Chapter –4 Theoretical Framework- EVA

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4.1 Introduction:

Economic Value Added (EVA) is a value based performance measure that gives importance on value creation by the management for the owners. Profit maximization as a concept is age-old wealth maximization is matured and value maximization is today’s wisdom. Stern Stewart’s EVA raises storm in corporate world and gives a new way to think about rewarding management. Performance measures are needed for decisions regarding management compensation packages and resource allocation. Initial measures revolved around “stock price”, but did not adequately reflect performance. In 1991, Stern Stewart Management Services created Economic Value Added (EVA), a measurement that correlated with changes in shareholder wealth, but was not subject to random variations in stock price. This article analyzes EVA and introduces Refined Economic Value Added (REVA) as a better measure of management performance.

Economic Value Added is the financial performance measure that comes closer than any other to capture the true economic profit of an enterprise. Thus, in modern economics and finance area, EVA holds an important part that has less debate among practitioners. It is the performance measure most directly linked to the creation of shareholders wealth over time. Shareholders are very much choosy for their interest into the business and they like management to come up with very specific solution. By the time, it is established that the very logic of using EVA is to maximize the value for the shareholders. More explicitly, EVA measure gives importance on how much economic value is added for the shareholders by the management for which they have been entrusted with. EVA is exceptional from other traditional tools in the sense that all other tools mostly depend on information generated by accounting. And we know, accounting, more often produces historical data or distorted data that may have no relation with the real status of the company. But, EVA goes for adjustments to accounting data to make it economically viable.

EVA that gained currency in the second half of 1990's has emerged as one of the most prominent value based management techniques. Fortune magazine has called it "today's hottest financial idea and getting hotter" and management guru Peter Drucker referred to it as a measure of total factor productivity. Companies across a broad spectrum of industries and a wide range of countries have joined the EVA bandwagon and have started reporting their EVA numbers.
4.2 Evaluation of EVA:

The evolution of economic profit—Economic Value Added (EVA)—is a fascinating study with historical roots that can be traced back to the classical economists’ notion of “residual income.” For instance, consider the definition of economic profit made in 1890 by famous British economist, Alfred Marshall, regarding the real meaning of a business owner’s “profit:

What remains of his profits after deducting interest on his capital at the current rate may be called his earnings of undertaking or management.

Based on Marshall’s statement, it is evident that the economists’ definition of profit—namely, a residual view of income or economic profit—is radically different from the accounting measures of profit in use today, such as EBIT, EBITAD, or net operating income. That is, a key distinction between economic profit and accounting profit lies in the classical economists’ notion that a company is not truly profitable unless its revenues have (1) covered the usual production and operating expenses of running a business, and (2) provided a normal return on the owners’ invested capital.

In a more fundamental sense, this residual view of income is really what today’s economic profit movement is really all about. While EVA is rooted in classical economic theory, three pioneering 20th century American economists—Irving Fisher during the 1930s, and Nobel Laureates Franco Modigliani and Merton Miller in the late 1950s to early 1960s—expanded upon the fuller meaning of economic profit in a corporate valuation context. Irving Fisher established a fundamental link between a company’s Net Present Value (NPV) and its discounted stream of expected cash flows. In turn, Modigliani and Miller showed that corporate investment decisions—as manifest in positive NPV decisions—are the primary driver of a firm’s enterprise value and stock price—as opposed to the firm’s capital structure mix of debt and equity securities.

Basically, the theory of economic value added rests on two principle assertions: (1) a company is not truly profitable unless it earns a return on invested capital that exceeds the opportunity cost of capital, and (2) that wealth is created when a firm’s managers make positive NPV investment decisions for the shareholders.
The EVA goal here is twofold: (1) to illustrate the essential ingredients of economic profit measurement without getting tangled up in a plethora of EVA accounting adjustments and, (2) to illustrate the EVA advantage over traditional accounting profit measures such as EBIT, EBITAD, and net operating income.

4.3 **Historical background of EVA:**

EVA is not a new discovery. An accounting performance measure called residual income is defined to be operating profit subtracted with capital charge. EVA is thus one variation of residual income with adjustments to how one calculates income and capital. According to Wallace (1997, p.1) one of the earliest to mention the residual income concept was Alfred Marshall in 1890. Marshall defined economic profit as total net gains less the interest on invested capital at the current rate. According to Dodd & Chen (1996, p. 27) the idea of residual income appeared first in accounting theory literature early in this century by e.g. Church in 1917 and by Scovell in 1924 and appeared in management accounting literature in the 1960s. Also Finnish academics and financial press discussed the concept as early as in the 1970s. It was defined as a good way to complement ROI-control (Virtanen, 1975, p.111). In the 1970s or earlier residual income did not got wide publicity and it did not end up to be the prime performance measure in great deal of companies. However EVA, practically the same concept with a different name, has done it in the recent years. Furthermore the spreading of EVA and other residual income measures does not look to be on a weakening trend. On the contrary the number of companies adopting EVA is increasing rapidly (Nuelle, 1996, p. 39; Wallace, 1997, p. 24 and Economist 1997/2). We can only guess why residual income did never gain a popularity of this scale. One of the possible reasons is that Economic value added (EVA) was marketed with a concept of Market value added (MVA) and it did offer a theoretically sound link to market valuations.

The origins of the value added concepts date all the way back to the early 1900's (Bromwich & Walker, 1998, p. 392). Stern Stewart & Co trademarks EVA in 1990’s when the tool is introduced and subsequently adopted by several major corporations that lead EVA to have successful stories at the very beginning. Mainly professional literature mostly aimed at presenting, promoting or discussing the EVA concepts in relation to consulting work. While most of this, partly anecdotal, literature looks at
the advantages of the concept with a few critical views also. Subsequent sources are too numerous for an extensive listing, but for instance there is material such as Milunovich & Tsuei (1996), Anctil, Jordan & Mukherji (1998), Damodaran (1999), Mouritsen (1998), Bowen & Wallace (1999), and Dodd & Johns (1999). There also is much WWW based material such as Mäkelä (1998), Weissenrieder (1999), and Stern Stewart & Co. (2000). Empirical research literature measuring the strength of the relation between market returns (or market value) and EVA compared to the relation between market returns and the traditional income measures. O'Byrne (1996, p.125) concludes, "EVA, unlike NOPAT [Net Operating Profit After Taxes] or other earnings measures like net income or earnings per share, is systematically linked to market value. It should provide a better predictor of market value than other measures of operating performance." Also Uyemura, Kantor & Pettit (1996) arrive at similar conclusions. Stark & Thomas (1998, p. 445) provide "some support for the advocates of the use of RI for planning and control" from the market relation. However, Biddle, Bowen & Wallace (1997) find "little evidence to support the Stern Stewart claim that EVA is superior to earnings in its association with stock return or firm values". Chen & Dodd (1997) conclude that EVA measures provide relatively more information than the traditional measures of accounting in terms of the stock return association, but that EVA should not entirely replace the traditional measures since measures such as E/P, ROA and ROE have incremental value in monitoring firm performance. They also observe that there is no significant difference between EVA and the traditional RI in terms of the association with stock returns.

Some literature evaluates EVA as a management tool from the point of view of the accounting measurement. O'Hanlon & Peasnell (1998) thoroughly discuss EVA as a value-based performance indicator, Stern Stewart Co intricate adjustments, EVA benchmarks, and EVA-based bonuses. Bromwich & Walker (1998) add to the theoretical discussion by pondering the EVA debate all the way from Hicksian income concepts. Pfeiffer (2000) considers mathematically EVA versus discounted cash flow methods for resolving internal agency problems in decentralized decision-making. Besides the theoretical discussion, understanding is needed about the numerical behavior of the EVA under different conditions and about EVA's numerical relationship to the accounting measures like Return on Investments (ROI),
Return on Equity (ROE) and to economic profitability measures like the Internal Rate of Return (IRR).

4.4 Definition of 'Economic Value Added:

EVA is an operational measure that differs from conventional earnings measures in two ways. First, it explicitly charges for the use of capital (residual income measure). Secondly, it adjusts reported earnings to minimize accounting distortions and to better match the timing of revenue and expense recognition. As such, wealth maximization correlates with EVA maximization. A positive EVA indicates that a company is generating economic profits; a negative EVA indicates that it is not; A measure of a company's financial performance based on the residual wealth calculated by deducting cost of capital from its operating profit after taxes. It is also known as economic profit.

The formula for calculating EVA is as follows:

\[
\text{EVA} = \text{Net Operating Profit After Taxes (NOPAT)} - (\text{Capital} \times \text{Cost of Capital})
\]

If a company’s return on capital exceeds its cost of capital it is creating true value for the shareholder.

Financial status is the backbone of company’s economy system. The economy of the company is greatly influenced by the operation of finance. It is essential for proper allocation of resources, which in turn helps to sustain a healthy climate for analyzing the profit as well as performance. There are different financial tools like Ratios, Fund flow and Cash flow, Common size, Comparative statements etc., to assess the financial performance. This study takes an effort to use the Economic Value Added (EVA) i.e. to find out the economic profit and to measure the difference between equity and debts respectively in addition to the usual financial tools.

EVA is measured by comparing Return on Capital Employed with Cost-of-Capital, also called Return Spread. A positive Return Spread indicates that earning is more than cost-of-capital – there by creating wealth for owners or stockholders. A negative Return Spread means earning is less than cost-of-capital – thus reducing the wealth of owners and stockholders.
Economic Value Added (EVA) is an indicator of the market value of service center's owner’s equity, a measure especially important to closely held companies, which do not have the benefit of a published stock price. For publicly traded companies, EVA correlates very closely with stock price.

EVA is an estimate of true economic profit and a tool that focuses on maximizing shareholders wealth. Companies’ best utilize EVA as a comprehensive management tool. EVA has the strategic importance of focusing management and employees on the company’s primary goal of maximizing shareholder value. With this goal in mind, EVA can be used tactically in a number of ways including: shareholder reporting, financial benchmarking, management decision-making tool, and foundation for incentive compensation plans.

With reference to Anderson, Anne et al. (2005) firms’ earnings must exceed the cost of debt and equity, in order to create wealth, Hamilton (1777) and Marshall (1890) It is argued that the origin of EVA was since Hamil-ton (1777) and Marshall (1890). In 1950s, the concept named as “residual income” was used by General Electric as performance measure.

In 1980s Stewart added a series of accounting adjustments based on GAAP figures and revised the computation of residual income (Geyser & Liebenberg, 2003). New York based consulting firm Stern Stewart & Co. named this concept as EVA and trademarked in 1989.

EVA has been defined in various ways. According to several scholars, EVA measures the difference between the return on company’s capital and the cost of that capital (Dagogo & Ollor, 2009; Young, 1997). EVA is “a measurement of the true economic profit generated by a firm” (Sharma & Kumar, 2010; Stewart, 1994, pp. 73) and is calculated by comparing a firm’s net operating profit after tax (NOPAT) to the total cost all its forms of capital which includes debt as well. If NOPAT exceeds the cost of capital, it gives a positive EVA and on the other hand, if the NOPAT is less than the cost of capital, it gives a negative EVA. The word capital includes all the assets invested in the firm taking into consideration the deduction of the current liabilities which are not entitled to any interest from those assets and the equity.
EVA includes cost of all the capital invested by firms calculated not following in the generally accepted accounting principles (GAAP). Cost of capital is the essential difference between accounting profit and the profit from the standpoint of an economist (Ramana, 2003). Accountants never deduct the cost of capital when calculate the profit. In other words, the cost of the equity is subtracted from the revenue. On the other hand from an economist’s point of view, there are charges for all the resources in computation of profit. This includes an opportunity costs for the equity capital invested by the shareholders in the business. Therefore, the calculation of economic profit is net above the cost of all resources.

Accordingly, EVA represents company’s profit which is net of the cost of both debt and equity capital invested in the business (Stewart, 1994). However, Young (1997) argues that EVA has issues more than just this deduction. Young supports GAAP inexorably distort accounting profits and equity capital, even though the managers do not have any intention to manipulate the figures under the best reporting practices. In order to restore these distortions, EVA computation includes number of adjustments based on the GAAP based figures. In fact, Stewart (1991) argued that about 164 adjustments needed in calculation of EVA. Therefore, it is likely that EVA users are to abandon any measurement of value creation from accounting principles.

While Lehn & Makhija (1996) concluded that EVA can be exhibited as superior performance measurement tool as compared to the conventional accounting measures. The same was claimed by Stewart in 1989 when it first proposed the model. Though there are arguments in both sides for EVA for decades, this study aims to examine it and come to a conclusion.
4.5 EVA - as a Management Tool:

EVA is superior to accounting profits as a measure of value creation because it recognizes the cost of capital and, hence, the riskiness of a firm’s operations (Lehn & Makhija, 1996, p.34). It is used as a value based performance measure tool more widely. In this context, EVA is compared with some traditional measures and with some other value based measures as well.

EVA Versus Traditional Measures:

EVA is based on the common accounting based items like interest bearing debt, equity capital and net operating profit. It differs from the traditional measures mainly by including the cost of equity. Salomon and Laya (1967) studied the accounting rate of return (ARR) and the extent to which it approximates the true return measured with IRR. Harcourt (1965), Solomon and Laya (1967), Livingston and Solomon (1970), Fischer and McGowan (1983) and Fisher (1984) concluded that the difference between accounting rate of return (ARR) and the true rate of
return is so large that the former cannot be used as an indication of the later (De Villiers, 1997, pp. 286-87).

Among all traditional measures, return on capital is very common and relatively good performance measure. Different companies calculate this return with different formulas and call it also 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 shortcoming with all these rates of return is in all cases that maximizing rate of return does not necessarily maximize the return for shareholders. Observing rate of return and making decisions based on it alone is similar to assessing products on the "gross margin on sales"-percentage. The product with the highest "gross margin on sales" percentage is not necessarily the most profitable product. The difference between EVA and ROI is actually exactly the same as with NPV (Net Present Value) and IRR (Internal rate of return). IRR is a good way to assess investment possibilities, but we ought not to prefer one investment project to the other on the basis of IRR only.

Mathematically EVA gives exactly the same results in valuations as Discounted Cash Flow (DCF) or Net Present Value (NPV) (Stewart, 1990, p. 3; Kappi, 1996), which are long since widely acknowledged as theoretically best analysis tools from the stockholders’ perspective (Brealey & Mayers, 1991, pp. 73-75). In the corporate control, it is worth remembering that EVA and NPV go hand in hand as also ROI and IRR. The formers tell us the impacts to shareholders wealth and the laters tell us the rate of return. There is no reason to abandon ROI and IRR. They are very good and illustrative measures that tell us about the rate of returns. IRR can always be used along with NPV in investment calculations and ROI can always be used along with EVA in company performance. However, we should never aim to maximize IRR and ROI and we should never base decisions on these two metrics. IRR and ROI provide us additional information, although all decisions could be done without them. Maximizing rate of returns (IRR, ROI) does not matter, when the goal is to maximize the returns to shareholders. EVA and NPV should be in the commanding role in corporate control and ROI & IRR should have the role of giving additional information.
EVA Versus Other Value-based Measures:

EVA is not the only value-based measure rather we have a good number of tools that are also used for the same. Some are developed by consulting industries and others are by academics. Consultants like to use their particular acronym to establish it as their personal brand though it would not differ very much of the competitors’ measures. Thus the range of these different acronyms is wide. Some of such measures are mentioned here in a tabular format so that readers can grasp them easily.

Table: 13 Some Value-Based Measures in Addition to EVA: at a Glance

<table>
<thead>
<tr>
<th>Title of the Value Based Measure</th>
<th>Developed By</th>
<th>How To Calculate?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash Flow Return On Investment CFROI</td>
<td>Boston Consulting Group (BCG) and HOLT Value Associates</td>
<td>CFROI (Gross Cash Flow/ Gross Assets), is calculated in two steps. First, inflation-adjusted cash flows are compared with the inflation-adjusted gross investment. Then, the ratio of gross cash flow to gross investment is translated into an internal rate of return by recognizing the finite economic life of depreciable assets and the residual value of non-depreciable assets such as land and working capital (Myers, 1996).</td>
</tr>
<tr>
<td>Cash Value Added (CVA)</td>
<td>Academicians</td>
<td>CVA = Operating Cash Flow (OCF) - Operating Cash Flow Demand (OCFD). OCF is the sum of Earnings before Depreciation, Interest and Tax (EBDIT, adjusted for non-cash charges), working capital movement and non-strategic investments. OCFD represents the average capital costs per year (in absolute terms) that is constant over the investment period. (Ottoson &amp; Weissenrieder, 1996)</td>
</tr>
<tr>
<td>Shareholder Value Added (SVA)</td>
<td>Dr. Alfred Rappaport and LEK/Alcar Consulting Group</td>
<td>Estimated future cash flows are discounted to present value to calculate the value of the firm continuously. Measuring the current</td>
</tr>
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</table>

A STUDY OF ECONOMIC VALUE ADDED BASED PERFORMANCE MEASUREMENT OF SELECTED AUTOMOBILE COMPANIES IN INDIA

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<table>
<thead>
<tr>
<th>Performance Measurement</th>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjusted Economic Value Added (AEVA)</td>
<td>Academicians</td>
<td>It is unlike to EVA in the sense that it uses current value of assets instead of book values.</td>
</tr>
<tr>
<td>Refined Economic Value Added (REVA)</td>
<td>Academicians</td>
<td>It uses the market value of the firm in the beginning of the period instead of book value (Baciodore et al 1997, p.15).</td>
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</table>

Comparision between EVA and Some Traditional Measurement

It is believed that EVA is a better performance measure than traditional measures like Earning Per Share (EPS), Return On Investment (ROI), or Return On Net Worth (RONW). EPS depends largely on the vagaries of accounting policies followed by a firm. Thus, EPS is as much reliable as the accounting profit. Accounting profit depends on the firm’s capital structure. In computing accounting profit, only one part of cost of capital (i.e., borrowing cost) is deducted. And it does not reflect the true economic profit. On the other hand EVA is the residual profit after deducting full cost of capital from operating profits.

Return on Investment (ROI) considers only one side of the performance. ROI is computed as follows:

\[ \text{ROI} = \text{Profit Margin} \times \text{Asset Turnover} \]
\[ \text{OR} \]
\[ \text{ROI} = \frac{\text{Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Investments}} \]

This measure is simple to compute and the formula gives a percentage that determines how the manager of a particular unit is doing. But executive reliance on it may lead to rejection of economically profitable projects or acceptance of unvalued projects. Both would lead to destruction of shareholders value. Consider a firm with a present ROI of 22 percent and an overall cost of capital of 18 percent. The firm receives a new investment proposal with an estimate ROI of 20 percent, whereas cost of capital remaining unchanged. If the firm’s objective is to maximize ROI, it may reject the project. But actually, the project would have added two percent economic surplus to the wealth of the firm. Consider another example. Suppose the present ROI of the firm is 10 percent and cost of capital 16 percent. The...
firms receive a new investment proposal with an estimated ROI 12 percent, with no change in cost of capital. The firm would accept the proposals, which may happen to maximize ROI. But this decision would destroy the firm’s wealth. EVA compares ROI with the cost of invested capital and a firm, with the objective of EVA maximization, and would accept all fresh investment proposals so long as the expected EVA is positive.

EPS, ROI and another performance measures are simple measures, yet they suffer from substantial weaknesses.

1. Income manipulation may be possible since income and investments or assets base has not been defined to ensure consistency;
2. Manipulation may result if different units make different accounting choices;
3. Income is based on accrual accounting which does not consider cash flows or time value of money and hence may not provide the best measure;
4. In an effort to improve performance, managers may be motivated to keep old assets and not replace them when it is most beneficial for the organization;
5. The measures focus attention on how well the units perform but no effort is made to determine how well the unit performs relative to the companies’ wide objectives.

Many of these shareholder value measures are based more on cash flows that make them more effective than EVA. On the other hand, these other measures are quite complicated to calculate and based on more subjective data than EVA. At least CFROI and CVA defer most of the depreciation into later years in order to achieve smooth return or smooth capital costs. EVA is the most widely used Value-Based performance measure (Myers, 1996, p.42) probably just because it happens to be an easier concept compared to the others. In implementing EVA, one of the most important things is to get the people in organizations to commit to EVA and thereby also to understand EVA (Klinkerman, 1997).
Figure: 4 The EVA Spectrum (Hoque, Akter & Shil, 2004, p. 139)

GAAP operating profits and the GAAP balance sheet. It is a True EVA: The most theoretically correct and accurate measure of economic profit. It can be calculated with all relevant adjustments to accounting data and using the precise cost of capital for each business unit in a company. It is extremely difficult to compute.

**Basic EVA:** The EVA, which would be derived by using unadjusted improvement on regular accounting earning, as it recognizes that equity capital has a cost.

**Disclosed EVA:** It is the EVA computed by Stern Stewart and Co to rank companies. It is computed by making about a dozen standard adjustments to publicly available accounting data. It is much better than basic EVA but not as good as it should be for internal management.

**Tailored EVA:** An insider can calculate this EVA by making tailor-made adjustment peculiar to the organization concerned. The EVA peculiar to the organizational structure, business mix, strategy and accounting policies of each company.

Tailored EVA is the ideal EVA measure. But, it is difficult for an outsider to use this definition of EVA for sheer lack of information. Therefore, in the present study, EVA has been calculated in a manner that lies in between “Basic EVA” and “Disclosed EVA”. 
4.6 Economic Profit Versus Accounting Profit:

Stern (1990) observed that Economic Value Added is the financial performance measure that comes closer than any other to capture the true economic profit of an enterprise.

**Economic Profit = Total revenues from capital – Cost of capital**

The basic idea of this criterion is to find, in microeconomics, where it is said that the main goal of a company is maximization of profit. However, it does not mean book profit (the difference between revenues and costs) but economical profit. The difference between economical and book profit is, economical profit. It is the difference between revenues and economical costs, which includes book costs and opportunity costs. Opportunity costs are presented by the amount of money lost by not investing sources (like capital, labour, and so on) to the best alternative use. Opportunity costs are in reality represented mainly by interests from equity capital including risk reward and sometimes lost wages too. In short:

**Book profit = Revenues – Costs**

This leads to the conclusion that economical profit appears when its amount is higher than “normal” profit derived from average cost of capital invested both by creditors (cost interests) and owners– shareholders (opportunity costs). This is the basic idea of new measure, EVA.
**Computation of EVA:**

Operationally defined, EVA is the difference between Net Operation Profits After Taxes (NOPAT) and capital charge i.e., Cost of net Operating of Capital Employed (COCE) or the product of capital employed with the difference between the Return on Capital Employed (ROCE) and the Cost of Capital Employed (COCE) i.e.,

\[ \text{EVA} = \text{Net Operating Profits After Taxes (NOPAT)} - \text{Capital Charge (WACC \times CE)} \]

Where:

- \( \text{WACC} = \text{Weighted Average Cost of Capital} \)
- \( \text{CE} = \text{Capital Employed} \)
- Capital Employed = Debt + Equity

OR

\[ \text{EVA} = \text{NOPAT} - (\text{Cost of Equity} + \text{Cost of Debt}) \]

Where:

- \( \text{CE} = \text{Capital Employed or invested capital} \)
- NOPAT = \( \text{Profits after depreciation and taxes but before interest cost} \)

\[ \text{EVA} = \text{Capital Employed} \times (\text{Return on Capital Employed - Cost of Capital Employed}) \]

\[ \text{EVA} = \text{CE} \times (\text{ROCE - COCE}) \]

\[ \text{EVA} = \text{ce} \times (r - c). \]

The real profit of a company is the profit after deducting the capital costs. This profit figure is often called Economic Value Added, EVA. (Economic Profit or Residual Income).

EVA simply is:

\[ \text{EVA} = \text{Sales} - (\text{Operating expenses (material, wages, depreciation, taxes)} + \text{Capital costs (WACC \times Invested Capital)}) \]
4.7 Elements of EVA’s Formula:

As mentioned above the formula of EVA is:

\[ \text{EVA} = \text{Net Operating Profits after Taxes (NOPAT)} - \text{Capital Charge (WACC \times CE)} \]

OR

\[ \text{EVA} = \text{NOPAT} - (\text{Cost of Equity Capital} + \text{Cost of Dept Capital}) \]

The components of EVA formula are:

- Net Operation Profit after Tax (NOPAT)
- Weighted Average Cost of Capital (WACC)
- Capital Employment (CE)
- Cost of Capital that is including of:
  - Cost of Debt Capital
  - Cost of Equity Capital

4.7.1 NOPAT:

It refers to quantum of net operation profit remained in the business after the payment taxes but before the interest. Addition and subtraction of non-operating income and expenses to the net profit figure and making certain other adjustments for turning accounting profits into economic profits is being also advocated.

However, the actual number of adjustments would depend on prevailing GAAP of a country. In order to avoid complexity in the calculation of NOPAT, four common adjustments are to be made has been suggested.

1. Adjustments for deferred Tax Reserve;
2. Last-in-First-Out (LIFO) Reserve;
3. Goodwill Amortization and;
These items are called Equity Equivalence. Equity Equivalents are added to invested capital and periodic change is taken to NOPAT. These adjustments make NOPAT, a realistic measure of yield generated for investors for recurring business activities. It is believed that these adjustments would truly convert accounting profit to economic profit.

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

PBIT (NNRT) = Profit Before Interest and Taxes (Net of Non-Recurring Transactions)

\[
= \text{Profit After Tax (PAT)} + \text{Provision for Tax} + \text{Interest Expenses} + \text{Lease Rent} + \text{Extraordinary Income} + \text{Extraordinary Expenses}
\]

\[
T = \text{Effective Tax Rate (provision for Tax / PBT)}
\]

### 4.7.2 WACC:

WACC is the weighted average of the cost of debt (ki), cost of equity (ke) and cost of preference capital (kp), if any, with weights equivalent to the proportion of each in the total capital, i.e.

\[
\text{WACC} = \frac{(ke \times s) + (ki \times b) + (kp \times p)}{v}
\]

Where:

- \(ke\) = Cost of equity
- \(ki\) = Effective cost of debt i.e., \(kd(1 - t)\)
- \(kd\) = Unadjusted cost of debt,
- \(kp\) = Cost of preference capital,
- \(v\) = Total value of business,
- \(s\) = Value of equity capital,
- \(b\) = Value of debts,
- \(p\) = Value of preference capital.

**Effective Cost of Debt (Ki)** Effective cost of debt refers to the average rate of interest that company pays for its debt obligation i.e., a company’s effective debt cost is taken by measuring interest paid against total borrowing and then adjusting it for taxes.
Cost of Preference Capital (Kp) is the discount rate that equates the present value of after tax interest payment, cash outflows to current market value of the preference share capital.

Cost of Equity (Ke) Cost of equity is an opportunity cost equal to the total return that an investor in a company’s equity could expect to earn from alternative investment of comparable risk. Cost of equity is not an explicit cost like cost of debt. The dividend-based approach or earning-based approach of finding out cost of equity is not a valid way of calculating the return expected by equity shareholders. These approaches only measure the explicit cost of servicing equity. But the true measure of equity cost can be calculated opting for a number of theories such as:

1. Capital Asset Pricing Model (CAPM);
2. Bond Yield Plus Risk Premium Approach;
3. Earning Price (E / P) Approach;
4. Realized Yield Approach;
5. Dividend Capitalization Approach.

In this current study, Capital Asset Pricing Model (CAPM) is being used for calculate cost of equity. Under CAPM cost of equity capital is expressed as:

\[ Ke = Rf + \beta(Rm - Rf) \]

Rf: Represents the most secure return that can be achieved and in India context, it represents current yield available in long-term government bonds.

\( \beta \): Refers to the sensitivity of the security returns to changes in the market return.

The suitability of a particular approach for calculation of cost of equity capital differs from country to country depending on their distinct disclosure and reporting practices and other environment conditions.

As mentioned above, in the India context, it represents current yield available in long-term government bonds. In the next section Beta has been explained in detail.
4.7.3 Capital Employment (CE):

It is the next element required for calculating EVA and can be calculated through the assets side or the liabilities side of a balance sheet.

From the Assets Side of the Balance Sheet:

\[ CE = \text{Current Assets} - \text{Noninterest bearing current liabilities} + \text{Net Fixed Assets} \]

OR

\[ CE = \text{Net Working Capital} + \text{Net Fixed Assets} \]

From the Liability Side of the Balance Sheet:

\[ CE = \text{Interest bearing debt (short term as well as long term)} + \text{Net worth less any non operating assets} \]

Capital employed or Invested capital refers to total assets (net of revaluation) net of non-interest bearing liabilities. From an operating perspective, invested capital can be defined as Net Fixed Assets, plus investments plus Net Current Assets. Net Current Assets denote current assets net of Non-Interest Bearing Current Liabilities (NIBCLS). From a financing perspective, the same can be defined as Net Worth plus total borrowings. Total borrowings denote all interest bearing debts. It is need to mention that adjustments for four Equity Equivalents mentioned above should be made. The adjustments for Equity Equivalents are intended to arrive at the economic value of invested capital. Equity Equivalents eliminate accounting distortions. Net worth is defined as paid up share capital plus reserves and surplus (net of revaluation reserves) less miscellaneous expenditure less accumulated losses, if any. One may argue that this method of calculating invested capital is not free of depreciation distortions. Since net block of depreciable assets is considered, different corporate depreciation policy would affect the invested capital and hence EVA. Stewart (1991) tackles it by prescribing a uniform method of charging depreciation. He mentions that a straight-line depreciation would minimize the distortions. Such adjusted invested capital (after adjusting for Equity Equivalents and depreciation) would be called economic capital. However, invested capital for the purpose of the study is defined as follows:
**Invested Capital = Net Worth + Total Borrowings**

Where:

- Net Worth = Share Capital + Reserves and Surplus – Revaluation Reserve - Accumulated Losses - Miscellaneous Expenditure
- Total Borrowings = long term Interests bearing Debt + Short term Interest bearing Debt

The pertinent questions asked are whether the capital employed is taken at its opening value at the beginning of the year or the year-end value or the average of the two? Also should the capital employed be taken at the book value or the market value? The answer to the first question is to use the beginning of the year capital employed for calculating EVA as this was the capital available to the management to earn the returns on and further, taking the beginning of the year capital employed helps in evaluating capital budgeting decisions.

As for whether to take the capital employed at book value or market value, it is prudent to use the book value figure in the EVA calculations, as this is the amount that has been entrusted to the management to employ in the business.

### 4.7.4 Cost of Capital:

The term ‘Cost of Capital’ means the cost of long-term funds of a company. It is the multiple of ‘Capital Employed’ and Weighted Average Rate of Debt Capital, Cost of Equity Capital and Cost of Preference Share Capital. This is cost of capital or is known as Weighted Average Cost of Capital (WACC). WACC is post tax. Capital Employed represents the total of Debt Capital, Equity Capital and Preference Share Capital. The mix of Debt and Equity Capital has a vital role in the cost of capital. Equity Capital is generally more costly than Debt Capital. Use of Debt Capital increases interest payment risk, reduces WACC and increase Equity Shareholder’s return. Optimum Debt Equity mix should always be aimed at considering the trade-off in between risk and return.

- **Cost of Debt Capital:** Cost of Debt Capital is the discount rate that equates the present value of after tax interest payment cash outflows, to the current market value of the Debt Capital. Due to the tax-benefit on interest payment on debt capital,
Cost of Debt is, generally, lower than the Cost of Equity Capital. That is why; many companies go for capital gearing through Debt Capital in order to increase the earning of their equity shareholders. In case of banking companies subordinated Debts is considered as debt but not deposits. Because unlike subordinated debt it is not contractual and repayable on demand. That is, debts raised for funding capital requirement should only be considered as debt. Debts/ Bonds/ Time deposits raised by financial institutions for funding their landings should not be considered as debt capital.

- **Cost of Equity Capital:** Cost of Equity Capital is the market expected rate of return. Equity capital and accumulated reserves and surpluses that are free to equity shareholders carry the same cost. Because the reserves and surplus are created out of appropriation of profit, that is, by retention of profit attributable to equity shareholders. As it is shareholders money, the expectation of the shareholders to have value appreciation on this money will be the same as in the case of equity share capital. Hence, it bears the same cost as the cost of equity share capital.

4.8 **Measurement of EVA:** There are several techniques of estimation of equity cost of the firm. The Capital Asset Pricing Model (CAPM) technique is used more in order to calculate cost of equity.

- **Capital Asset Pricing Model (CAPM):** Cost of Debt Capital is easy to calculate as it depends on actual after tax cash outflows on account of interest payment. Calculation of cost of Equity Capital is little difficult as it depends on market expected rate of return. There are many theories to calculate Cost of Equity Capital. Out of all those theories Capital Assets Pricing Model (CAPM) is the most widely used method of calculating the Cost of Equity Capital.

Under CAPM cost of Equity Capital is expressed as:

\[
\text{Risk Free Rate} + \text{Specific Risk Premium} = \text{Risk Free Rate} + \text{Beta} \times \text{Equity Risk Premium} = \text{Risk Free Rate} + \text{Beta} \times (\text{Market Rate} – \text{Risk Free Rate})
\]

The risk-free rate represents the most secure return that can be achieved. In the Indian perspective, if anyone wants to sleep soundly at night should invest his savings in long-term tax-free government bonds, which is insensitive to what happens to stock market. In other worlds, yield on long-term tax-free government
bonds may be considered as the risk free rate. There is no consensus among the practitioners regarding risk free rate. But in this research the Indian long-term tax-free government bonds is considered.

Specific Risk Premium is a multiple of Beta and Equity Risk Premium. Equity Risk Premium is almost same for all the listed companies in stock market. Unless the volatility of share price and share market indices of two companies is the same, their Beta will be different.

- **Equity Risk Premium**: Equity Risk Premium is the excess return above the risk free rate that investors demand for holding risky securities. It is calculated as “Market Rate of Return (MRR) minus Risk Free Rate”. Market rate may be calculated from the movement of share market indices over a period of an economic cycle based on moving average to smooth out abnormalities. Risk Premium is judgmental based on: firm size (market capitalization), liquidity of the stock and non-diversifiable risk

- **Beta**: Beta is a relative measure of volatility that is determined by comparing the return on a share, to the return on the stock market. In simple terms, the greater volatility is equal with more risky share and the higher Beta. If a company is affected by the macro economic factors in the same way as the market is, then the company will have a Beta of one and will be expected to have return equal to the market. A company having a Beta of 1.2 implies that if stock market increases by 10% the company’s share price will increase by 12%. Beta is a statistical measure of volatility and is calculated as the Covariance of daily return on stock market indices and the return on daily share prices of a particular company divided by the Variance of the return on daily Stock Market indices.

The market Return = (Today’s Index – Yesterday’s Index) / Yesterday’s Index

The share return = (Today’s Price – Yesterday’s Price) / Yesterday’s Price

The statistical method of estimating this kind of dependence of one variable on the other is known as simple linear regression. Once the share and market returns of a sufficiently long period have been computed to get a large number of pairs of returns, the regression technical can be used to estimate the beta.
It must be noted that measurement of EVA can be made by using either an operating or financing approach. Under the operating approach, deducting cash operating expenses and depreciation from sales derives NOPAT. Interest expense is excluded because it is considered as a financing charge. Adjustments, which are referred to as equity equivalent adjustments, are designed to reflect economic reality and move income and capital to a more economically based value. These adjustments are considered with cash taxes deducted to arrive at NOPAT. EVA is then measured by deducting the company's cost of capital from the NOPAT value. The amount of capital to be used in the EVA calculations is the same under either the operating or financing approach, but is calculated differently.

The operating approach starts with assets and builds up to invested capital, including adjustments for economically derived equity equivalent values. The financing approach, on the other hand, starts with debt and adds all equity and equity equivalents to arrive at invested capital. Finally, the weighted average cost of capital, based on the relative values of debt and equity and their respective cost rates, is used to arrive at the cost of capital which is multiplied by the capital employed and deducted from the NOPAT value. The resulting amount is the current period's EVA.

4.9 Application of EVA:

To make EVA an effective operational management tool, one has to follow three stages of EVA system, Planning, Executive and Evaluation.

At the beginning the management must begin by making a plan formulated in terms of expected EVA and the management has to accept the responsibility in the process. Generally the management has to understand the 4 basic conditions in order to follow the EVA system more effectively.

1. Well defined managerial objectives in terms of earning a positive EVA or at least increase EVA;
2. Selection of appropriate criteria for investment projects;
3. Evaluation of actual performance of company’s investment at a regular time interval and using EVA for shareholder’s point of view;
4. Incentive scheme must be provided to the concerned manager for the capital allocation decision in the form of year and bonuses.
The number of companies that have turned to Economic Value Added (EVA) over the past few years as a new and modified way to gauge corporate financial performance is going up. Indian corporate also recognizes the importance of EVA. Particularly, after the liberalization on foreign holding in Indian companies the concept of shareholder value is gaining ground.

Some companies e.g., Hindustan Lever, NIIT, Infosys Technologies, Hyderabad based Dr. Reddy Laboratories have already made EVA a part of their published Annual Reports and others e.g., Ranbaxy Laboratories, Samtel India Ltd. have started calculating EVA as an internal report. EVA has become a part of doing business at NITT. EVA has enabled the management to link key decisions to shareholder value.

Several hundred front line managers have already undergone orientation and training in implementing EVA in their business activities.

The role of EVA in the theory of finance is an emphasis on investment decisions. In this context, we found that EVA is the annualized (or annuity) equivalent of the firm’s net present value. From a capital budgeting perspective, we found that managers should accept investment opportunities having discounted positive economic profit. In turn, they should reject investment opportunities with discounted negative EVA. Whether or not investors should buy or sell the stocks of companies with favorable or unfavorable EVA opportunities depends on whether these opportunities are already “fully reflected” in stock prices. We’ll look at the security selection and portfolio management implications associated with positive or negative EVA opportunities.

4.10 Benefits of EVA:

One effective way to align employees’ interest with that of investors is to tie their compensation to output from the EVA metric. People are paid for sustainable improvements in EVA. The behaviour within a company is changed through the understanding of what drives EVA and economic returns.
Necessary properties for the incentive system to work:

- Have an objective measure of performance that cannot be manipulated.
- Plan must be simple so everyone in the organization can understand it.
- Significant bonus amount to alter employees’ behavior.
- Keep target fixed and do not move goalpost after plan gets under way.

Properties that are strongly recommended:

- No limits should be placed on the plan.
- Not paying the full bonus amount in one year in order to seek substantial performance.
- Include cancellation clause whereby banked bonus is lost if a person resigns.
- Incorporate long term perspective into the plan.
- Structure of the plan should be team based.

4.11 Limitations of EVA:

EVA has a lot of advantages though it is not free of limitations. Some of the limitations are pointed out below:

1. EVA is criticized to be a short-term performance measure. Some companies have concluded that EVA does not suit them because of their focus on long-term investments. An example is offered by American company GATX (Glasser, 1996), which leases transportation equipment and makes fairly long-term investments.

2. The true return or true EVA of long-term investments cannot be measured objectively because future returns cannot be measured; they can only be subjectively estimated.

3. EVA is probably not a suitable primary performance measure for companies that have invested heavily today and expect positive cash flow only in a distant future.

4. The periodic EVA fails to estimate the value added to shareholders, because of the inflation and other factors.
5. EVA suffers from wrong period-izing. A company may have a lot of un-depreciated new assets in its balance sheet and it might show negative EVA even if the business would be quite profitable in the long run.

6. Traditional financial ratios are commonly used for distress prediction. It was observed that EVA does not have incremental value in the predicting.

### 4.12 EVA and Shareholders’ Value:

Almost in all books on financial management, the very first chapter introduces the fact that the goal of financial decisions is to maximize shareholder’s value. But why only shareholder’s value and what about others stakeholders like employees, customers, creditors? If one focuses on the shareholder value creation other stakeholder’s interests will automatically become the sub-goals and achieving these sub-goals becomes crucial to the achievement of the overall goal i.e. shareholder value maximization. For example, the firm’s profit depends a lot on how the employees perform and to motivate them the firm needs to satisfy their needs and constantly upgrade their knowledge and skills by proper training. Similarly the firm would be required to pay its creditors on time so that they keep providing them credit whenever needed in the future and the credit availability does not hamper the operations of the firm. So a firm’s goal to maximize wealth of the shareholders can be taken to be a reasonable overall goal.

In general, the shareholder value is the present value of the anticipated future stream of cash inflows from the business plus the terminal value of the company. The positive shareholder value is created when these cash inflows are greater than the investors’ risky investment over the same time frame.

Shareholder’s value is measured by the returns they receive on their investments. A return are in two parts, first is in the form of dividends and second in the form of capital appreciation reflected in the market value of shares, of which market value is the dominant part. But the management of a firm influences the market value of shares. However, one factor, which has a significant influence on the market value, is the expectation of the shareholders regarding the return on their investment. The share prices are influenced by the extent to which the management is able to meet
the expectations of the shareholders. Shareholders are the ultimate owners of the corporate organization, who keep the management as agent for them.

The destruction in value, that is consistent fall in the market value of shares, is making the shareholders unable to get the initial issue price of shares and it is compelling them to offload their shareholding.

If the shareholders start selling their shares and there is no buyer then the company is bound to windup its existence. The interest of the shareholders is well maintained if the prices of the shares of the company in the stock market go on adding value to the shareholders. That is, over a period of time shareholders want an increase in the market price of the shares they are holding. In a nutshell, shareholder’s value of a company may be defined as the Market Value of its Equity shares. Market Value of Equity shares is represented in the Market Capitalization. It is a multiple of number of shares issued by the company and the market value per share of the company. The other way of measuring Market Capitalization of a company is Market Value Added (MVA) plus total Capital of the company.

As total capital is more or less static and changes only through retained earnings /loss, Market Capitalization of a company depends on its MVA.

EVA is the performance measure most directly linked to the creation of shareholder wealth over a period of time. EVA gives manager superior information and superior motivation to make decisions that will create the greatest shareholder private enterprise.

Lehn and Makhija (1996) conducted an empirical study of a number of U.S. companies for 1987, 1988, 1992 and 1993, which shows that EVA was most highly correlated with returns of shareholders investment. Grant (1996) states that security analysts can use EVA to identify firms those are creating value for shareholders. Favorable changes in stock prices will increase stock prices as the equity holders’ residual claim decreases, while debt holders should realize capital gains on their securities through credit upgrades. These researches add that EVA also can be used to design value and growth-oriented investment strategies. Jackson (1996) provided a discussion of the benefits of EVA to security analysis. Specifically, Jackson notes
that EVA encourages managers to focus on the balance sheet, just as the market does. In practice, many investors look primarily at the income statement, which can result in being misled as to whether or not value is truly created. Jackson also notes that EVA can be used not only to “back out” investors’ expectations about key variables in the current stock price, but also can be used to reveal expectations that are unreasonably high or those that are temporarily under priced by the market.