non-interest-bearing liabilities (except the deferred income tax reserve)
4. All interest-bearing liabilities and capitalized leases and
5. The present value of noncapitalized leases (estimating by discounting the minimum rents projected for the next 5 years by 10%)

3. Less the book value of marketable securities and of construction in progress (because these items also are subtracted from capital, there is no effect on MVA; the intent is to produce more accurate measures of returns earned in active business activities)

Book value was used to approximate the market value of all items except common equity due to the absence of broad availability of quoted prices.

**Market Value Added (MVA): MVA** is the difference between a firm's market value and its capital employed. In other words, MVA is a measure of the value a company has created in excess of the resources already committed to the enterprise. In theory, MVA represents the net present value of all past and projected capital investment projects. MVA can be calculated in several values depending on key value drivers. The general formula for it is as flows:



However, it could also be calculated as:

MVA= EV – book value of debt- book value of preferred stocks and book value of equity

where EV is the enterprise value.

MVA is directly related to EVA as shown here:

Another way of looking at MVA is based on other key value drivers such as: sales, profit margin and the firm’s capital requirements:

**OP= Operating profit CR= Capital Requirement**

**Change in MVA: T**he creation or destruction of value is measured by calculating the change in MVA over the past 5- and 10-year periods. MVA will increase if value expands by more than the amount of new capital committed to the business, and vice versa.

1. This text has benefited and has used materials from G. Bennett Stewart, III **The Quest for Value: The EVATM Management Guide**, and Harper Business, 1991.