Chapter 4

An Analysis of Economic Value Added Based on Mergers & Acquisitions

Introduction
Concept of EVA
Accounting profit versus economic profit
The Calculation for EVA
Steps in computing EVA
Issues relating to calculation of EVA
Adjustment rationale
NOPAT
Usefulness of EVA
Implementation of EVA
EVA and traditional performance measures
EVA and discounting cash flow (DCF) model
Market value added
Relationship between EVA & MVA
Problems with EVA as performance measure
Conclusion
References
INTRODUCTION

This chapter includes the historical evolution of corporate performance metric popularized by Stem Stewart of US, namely Economic value added (EVA) and its twin, Market value added (MVA). After giving the rationale of its use and its superiority over other performance metrics like Earning Per Share (EPS) and Return On Net Worth (RONW), the detailed theoretical methodology regarding its computation has been discussed.

CONCEPT OF EVA

The onset of liberalization and globalization of the Indian economy over the ten years has resulted in shift of the corporate goals from socio-economic focus to an increasing shareholders value. Therefore, the present day need is to choose the right metrics that would help to measure organizational progress in meeting the above mentioned strategic goal. Although there are few traditional performance metrics like balance sheet measures (namely, rate of return, shareholders’ profit, earning per share) and market driven measures (namely, market capitalization, price earning ratio), these are subject to certain deficiencies. Balance Sheet based measures are veiled in accounting anomalies that generally measure notional profit, not real ones. And market driven measures are prone to volatility of the bourses. The need is for a mix and match measure that factor in a market’s assessment of a
company’s value. At the same time, it should be a real measure of its financial performance extracted from its financial statements.

Thus, corporate world’s need for a tool to measure value creation has been filled with the emergence of a new concept namely, EVA. It has been redefined and popularized by US based Stem Stewart & Company. It is an attempt to resolve the need for a performance measure that is highly correlated to the shareholders wealth and responsive to the actions of the company’s managers. Shareholder value is considered as an essential measure of the corporate performance. It is an accurate reflection of the quantum of incremental value a company generates for shareholders after accounting for its cost of operations, which include the cost of capital. The number of companies that have adopted EVA worldwide is startling. Stem Stewart Management Services (the founders of EVA) claim that more than four hundred companies globally are using EVA. Fortune magazine has termed it as today’s hottest financial idea with underlying scope of getting hotter. Management Guru Peter Drucker has described EVA as a vital measure that reflects all the dimensions by which management can increase value. EVA is the financial measure that comes closer than any other measure in capturing true economic profit of an enterprise.

To elaborate, EVA is the same as what economists call as economic profit. In business, revenue comes from customers and is distributed among the shareholders. Suppliers are paid for their goods and services
and employees for their services. Depreciation amount is deducted from revenue as it results in loss of the value of assets. Creditors are paid interest while loans and taxes are paid to the government. Ultimately, shareholders are also paid a return. The shareholder’s return is not the usual dividend payment, but is the return commensurate with the risk undertaken by them by investing money in the business. It is the earning that the shareholders could have earned by investing in similar risk profile investments i.e. they have to be paid their opportunity cost of capital. This differentiates EVA from the accounting model as the accounting model does not acknowledge the cost of equity. After paying to all whatever is left out from revenue is know as EVA. EVA is thus the residual income. As shareholders are the owners of the business, the residual income adds to their wealth.

The current demand for adopting EVA is based on a simple i.e. you cannot know whether your enterprise is creating value for your shareholders until you subtract cost of the capital from income. To the extent EVA is positive; the firm is adding value for its shareholders. But if a firm’s EVA is negative, the firm is destroying value even though it may be reporting a positive or growing earning per share (EPS) or return on investment (ROI). This means that if a firm wants to have an attractive investment, it has to have a return that would exceed other investment options with a similar risk. Though EVA just reiterates the basic tenet behind any enterprise, it is not just any other metric for the
firm. It is a framework for complete financial management and compensation system. It can guide every decision a company makes that can a corporate culture and help produce greater wealth for shareholders, customers and themselves.

While creating value for the shareholders is an objective measure of corporate performance, the measure of creation of wealth for the company as a whole is also equally important. The best measure for this is another value add measure, namely, Market Value Added (MVA). MVA is an absolute measure of wealth creation obtained by subtracting the economic capital of an organization (book capital after perfect measure of a company’s ability to create wealth but is as volatile as any market index and so, can be calculated for the company as a whole only.

EVA on the other hand is the most accurate measure of economic performance of the company and can be calculated at the level of divisions and product lines. So, while EVA of a company is the excess of its return on capital over its cost of capital, MVA is the difference between company’s total market value and its capital employed. In mature markets, MVA of a company is equal to the net present value of all future EVAs. In countries like India where markets are not efficient, MVA is volatile with no mathematical link with EVA.
In a nutshell, EVA can be described as:

1. Most accurate value based measure of financial performance.
   A registered trademark redefined and popularized by US based Stem Stewart & Company.

2. Concept, a variation of residual income.

3. Concept, practically the same as economic profit.
   A measure indicating amount of shareholder wealth created or destroyed during each year.

4. A framework of complete financial management and incentive compensation.

ACCOUNTING PROFIT BERSUS ECONOMIC PROFIT

According to conventional accounting concepts, business income is measured by matching revenues by costs. It is a purely monetary concept. In such a system, ones sales revenues are determined; various costs are divided between present and future. The present costs or expenses are charged against revenues and appeared in the income statement and future costs are treated as deferred expenditure and hence appeared as assets in Balance Sheet to charge against revenues in later years. The accounting concept lays more emphasis on objectivity and accuracy through the use of certain conventions, principals and accounting standards.
Economic profit is also a concept that was established long ago, as is understood by the writings of Alfred Marshall over hundred years ago.

“When a man is engaged in business, his profits for the year are the excess of his receipts from his business. The difference between value of stock of the plant, machinery etc. at the end and beginning of the year is taken as part of his outlay, accordingly as there has been an increase or decrease of value. What remains of his profits after deducting interest on his capital at the current rate ..... is generally called his earnings of the undertaking or management.”

Today, this concept has been developed in every principle of economic text. The idea of economic profit is the basis of capital budgeting techniques of net present value and internal rate of return which can be found in finance texts over past thirty years. The cost of capital is the return required by suppliers’ of capital. Cost reflects both, the time value of money and compensation for risk - the more risk associated with the firm, greater is the firm:s cost of capital. Factoring in the cost of capital tells us whether accounting profit is sufficient to keep suppliers i.e. creditors and owners from moving their funds elsewhere. The cost capital in these cases is referred as “minimum acceptable return” or “minimum revenue required”. Profit is defined as earnings in the excess of cost of the capital. Economic concept, thus, basically deals with the real terms instead of only monetary terms as is the case of
accounting concept. Summary, of the difference between accounting profit and economic profit is given below.

Table 4.1
Differences between Accounting Profit & Economic Profit

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Accounting Profit</th>
<th>Economic Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Based on theory of accountancy, profit is calculated as book as perceived by the accountants as per accounting standards.</td>
<td>Based on theory of value and utility of economics, profit is worked out as per the perception of an economist.</td>
</tr>
<tr>
<td>2.</td>
<td>Accounting profit is affected by one time irregular adjustments.</td>
<td>For calculating economic profit, one time adjustment as discounted by market is considered.</td>
</tr>
<tr>
<td>3.</td>
<td>Depreciation is based on adhoc rates.</td>
<td>Depreciation is based on market value and economic assets.</td>
</tr>
<tr>
<td>4.</td>
<td>Expected losses and expenses are provided for on adhoc basis.</td>
<td>Expected losses and expenses are provided for as per market perception.</td>
</tr>
<tr>
<td>5.</td>
<td>Considers monetary transactions only.</td>
<td>Considers non-monetary transactions only.</td>
</tr>
<tr>
<td>6.</td>
<td>Change in earnings not considered on account of external/internal factors unless ascertainable.</td>
<td>Changes in earnings are considered on account of external/ internal factors even though not ascertainable.</td>
</tr>
</tbody>
</table>

CALCULATION OF EVA

The value based performance measure, namely, EVA, introduced by Stern Stewart & Company is an incarnation of Residual Income concept. They defined “EVA as an estimate of true economic profit, the amount by which earnings exceed or fall short of required minimum rate of return investors could get by investing in other securities of comparable
risk.” It is the net operating profit minus the appropriate charge for the
opportunity cost of capital invested in an enterprise (both debt and
equity). The capital charge is the most distinctive and an important
aspect of EVA. Under conventional accounting, most of the companies
appear profitable. However, many are actually destroying shareholder
value because the profits they earn are less than their cost of capital.
EVA corrects this error by explicitly recognizing that when managers
employ capital, they must pay for it. By taking all capital costs into
consideration, including cost of equity, EVA shows the amount of wealth
a business has created or destroyed in each reporting period.

Expressed as a formula, EVA for a given period can be written as:

$$\text{EVA} = \text{NOPAT} - \text{Cost of Capital Employed}$$

$$= \text{NOPAT} - \text{WACC} \times \text{CE}$$

Where

NOPAT : Net Operating Profit After Taxes but before financing costs

WACC : Weighted Average Cost of Capital

CE : Capital Employed

OR equivalently, if rate of return is defined as \(\text{NOPAT} /\text{Capital Employed}\), then, it turns into a more revealing formula.

$$\text{EVA} = (\text{Rate of Return} - \text{Cost of Capital}) \times \text{Capital Employed}$$

Where

Rate of Return : \(\text{MOPAT} /\text{Capital Employed}\)
Capital Employed: Total of balance sheet - Non Interest Bearing Current Liabilities (NIBCL) in the beginning of the year

Cost of Capital: Cost of equity \times \text{proportion of equity in Capital} 
+ \text{Cost of debt} \times \text{proportion of debt in Capital (1- tax)}

If, Return on Investment is defined as above after taxes, EVA can be presented with the following familiar terms:

EVA = (ROI - WACC) \times \text{Capital Employed}

Where

Capital Employed: Net fixed assets - Revenue reserve 
- Capital Work in progress + Current assets 
- Funds Deployed outside business - NIBCL

STEPS IN COMPUTING EVA

Various steps in computing EVA are as follows:

(1) Calculation of NOPAT

NOPAT refers to amount of profit remaining of the business after tax and adding back interest payments. It can be calculated as per accounting concept after making necessary adjustments for certain for non- operating incomes and expenses.

NOPAT = \text{PBIT (nnrt)} \times (1-\text{T})

Where,
PBIT (nnrt) Profit before Interest and Taxes
(Net of non recurring transactions)

\[ T = \text{Effective tax rate} \]

\[ T = \frac{\text{Tax paid}}{\text{Profit before tax}} \]

(2) Calculation of Capital Employed

In calculation of EVA capital employed refers to economic capital, which means economic value of funds invested in a business. It consists of total amount in circulation and total amount of borrowings or debts raised.

Stewart defined capital employed as company’s net asset at the beginning of the year after following three adjustments:

(i) Marketable securities and construction in progress are subtracted.

(ii) Present value of non-capitalized leases is added to net property, plant and machinery.

(iii) Certain equity equivalent reserves are added to assets. For example:

(a) Bad debts reserve is added to receivables.

(b) Last in first out (LIFO) reserve is added to inventory.

(c) Cumulative amortization of goodwill is added back to
goodwill.

(d) Research and Development (R&D) expenses is capitalized as long term asset and depreciated over five years.

(e) Cumulative unusual losses/gains after taxes are considered to long term investment.

(3) Calculation of Cost of Capital

It defined as the weighted average cost of both equity capital and debt. It is the weighted average of both the specified costs with weights equal to proportion of each in total capital. The tax shield of the debt is adjusted with the cost of debt:

\[
\text{Cost of capital} = \text{Cost of equity} \times \text{solvency ratio} \times \text{cost of debt} \\
\times (1 - \text{solvancy ratio}) \times (1 - \text{tax})
\]

Solvency ratio defines the proportion of both equity capital and debt separately in total capital:

\[
\text{Solvency ratio} = \frac{\text{Equity Capital}}{\text{Total Capital}}
\]

The calculation of an average cost includes solvency ratio. Solvency ratio generally changes according to business cycles and changes in other factors. Financial theory suggests that when solvency changes, the cost of equity and debt shift so much that WACC itself does not change. When solvency or debt-equity ratio decreases, risk of equity increases. So, when relative proportion of debt from capital increases,
return on equity become more fluctuating and therefore true cost of equity capital increases. Also, lenders demand premium at high rate on debt when leverage increases. So when solvency ratio decreases, both the cost of equity and debt increase and vice-versa. The increase in the cost of equity and debt cancel out the decrease in WACC, caused by bigger relative proportion of a cheaper debt capital. Hence, the change in WACC is zero.

This change in leverage not affecting WACC can be considered from expected returns angle also. WACC reflects the expected return of capital with similar risky business because opportunity cost i.e. the expected return of capital with similar risky business because of opportunity cost i.e. expected risk on similar risky investments. If change in leverage does not affect the expected return on investment (expected ROI), then WACC does not change, changing only liability side of the balance sheet i.e. replacing equity capital with debt capital does not affect the expected return on assets but decreased solvency raises expected ROI because an increased financial leverage raises return on the equity capital and risk of equity capital as well. Also, expected return on stock market does not depend on how investors finance their investments. For an individual investor, the expected return changes if he uses more financial leverage i.e. debt with his investments although this can not affect return for whole investment. Changing leverage changes the return and risk of equity and debt capital but it can not
influence the expected return of whole investment. It merely allocates risk and return new manner. However, if tax shield of debt is considered, when leverage increases, increase tax shield from debt will decrease WACC to some extent. Therefore, increasing leverage might decrease WACC slightly. On the other hand, if leverage decreases too much, then the increased probability of bankruptcy and cost attached to it increases WACC.

4. Calculation of Cost of Debt

Cost of debt refers to the average rate of interest the company pays for its debt obligations. To calculate cost of debt, the company’s interest payments are measured against the total borrowings and then adjusted for taxes.

\[
\text{Cost of Debt} = \frac{\text{Interest Expenses} \times (1 - t)}{\text{Total Borrowings}}
\]

Tax:

\[
\text{Effective tax rate} = \frac{\text{Tax paid}}{\text{Profit before tax}}
\]

5. Calculation of Cost of Equity

For computation of cost of equity, Stern Stewart & Co. (founders of EVA concept) recommended the use of Capital Asset Pricing Model (CAPM). This model holds that firm’s equity costs is the composition of
risk free rate of return for a stock plus premium representing the volatility
of share prices.

Broadly,

Cost of equity = Risk free + Specific risk premium

\[ Ke = Rf + B \ (Equity \ risk \ premium) \]

\[ = Rf + B \ (Market \ rate - Risk \ free \ rate) \]

\[ = Rf + B \ (Rm - Rf) \]

1) \( Rf \) : Risk free return

Normally, 364 days Treasury Bill rates are considered risk free. Treasury
securities are highly liquid and free of default risk. Interest rates on these
securities are used to measure the risk free rate. It serves as a bench mark
from which cost of risky security is calculated.

2) \( B \ (RM - Rf) \) : Specific risk premium

Specific risk premium is the product of level of risk and compensation per
unit of risk. More specifically, it refers to premium required by the
investors to invest in specific company. It is the multiple of equity risk
premium of the company in which the investors want to invest their money
and it’s Beta (B).

(a) Equity risk premium is the excess return over and above risk
free rate that the investors demand for holding risky security. It is
calculated as the difference of market rate of return and risk free rate (Rm - Rf).

(b) Beta (B) is the risk free co-efficient which measures the volatility of a given script of a company with respect to volatility of market. It is a measure of responsiveness of company’s shares due to changes in economic factors (micro and macro both) of the economy. It is calculated by comparing return on a share to return in the stock market. Mathematically, beta is the statistical measure of volatility. It is calculated as covariance of daily return on stock market indices and return on daily share prices of a particular company, divided by variance of return on daily stock market indices. While considering market index, broad based index must be considered.

Simply calculated,

1. The market expected rate of return (Rm) is normally given as growth rate of market index:

\[ R_m = \frac{\text{Today's index} - \text{Yesterday's index}}{\text{Yesterday's index}} \]

(Independent Variable)

2. The Security Return

Dependent Variable = \( \frac{\text{Today's index} - \text{Yesterday's index}}{\text{Yesterday's index}} \)
The statistical method of estimating this kind of dependence of one variable on the other is known as simple linear regression. Once the security and market returns of a long period have been computed to get a large number pairs of returns, the regression technique can be used to estimate Beta.

6. Calculation of Quantum of Value Addition

If NOPAT exceeds cost of capital employed, it will be construed that an organization has created value for the shareholders during the period of operation or vice versa.

NOPAT - Cost of capital employed = Value Addition

ISSUES RELATING TO CALCULATION OF EVA

Calculation of EVA is totally different from Generally Accepted Accounting Principles (GAAP).

The first major departure is to recognize the full cost of capital. Accountants generally treat cost of equity to be free. EVA calculation recognizes that equity has a cost, hence subtracts if from profits. Also, EVA solves the problems of GAAP accounting by converting accounting earnings to economics earning and accounting capital to economic capital. The result is a NOPAT figure (net operating profits after taxes) that gives a much truer picture of funds contributed by shareholders and lenders. The major issue involved in computation of EVA is to decide on
which adjustments to make to GAAP accounts. Stern Stewart has identified 164 adjustments to GAAP and to internal accounting treatments, all of which can improve the measure of operating profits and capital. Any change in accounting adjustment will give a different EVA. According to Ehrbar (1998), if all EVA are considered as running along a spectrum (as shown in chart the one at the extreme left is called basic EVA.

Chart: 4.1
The EVA Spectrum

This is the EVA that would be computed using unadjusted GAAP operating profits and GAAP balance sheet. Basic EVA is an improvement on regular accounting earnings because it recognizes that equity capital has a cost, but all other problems with GAAP remain. Moving to the right, is the disclosed EVA which Stem Stewart use in their published EVA rankings. Disclosed EVA is computed by making about ten to twelve standard adjustments to publicly available accounting policy available accounting data. It is better than basic EVA. Next, is what most companies need, a custom tailored definition of EVA peculiar to each company’s organizational structure, business mix
strategy and accounting policies. This is the EVA that is assumed to optimally balance the trade off between simplicity (the ease with it captures true economic profit). Then, finally, at the extreme right is the true EVA, which is the most theoretically correct and the accounting data (these run into a huge number) and using precise cost of capital for each business unit in a corporation.

Various types of adjustments to be made to NOPAT and capital include treatment of such things like timing of expense and revenue recognition, passive investment in marketable securities, securitized assets and other off balance sheet financing, restructuring, inflation, inventory valuation, book keeping reserves, bad debt recognition, intangible assets, taxes, pension, post retirement expenses, marketing expenses, goodwill and other accounting issues etc. Some avoid mixing stocks and flows. Then, there are some adjustments which convert GAAP accrual items to cash-flow basis while the others convert GAAP cashflow items to additions to capital.

These and many other like adjustments complicate the calculation of EVA. Most of the organizations do not maintain in-depth data required for these adjustments and even if the data is maintained, computation is not possible without professional consultants help. Also, many of these adjustments may not be palatable and may differ among consultants. Thus, out of detailed 164 adjustments, only a few major
ones are practically carried out to convert GAAP based accounting profit and capital to economic profit and capital. These are given in Table 4.2:

Table 4.2
Broad Adjustments to be made to Capital and NOPAT

<table>
<thead>
<tr>
<th>Add to Capital</th>
<th>Add to NOPAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equity equivalents</td>
<td>Increase in equity equivalents</td>
</tr>
<tr>
<td>Deferred tax reserves</td>
<td>Increase in deferred tax reserves</td>
</tr>
<tr>
<td>LIFO reserves</td>
<td>Increase in LIFO reverses</td>
</tr>
<tr>
<td>Cumulative goodwill amortization</td>
<td>Goodwill amortization</td>
</tr>
<tr>
<td>Unrecorded goodwill</td>
<td>Increase in capitalized intangibles</td>
</tr>
<tr>
<td>Capitalized intangibles (R&amp;D) cumulative unusual gains/losses</td>
<td>Increase in other reserves unusual gains or losses</td>
</tr>
<tr>
<td>Reduce from Capital</td>
<td>Reduce from NOPAT</td>
</tr>
<tr>
<td>Cash and marketable security</td>
<td>Any finance income in the form of interest</td>
</tr>
<tr>
<td>Non interest + bearing current Liabilities</td>
<td>Interest expenses</td>
</tr>
</tbody>
</table>

ADJUSTMENT RATIONALE

Capital

1. Cash and marketable securities
These represent discretionary investment of funds not required on day to day operations.

2. Non interest bearing current liabilities (NIBCL)
The financing cost associated with paying suppliers and employees with some delay are already included in the cost of goods sold. Hence, these costs are excluded from capital.
3. Present value of operating leases
   As long as asset being leased is required in business, the lease is capitalized and considered as debt, hence as an asset.

4. LIFO Reserves
   Under the LIFO method, cost of recently acquired and used raw materials are charged to production while costs of earlier purchases are accumulated. So, LIFO reporting generally understates the inventory. During period of rising prices, companies’ saves taxes by adopting LIFO system of inventory valuation. Economic reality suggests that inventory should be valued at replacement cost. Rather, keeping in view the large number of items in large companies., it is suggested tat inventory be valued at weighted average cost for EVA calculations as separately identifying each batch may not be practically feasible. Hence, for calculating EVA, LIFO system of valuation is changed to first in first out (FIFO) system by adding the difference to capital and NOPAT.

5. Bad debt reserve
   Management must be held accountable for bad debts and so add back to capital.

6. New R&D expense
   GAAP requires companies to immediately charge all outlays for R&D. But these expenses may not be truly revenue in
nature. EVA treatment considers R&D as an asset, hence to be capitalized (add current outlays to the balance sheet as an asset) and amortized (charge a position against earning each year) over the period during which benefits of successful R&D project will be reaped.

7. Deferred tax reserves
GAAP earning statements generally report book taxes which are not the same as taxes actually paid by the company. Accumulation of this difference of accounting provision of taxes and tax actually paid is called reserve for deferred taxes. These are to be added back to capital.

8. Cumulative after tax gains or losses
Any successful or unsuccessful investment which gives rise to loses or gains should be recognized in capital calculation.

NOPAT

1. Interest expense on operating lease.
Since EVA determines profits before financing costs, an estimate of the interest component is subtracted from operating costs.

2. Interest on LIFO reserves
This backs out the excess consumption created by LIFO
accounting. However, if weighted average costing method is followed, no adjustment will be required to be made.

3. **Change in bad debt reserve**

   By considering change in bad debts in earnings, NOPAT accurately reflects the timings of cash receipts and disbursements.

4. **Increase in net capitalized R&D**

   Since investment in R&D is treated as an asset and capitalized, depreciation on the same has to be treated as an expense or it has to be amortized over the appropriate period. The average useful life of R&D for all industries is generally considered as five years which is the amortization period that Stern Stewart have used.

5. **Increase in deferred tax reserves**

   Deferred tax reserves arise due to difference in the timing of recognition of revenues and expenses for financial reporting as against reporting for tax purposes. It is an accumulation of the difference between accounting provision of taxes and tax amount actually paid under the head “Reserve for deferred taxes”. NOPAT is to be adjusted for tax actually paid instead of any provisions.

6. **Other incomes**

   Any non finance income or expense not included in operating
expenses and not part of unusual loss or gain in the capital calculation is included to reflect the real operating costs. However, in Indian context, this component would be included in the “Miscellaneous income? Expenses” head. Hence, miscellaneous income after reducing finance income should be considered.

Apart from these broad adjustments, similar other adjustments that can distort the accounting profits and capital employed figures are made to achieve the following objectives:

i) To produce an EVA figure that is closer to cash flows’ and subject to less distortions of accrual accounting.

ii) To remove arbitrary distinction between investments in intangible assets which are capitalized and intangible assets which tend to be written off as incurred.

iii) To correct biases caused by accounting depreciation.

iv) To prevent amortization or write off of goodwill.

v) To bring all off-balance sheet items such uncapitalised leases and securitized receivables back into balance sheet to avoid mixing of operating and financing decisions.

However, each company’s EVA has to be tailored specifically to its needs, so which adjustments would give the best results cannot be
defined. Also, certain conditions need to be fulfilled for enabling computation of adjusted EVA namely,

(i) The necessary data is available.

(ii) The amounts of adjustments are significant.

(iii) The adjustments are understandable to the operating managers.

(iv) The adjustments can be made completely and left unchanged for a period of three years.

(v) The adjustments align calculated EVA more closely with market value of the firm.

So, for the Indian corporate sector, accounting adjustments to GAAP profit are largely non existent or inapplicable; due to frequent fluctuation in interest rates and relatively high volatility in Indian capital markets than capital markets in developed economies. Moreover, there is an incomplete grip of the regulators on the capital market to enhance its efficiency and difficulty in ascertaining risk premium because of short history of Indian capital market that has become active only in the last decade.

USEFULNESS OF EVA

The EVA method can be used in areas like valuation, mergers and acquisitions, capital budgeting, equity research etc. But its best use is in corporate strategy making and management compensation setting. In
EVA model, total business can be divided into small units and each manager is held responsible for unit’s EVA. Based on performance, management may divest those businesses which have consistently negative EVA invest in positive EVA projects. As unit manager’s compensation is related to yearly EVA figure and its growth, it’s ensuring better management. Each employee’s bonus gets related to EVA generated by him. Thus, whole company is geared up for shareholder’s value maximization. EVA, thus, ensures capital allocation efficiency. Usefulness of EVA is concluded as below.

1. EVA is closely related to Net Present Value (NPV). It is theoretically linked to corporate finance theory that value of firm will increase if you opt for positive NPV projects.

2. It makes the top managers responsible for a measure that they have more control over (the return on capital and the cost of capital are affected by their decisions) rather than the one that they feel they cannot. control (the market price per share).

3. It is influenced by all the decisions that the managers have to make within a firm the investment decision and the dividend decisions affect the return on capital (dividend decisions affect it indirectly through cash balance) and the financing decisions affect the cost of capital.
4. EVA as a performance measure is also gaining grounds because of its unbiasedness towards any of stakeholders (for example equity holders, debt managers, management, suppliers of materials and services, employees and customers).

Proponents of EVA argue that EVA is a superior measure as compared to other measures due to the following reasons:

I) It is near to the real cash flows of the business entity.

II) It has higher correlation with the market value of the firm

III) It is easy to calculate and understand.

IV) It’s application to employee’s compensation lead to the alignment of managerial interest with those of the shareholders.

IMPLEMENTATION OF EVA

EVA has been implemented successfully and used as an important tool in the following areas:

1. Valuation : Leading investment firm such as First Boston, Goldman Sashes, Merrylynch and Mogan Stanley in U.S. and Banque Paribas Flemming in Europe are using EVA as a primary valuation tool. In India, NIIT is the first company to adopt EVA from Stern Stewart & Co. as a measure of corporate performance followed by Infosys Technologies, Godrej Industries.
2. Acquisitions: In one of the largest acquisition in recent years, AT&T used EVA method to decide on $126 billion purchase of McCaw Cellular. The ball Corporation rejected acquisition of Eastman Kotak unit because it failed the EVA test for creating value. Heekin Can Inc passed the EVA test and so, was acquired.

3. Strategic Decision Making: International Business Machine (IBM) applied EVA to evaluate strategic plans for the key Latin American markets such as Mexico, Brazil and Argentina. At Georgia Pacific, strategic focus shifted from profit creation to value creation:

4. Operational Improvement: Briggs and Stratton realized that its return on capital was poor and getting lower. They restructured their operations and adopted EVA as a way of focusing manager’s attention on how they were employing capital. EVA is, now the firms’ benchmark for product introduction, equipment purchases, process improvements etc.

5. Product Line Discontinuation: EVA helped Coca Cola to identify and sell those businesses that failed to recover cost of capital. Perfect Data Corporation and Incstar both discontinued unprofitable product lines based on EVA analysis.

6. Incentive Compensation: Compensation of supervisors and managers above certain salary in Coke is linked to EVA. At Transamerica, 100% of annual bonuses of Chief Executive Officers (CEO’s) and Chief Finance Officers (CFO’s) is based on EVA. In India,
at NUT, Infosys Technologies and Godrej Soaps, EVA linked compensation plan has been adopted.

7. Cost of Capital Focus: Dow Chemicals used EVA to shed light on cost to run business and return a positive economic profit. Deere and Company used EVA to focus management on the value drivers of its business and the true cost of its asset base. AT&T changed its focus from income statement earnings to a broader view that included balance sheet. SPX, a Michigan based corporation, large manufacturer of specialty tools and parts for auto industries used EVA framework to concentrate on cost of capital in every phase of company’s work. They discovered lots of assets which were uselessly employed in business.

8. Working Capital Focus: Quaker Oats used EVA to account for large dollar amount tied up in finished goods and packaging materials inventory. Morrison Restaurants used EVA to focus on management and its receivables.

EVA AND TRADITIONAL PERFORMANCE MEASURES

EVA is a standardized accounting process independent of balance sheet approach. It is a potential financial tool for continued economic growth of organization and all its constituents. This approach ensures that growth is not sacrificed at the cost of short term results. Conceptually, EVA is superior to accounting profits as a measure of value creation because it recognizes the cost of capital and the riskiness
of firms operations. Further EVA can be constructed in a way that maximizing any accounting profit of accounting rate of return leads to undesired outcome. Benefits of EVA as compare to conventional performance measures are summarized as under:

**EVA AND DISCOUNTING CASH FLOW (DCF) MODEL**

Determination of value of the company is very important. Discounting Cash Flow (DCF) and Net Present Value (NPV) models have been used very widely over the years to determine the value with which to discount the future free cash flows to the present value. Also, DCF approach has been considered as an important tool in analyzing mergers and acquisitions. However, in EVA model, value of a company can be determined. Mathematically, EVA gives the same results in valuation as DCF or NPV models, which have been for long acknowledged as theoretically best tools from shareholders’ perspective. Both measures include opportunity cost of capital, take into account time value of money and do not suffer from any accounting distortions. However, NPV and DCF model are not relevant in performance evaluation since they are exclusively based on cash flows. A benefit of discounting EVA with free cash flow is the additional insight it provides being a period by measure. EVA also imposes an added accountability for capital over only enforces capital discipline and accountability at the initial approval of capital expenditure. Further, benefit is derived from power of commonality and focus in using EVA as single financial
measure for budgeting, capital planning, performance evaluation and incentive compensation.

NPV of a project provides a standard for assessing its contribution to value and also can be used to compare relative value among a selection of investment opportunities. The conventional procedure for calculating NPV involves discounting of projects forecast with free cash flows. Typically, as initial investment is made, cash flow is negative. Then, as benefits are realized, cash flows become positive. The discounting to present value indicates whether project benefits offset initial investment and provide value to investors.

Problem with free cash flow approach is that, once invested, the new capital is mixed with all other assets on the balance sheet. After that, rarely does the management look back to assess whether actual returns are in line with forecasts used to justify the project. Also free cash flow as a single period measure cannot be used in post investment audits, since it mixes profits and investments and forgets about early investment. As a result accountability is lost.
Table 4.3
Differences between EVA and DCF/NPV Models

<table>
<thead>
<tr>
<th></th>
<th>DCF/NPV Model</th>
<th>EVA Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>These are generally employed to analyze the attractiveness of an acquisition activity or when to divest from business.</td>
<td>This is a measure of past and current performance. EVA for past performance can be used for trend analysis.</td>
</tr>
<tr>
<td>2.</td>
<td>These measures do not take into account opportunity cost of capital i.e. expected return to stakeholders. They consider dividend payment only when paid.</td>
<td>This measure takes into consideration opportunity cost of capital irrespective of cash flows.</td>
</tr>
<tr>
<td>3.</td>
<td>Manager’s compensation cannot be tied to DCE/NPV because these are measures of future expected performance.</td>
<td>Manager’s compensation can be tied to achieve EVA as it is a measure of current and past performance.</td>
</tr>
<tr>
<td>4.</td>
<td>These measures do not help in coordinated working in an enterprise.</td>
<td>This measure results in coordinated working in an enterprise.</td>
</tr>
<tr>
<td>5.</td>
<td>These measures do not indicate whether shareholder value is created or not.</td>
<td>EVA indicates the amount of shareholders value created or eroded during a particular period.</td>
</tr>
</tbody>
</table>

Example: Assume, a project with an initial investment of Rs. 100 is expected to create a perpetual free cash flow (FCF) of Rs. 12 every year. Depreciation is charged at 10% straight line method and the same amount is reinvested which makes net operating profit after axes (NOPAT) and FCF same. Let cost of capital be assumed at 10%. Values given by both these methods are given underneath in Table 4.4:
Table 4.4
Valuation of Business: EVA and DCF Models

<table>
<thead>
<tr>
<th>Year</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>Infinite</th>
</tr>
</thead>
<tbody>
<tr>
<td>FCF</td>
<td>(100)</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>NOPAT</td>
<td></td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>ROIC</td>
<td>12%</td>
<td>12%</td>
<td>12%</td>
<td></td>
</tr>
<tr>
<td>WACC</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>ROIC-WACC</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>EVA</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

In DCF model
Value = 12/0.1 = 120
Net Present Value (NPV) = 120 - 100 = 20

In EVA Model
MVA = 2/0.1 = 20
Value = 100 + 20 = 120

Both models give identical results but each has some inherent advantages over the other. EVA model tells us how much value is added in better strategic decision making and communication with shareholders. Moreover, Eva method gives warning signals if major part of valuation comes from terminal values. This makes EVA a better tool in capital budgeting and corporate strategy making. On the other hand, DCF model tells about the cash in hand situation. Managers can use this information to plan the use of excess cash or borrow capital from the market to meet shortages. This makes DCF a better tool in asset liability management, financial restructuring and working capital management. EVA, as pointed out earlier, tells management instantly whether value
has been added or not without discounting it. A growing EVA figure shows better management.

EVA and Earning Per Shares (EPS)

Earning Per share (EPS) is a measure relevant to only shareholders. It is prone to accounting distortions and also, does not capture risk factor associated with business. The measure simply tells the shareholders how much each share has earned for them. This means that if the opportunity cost per share is reduced from EPS, it would give them EVA per share and a mush better idea of whether the company is creating value or destroying it. EPS, in isolation, cannot give any information on value creation. EPS can be increased, simply by investing more capital in business. If additional capital is equity capital is debt only, EPS will rise if rate on return on invested capital is more than cost of debt only. In reality, however, invested capital is generally mix of debt and equity and EPS will increase if rate of return on additional capital is somewhere between cost of debt and zero. Therefore, it is completely inappropriate measure of corporate performance.

Example: Assume, profits available for equity shareholders of a company for the years 2006, 2007, 2008 were Rs. 150 lakhs and Rs. 200 lakhs respectively. The subscribed capital of the company has remained constant at Rs. 1000 lakhs (100 lakhs share of Rs.10 each). The opportunity cost of capital has also remained constant at 18.50%. If EPS
is looked in isolation, performance trend would appear as given in Table 4.5.

Table 4.5  
Performance Trends : With EPS

<table>
<thead>
<tr>
<th>Years</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earning for equity Shareholders</td>
<td>100 lacs</td>
<td>150 lacs</td>
<td>200 lacs</td>
</tr>
<tr>
<td>No. of equity shares</td>
<td>100 lacs</td>
<td>100 lacs</td>
<td>100 lacs</td>
</tr>
<tr>
<td>EPS</td>
<td>Rs. 1.00</td>
<td>Rs. 1.50</td>
<td>Rs. 2.00</td>
</tr>
</tbody>
</table>

The above trend shows that the performance of company is improving each year. There is no indication of whether value of firm is being created or not.

If opportunity cost is brought into the picture performance would look as given in Table 4.6.

Table 4.6  
Performance Trend : With EVA

<table>
<thead>
<tr>
<th>Years</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPS</td>
<td>1.00</td>
<td>1.50</td>
<td>2.00</td>
</tr>
<tr>
<td>% Return on Capital of Rs. 10.0</td>
<td>10%</td>
<td>15%</td>
<td>20%</td>
</tr>
<tr>
<td>Opportunity cost of capital</td>
<td>18.50%</td>
<td>18.50</td>
<td>18.50</td>
</tr>
<tr>
<td>EVA</td>
<td>-8.50%</td>
<td>-3.5%</td>
<td>1.5%</td>
</tr>
</tbody>
</table>

The above trend shows that company’s performance is improving but in the last two years, it has destroyed value. Only in the year 2011, it had added value.
EVA and Return on Investment (ROI)

Rate of return on capital is quite common and a relatively good performance measure. Different companies calculated this return in different ways and call it with different names like Return on Investment (ROI), Return on invested capital (ROIC), Return on capital employed (ROCE), Return on net assets (RONA), Return on assets (ROA) etc. The main short coming in all these measures is that the maximizing rate of return does not necessarily maximize the return to shareholders. As a relative measure and without risk component, ROI fails to steer operations completely. Therefore, capital can be misallocated on the basis of ROI. Firstly, ROI ignores the definite requirement that the rate of return should be at least equal (if not more) to cost of capita. Secondly, ROI does not recognize that shareholders wealth is not maximized when rate of return is maximized. Shareholders want the firm to maximize the absolute return over and above the cost of capital and not of capital just because the expected return is less than the present return. Cost of capital is a much more important hurdle rate than company’s current rate of return.

In the corporate control, in spite of differences between EVA and ROI, they both go hand in hand. The former stresses on impact on shareholders wealth and the latter tell about rate of return. ROI cannot be abandoned since it is a very good and illustrative measure about rate of return. However, decisions cannot be based on ROI since maximizing rate of return does not matter when aim is to maximize return to shareholders.
EVA and Return on Net Worth (RONW)

Rate of return on equity (ROE) or net worth (RONW) is again a function of returns the company’s products and projects generate, irrespective of its cost of capital. ROE suffers from the same shortcoming as ROI. Risk component is not included and hence, there is no comparison. The level of RONW does not tell the owners if company is creating shareholders wealth or destroying it. With ROE, this shortcoming is much more than ROI for simply increasing leverage can increase financial risk. As ROI, RONW is also an informative measure but it should not guide the operations.

Thus, all accounting based rate of returns (ROI, ROE, RONA, RONW, ROIC etc.) fail to assess true or economic return of a firm because they are based on historical asset values, which in turn, are distorted by inflation and other factors. Stewart defined. EVA as after tax return on beginning capital. EVA is like a corporate nervous system. It enables organization is to add to its shareholders value and EVA is an accurate measure of incremental annual shareholder value generated by a company. By using EVA to evaluate options, a company chooses strategies that result in maximum addition to shareholder value. This makes EVA an ideal tool for equity analysis. Also, since EVA standardizes financial information, it provides common platform for comparison of companies across the globe. EVA has thus, taken the best of residual income concept, eliminated the worst of accounting practices and emerged as a reliable performance metric.

- A performance measure that can be maximized as an objective.
- It can be used as a metric to evaluate capital budgeting proposals (it is the only measure of both, performance evaluation and strategic decision making).
- It integrates effect of profitability and growth into the same measure.
- It simplifies the concept of profitability which was earlier complex with traditional measures.
- It unifies the goal of companies and their shareholders.
- It has good correlation with market capitalization (not yet demonstrated in India).

MARKET VALUE ADDED

EVA is aimed to be a measure of the wealth of shareholders. According to this theory, earning a return greater than the cost of capital increase value of company while earning less than the cost of capital decreases the value. For listed companies, Stewart defined another measure that assesses if the company has created shareholder value or not. If the total market value of a company is more than the amount of capital invested in it, the company has managed to create shareholder value. However, if market value is less than capital invested, the company has destroyed shareholder value. The difference between the company’s market value and book value is called Market Valued Added or MVA.
Simply stated,
Market Value Added (MVA)

\[ \text{MVA} = \text{Market value of the company} - \text{Capital invested in the company} \]

Where,

Market value :- For a public listed company it is calculated as the number of shares outstanding \( \times \) share price + book value of debt (since market value of debt is generally not available).

Capital invested :- It is the book value of investments in the business made up of debt and equity.

Effectively, the formula becomes

\[ \text{MVA} = \text{Market value of equity} - \text{Book value of equity} \]

According to Stewart, MVA tells us how much value company has added to or subtracted from its shareholders investments. Successful companies add their MVA and thus, increase the value of capital invested in the company. Unsuccessful companies decrease the value of capital originally invested in the company. Whether a company succeeds in creating MVA (increasing shareholder value) or not, depends on its rate of return. If a company’s rate of return exceeds its cost of capital, the company will sell on stock markets with premium compared to the original capital and thus, have positive MVA. On the other hand, companies that have rate of return smaller than their cost of capital, sell with discount compared to the original capital invested in the company.
Whether a company has positive or negative MVA depends on the level of rate of return compared to the cost of capital. All this applies to EVA also. Stewart has defined relationship between EVA and MVA.

RELATIONSHIP BETWEEN EVA AND MVA

When a business earns a rate of return higher than its cost of capital, EVA is positive. In other words, investors are earning more than their investment in that business than they could elsewhere. In response, investors bid up share prices, increasing the value of their business and driving up its MVA. Similarly, investors discount the value of businesses that earn a return below their cost of capital. Thus, in a way, EVA drives MVA as is shown in Chart 4.2.

Thus, MVA is an estimate made by the investors of the net present value of all current and expected future investments in the business. In other words, it can be said that MVA is same as NPV and can be
calculated as the present values of all future EVAs. Similarly, it can be the present value of future free cash flows, because discounted EVA and discounted free cash flows are mathematically equivalents.

From the definition of MVA, value of firm can be expressed as

\[
\text{Market Value} = \text{Capital} + \text{MVA of firm}
\]

However, MVA is the present value of all future EVAs. Therefore, the value of the firm can be expressed as sum of its capital; current EVA capitalized as perpetuity and the present value of all the expected future EVA improvements.

\[
\text{Market Value} = \text{Capital} + \text{Value of current EVA as perpetuity} + \text{Present value of expected EVA Improvement}
\]

Since, market value is dependent on market implications of all future performance, market values are sensitive to the changes in current EVA as well as expected EVA improvement. This results in an interesting problem for the managements. They need to decide the level of focus on generating current results and future prospects. The solution seems to be clear. Management must focus on producing best results today a while making significant efforts for future simultaneously. The stress has to be on long term and short term perspective both. Relationship between MVA and EVA is reflected in Chart 4.3.
In a nutshell, relationship between EVA and MVA can be summarized as follows:

1. The relationship between EVA and MVA is more complicated than the one between EVA and firm value.

2. MVA of a firm reflects not only expected EVA of assets in place but also expected EVA from future projects.

3. To the extent that the actual EVA is smaller than expected EVA, the market value can decrease even if EVA is higher.

MVA is, thus, in a way best performance measure because it focuses on cumulative value added or lost on invested capital. It is the difference between the capital investors have put in business (cash in) and the value they could get by selling their claims (cash out). It is a focus on wealth in dollar or rupees rather than rate of return in percentage. It, therefore, recognizes all value adding investments even if than original rate of return.
PROBLEMS WITH EVA AS PERFORMANCE MEASURE

A better understanding of the concept of EVA requires understanding of the problems it faces in measuring operating performance of the company. No performance measure is perfect. Likewise, EVA has its weaknesses and it is for the companies to realize that EVA is not the ultimate truth and it does not always tell the amount of shareholders value created or destroyed. Table gives the overview of these measurement problems faced by the companies in computation of EVA.

Table 4.7
Some Measurement Issues in EVA

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Measurement Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>How to measure the capital invested in assets in place:</td>
</tr>
<tr>
<td></td>
<td>Many firms use book value of capital invested. To the degree that book values reflect accounting choice made over time, this may not be true.</td>
</tr>
<tr>
<td></td>
<td>In case where firms alter their capital invested through their operating decisions (for example, by using operating leases), the capital and after tax operating income have to be adjusted to reflect true capital invested.</td>
</tr>
<tr>
<td>2.</td>
<td>How to measure return on capital:</td>
</tr>
<tr>
<td></td>
<td>Again, the accounting definition of return on capital may not reflect the economic return on capital.</td>
</tr>
<tr>
<td></td>
<td>In particular, the operating income has to be cleansed of any expenses which are really capital expenses (in the sense that they create future values). One example would be R&amp;D.</td>
</tr>
<tr>
<td></td>
<td>The operating income also has to be cleanse of any cosmetic or temporary effects.</td>
</tr>
<tr>
<td>3.</td>
<td>How to estimate cost of capital:</td>
</tr>
<tr>
<td></td>
<td>DCF valuation assumes that cost of capital is calculated using market values of debt and equity.</td>
</tr>
</tbody>
</table>
If it is assumed that both assets in place and future growth are financed using the market value mix, the EVA should also be calculated using the market value.

Instead, if the entire debt is assumed to be correct by assets in place, the book value debt ratio will be used to calculate cost of capital. Implicit is then the assumption that as the firms grow, its debt ratio will come close to book value debt ratio.

In addition to these measurement problems, EVA computation is subject to two limitations:

1. **Wrong Period sing**

   EVA is poor in period sing returns of a single investment for. It under-estimates the return in the beginning and over-estimates at the end of the period. The companies in the growth phase or business units with heavy new investments are likely to have current negative EVA although their true rate of return may be good and so long term shareholders wealth added (TRUE long term EVA) would be positive. This is the main criticism of EVA being a short term performance measure.

2. **Distortions caused by inflation, asset structure**

   EVA, on an average, is also a poor estimator of true underlying rate of return because historical asset values cannot describe accurately the current value of assets tied into the business. Being distorted by inflation and different depreciation schedules etc. Historical values distort EVA and ROI also. As ROI fails (on an average) to estimate the true return, so periodic EVA fails to estimate the value added to shareholders.
Distortions of EVA are more pronounced in cyclic businesses where peaks and valleys feature in EVA figures. Further, projects in infrastructure, new product launches with high gestation period have negative initial EVA figure through NPV of the project may be positive. Thus, it gives wrong signals about the aggregate company performance. However, industries with lots of current assets (instead of fixed assets and with short investment period e.g. banking, food and beverages, personal computers, retailing and publishing etc.) do not get affected by these pitfalls since current assets represent the majority of total amount of assets; so value of assets would be close to current value of capital tied into the business.

To cope with distortions and eliminate this problem, DE Villiers (1997) suggests using the current value of assets instead of book value. The extent of this problem depends very heavily on the assets structure (how relatively big are the proportions of current, depreciable and non depreciable assets) and on the average project duration. Thus, the extent and direction of this problem can be estimated. The EVA targets can be adjusted accordingly, although it is not an easy task. Also, this problem is generally small though it does not require too many adjustments. EVA can be and has been successfully applied in many companies without any special adjustment to capital base (Birchard 1996). This is also the way the companies have calculated their ROI for decades without massive criticism. So far, this distortion in ROI has been widely ignored.
although the theoretical weakness in using historical values in calculating ROI has been acknowledged.

CONCLUSION

In spite of these shortcomings, EVA has turned out to be a better shareholder’s performance measure than the traditional accounting based performance metrics. In fact, EVA is regarded as the most accurate measure of shareholder value creation around the world. It is an accurate reflection of the quantum of incremental value a company generates for its shareholders after accounting for its cost of operations including cost of capital. Since creating shareholders value is the basic objective of every organization, hence the present study has employed this metric for analyzing post-merger performance of merged firms.
REFERENCES