ECONOMIC VALUE ADDED AS A PERFORMANCE MEASUREMENT TOOL IN MAHARATNA COMPANIES IN INDIA

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ABSTRACT

Economic Value Added is a modern performance measurement tool which is gaining popularity among the corporate entities and has bought in a corporate paradigm shift. Economic Value Added is a value-based measurement tool where performance of an investment centre is evaluated on the basis of value or wealth created by an organization. According to the concept value is considered to be added only after paying off its cost of capital. In this research work the researcher aims to use EVA as performance measurement tool in the companies accorded with the Maharatna status. From the work the researcher inferred that EVA being a measure more condusive for the investor fraternity these public sector undertakings can benefit from the use of these performance measure.

Keywords: *Economic Value Added, Maharatna, performance measurement tool.*

Introduction

Economic Value Added (EVA) is a new concept in the field of finance theory. It is a modern day financial management tool which emphasizes on the concept of wealth maximization. It is a modern performance measurement tool which is gaining popularity among the corporate entities which have bought in a corporate paradigm shift. This new and innovative concept was at the onset mooted by Stern Stewart in the year 1989 for his global consultancy firm. The term EVA or Economic Value Added is a registered trademark of Stern Stewart & Company of New York City (USA). The term EVA is usually written with the symbol[tm] as super script which is the normal practice of referring to any registered trademark whenever the term is used Economic Value Added is a value based measurement tool where performance of an investment centre is evaluated on the basis of value or wealth created by an organization. According to the concept value is considered to be added only after paying off its cost of capital. Whatever remains with the company after paying off the cost associated with capital is termed as Economic Value Added. Economic Value Added is the residue that remains with the company in the form of retained earnings which can be invested in avenues to generate more return and create wealth. An improved EVA thus leads to shareholders wealth or value which reflects in the Market Value Added of the firm. The term "Value Added" had been discussed widely by many noted experts. It was Peter. F. Drucker who claimed that he was the first one to discuss value addition in his book named "Managing for Results". Even Nobel Laureates Merton H. Miller and Franco Modigliani have discussed about value addition in the year 1961. But value addition got its real form only when Stern Stewart marketed it with the concept of "Economic Value Added". (Prasad2000).

Computation of Eva

Economic Value Added is the difference between the Net Operating Profit after Tax (NOPAT) or Earnings before Interest and tax (EBIT) and shareholders expectations, which is the capital charge for both debt and equity i.e. overall cost of capital. Arithmetically:

EVA = NOPAT-Capital charge
= NOPAT-WACC x capital employed

Where NOPAT is Net operating profit after tax
WACC is the weighted average cost of capital
There are four steps in calculation of EVA:

a. Calculate Net Operating profit after taxes
b. Calculate total invested capital
c. Determine cost of capital (WACC)
d. Calculate EVA with the help of the aforesaid formula

a) EVA: Calculating NOPAT

In calculating economic profit, the essential step is to compute net operating profit after taxes. The NOPAT that appears in the books of accounts hardly represent the NOPAT that creates value. The NOPAT may be calculated

by a series of adjustments which involves three basic steps.

i. Calculate earnings before interest and taxes (EBIT)
ii. Make the key adjustments-which include Eliminating accounting distortions (convert accrual to Cash)

b) EVA: Calculating invested capital

Calculating invested capital is the next step in finding economic profit because the basic key underlying this performance metric is charging the company for its cost of capital. In order to arrive at economic profit, it must cover the cost of using the invested capital.

To arrive at the invested capital three steps are to be followed

i) Get invested book capital from the balance sheet

ii) Make adjustment that convert accounting accruals to cash

c) EVA: Calculation of Weighted Average Cost of Capital (WACC)

The next step is to estimate company's weighted average cost of capital i.e. WACC. This is the average return expected by the investors. In order to calculate WACC, we require to estimate the cost of debt and cost of equity.

i. **Cost of Debt-** The cost of debt which is explicit in nature is easy to calculate or identify. It is estimated from the long term debt appearing in the balance sheet.
ii. **Cost of equity** –, The cost of equity is implicit in nature and the calculation is difficult as returns to shareholders are never uniform nor fixed. The cost of equity is calculated by applying Capital Asset Pricing Model (CAPM) model of security analysis.

Cost of equity= Cost of equity for the purpose of calculation of equity is measured by using the CAPM method of calculating market return

$$R_e = R_f + \beta(R_m - R_f)$$

R_f = Risk free rate

R_m = Market return

β = Beta

Risk free rate: in reality there is nothing called risk free rates when it comes to securities as no securities are completely risk free but government securities or gilt edge securities are considered comparatively risk free. Hence interest on the treasury bills are considered as the risk free rates. For the pupose of the study 10 year T bill for the period of the study has been considered as the R_f or risk free rates.

Beta: Beta is the volatility of the stock market

Market return: for the purpose of the study to represent the market return of NSE for CPSE the market return of CPSE indices for the period of the study has been used by the researchers

With the help of the results derived from cost of capital and debt we can calculate WACC. To do this, we simply multiply the cost of debt and equity by their respective proportion of invested capital, and then add the two resulting numbers together. The proportion of debt and equity can be found out from the company's balance sheet.

d) EVA: Putting it together

The last and the final step is to calculate EVA by deducting WACC of the total invested capital from the NOPAT derived by making the adjustments. It's worth mentioning here that Stern Stewart, have identified 120 (approx) adjustments to earnings and balance sheet, but to protect his trademark he doesn't fully disclose the adjustment. The researcher in the work will take into account only does adjustment which through literature review have been found by the researcher to be widely used. (Ehrbar 1998)

Economic Value Added (EVA) and its Relation to Market Value Added (MVA)

Economic Value Added (EVA) is a performance measure developed by Stern Stewart & company to measure the true economic profit realized by a company. Such a measure helps investors to determine whether a company has created or destroyed value for them. It is calculated by subtracting the company's capital multiplied by its percentage cost of capital from the net operating profit of a company.

Market Value Added (MVA) is the difference between the current total market value of a company and the book value of the company's capital. It is a wealth metric which measures the level of value a company has accumulated over time. Ehrbar (1998) has explained that "If

investors expect a company to earn exactly its cost of capital, and no more or no less, then its market value will be exactly equal to capital. In this case MVA i.e. market value minus capital will be zero. Wealth is perceived when investors expect a company to generate enough profit to meet the minimum acceptable rate of return. If expected returns exceed the cost of capital the company's stock will sell at a premium and MVA will be positive. That will mean that management has created wealth by convincing investors that it will produce profits that exceed the cost of capital. If expected returns amount to less than the cost of capital, management has destroyed wealth and MVA will be negative."

Thus MVA is considered to equate the present value of the company's future EVA"s. Companies which had a positive EVA would see their stock prices or market prices of their shares go up over times as the profit increases

Literature Review

The researcher during the course of research had come across various literatures related to Economic Value Added which included aspects related to the basic concepts of EVA which included calculation and its conceptual framework and its gaining popularity which includes

Stewart (1990) states that EVA is a financial measure which captures the economic profit of a firm.EVA with the help of incentive scheme provides quality information and motivation to the organization to perform better. According to the researcher EVA is linked very closely to shareholders wealth which makes it a superior performance measure and should be used for various management functions like decision making and planning.

Chen & Dodd (1997) makes an initiative to examine EVA as performance measurement tool in that pursuit the researchers to examine the correlation between EVA and stock market prices in comparison to residual performance measure. For the purpose of the study the researcher have selected companies from Stern Stewarts 1000 company database out of which selecting only those companies which provide sufficient public data. For a time frame of1983 to1992 concluded by observing big corporate giants that EVA is a useful measure of corporate performance yet EVA is neither as perfect as claimed by its advocates nor is it the only performance measure that suggest a path to superior stock return.

Goldberg (1999) in his research entitled "Economic Value Added a Better Measure for Performance and Compensation" made an attempt to make a comparison between EVA and traditional measures like ROI and EPS in measuring the performance of the firm. The researcher opines that EVA is a better performance and compensating measure as it makes mangers to think like owners.

Weaver (2001) in its research work makes an attempt to identify the inconsistency in the application of EVA. For the purpose of the study companies who adopted EVA forms part of the study. The study revealed that there are significant differences or inconsistencies in the application of EVA among the companies selected for the purpose of the study

Paramanik (2009) In this articles the researcher gives an insight into the various aspects associated with the calculation of EVA and has also attempted to compare with other performance measures

Dhiman & Pruthi (2012) the researcher in this article have given the concept of EVA and has computed the EVA of 50 companies listed in NSE and ranked them on the basis of their performance and value generated

Křečková (2018) the researcher in its research work makes an attempt to deal with the calculation of bank's ex-ante profitability and the possibility of using EVA as tool instead of banks current tools used to measure performance which includes Risk Adjusted Return on Capital (RAROC). The researcher concluded that Using EVA tool instead of RAROC measurement thus could help bank´s relationship managers and branch managers focus on those clients creating larger value added than others.

Objective of the Study

The researchers in this research work has made an attempt to study on EVA as performance measurement tool in the Central Public Sector Organizations accorded with Maharatna status operating in India. The research work was undertaken with the following objectives in view which includes

1. To compute and the Economic Value Added of the select Central Public Sector Undertakings operating in India;
2. To examine the impact of Economic Value Added on Market Value Added;

Research Methodology

The present study deals with Economic Value Added as a performance measurement tool in the central public sector undertakings accorded with the Maharatna status in India.

The universe of the study comprises of the various central public sector organizations in India which have been accorded Maharatna status. This includes the following companies' liseted below

List of Maharatna as on 31.3.2013

1. Coal India Ltd.
2. Indian Oil Corporation
3. NTPC Ltd.
4. Steel Authority of India Ltd.
5. GAIL (India) Ltd.
6. Oil and Natural Gas Corporation
7. Bharat Heavy Electricals

Source of Data

The study completely deals with secondary data. Annual reports of the companies have been collected along with the annexure with the help of Capitaline Database and various other company website has been consulted for company profile order to fulfils the above objective EVA is been calculated using the formula propounded by Stern Stewart and an analysis is been made on the value addition or destroyed by the Central Public Sector Undertakings and on the basis of their EVA the companies are ranked within the various categories of Maharatna.

In order to achieve the aforesaid objective a Karl Pearson's correlation coefficient method has been used to test whether EVA and MVA are related Here MVA or shareholders value is the dependent variable while EVA is the independent variable. Thus the regression model is $MVA = \alpha+\beta EVA +€$

€ = when € denotes the disturbance terms which incorporates the effect of other factors on EVA besides MVA.

Periodicity of the Study

The study covers a period of five years from 2013-14 to 2017-18.

Limitation of the Study

The present study has the following limitations

1. The present study is confined to only central public sector undertakings and no private sector organizations were taken as a part of the study thus only portraying the significance of the subject matter in and around public sector units.
2. A period of only five years has been selected for the purpose of the study.
3. No primary data forms part of the present study.

Table 1.1Year wise NOPAT of the Maharatna Companies (*amt in crore)*

Company	2013-14 (Rs)	2014-15 (Rs)	2015-16 (Rs)	2016-17 (Rs)	2017-18(Rs)
SAIL	3584.13	3546.91	1720.99	-305.42	2341.04
BHEL	3593.41	1510.94	-350.12	908.01	1136.16
GAIL	4741.46	3400.47	3026.29	3982.27	4893.52
ONGC	22095.17	17735.75	17464.06	19121.72	21453.73
NTPC	13440.70	13132.59	14115.92	13084.18	14339.42
COAL IND	15267.14	13627.31	16469.48	14363.25	9036.04
IOCL	12140.08	8731.50	14348.20	22571.44	24822.40

Source; self compiled

The table above shows the NOPAT of the Maharatna Companies during the time period 2013-14 to 2017-18. It can be seen from the above table that corporate giants like ONGC, NTPC,COAL INDIA and IOCL have a positive and increasing NOPAT over the time period while corporate giants like SAIL, BHEL have very poor and sometimes a negative NOPAT.

Table 1.2. Year wise Beta value of the Maharatna Companies

Company	2013-14	2014-15	2015-16	2016-17	2017-18
SAIL	0.73	0.80	1.03	1.17	1.10
BHEL	1.06	1.05	0.99	0.88	.69
GAIL	0.73	0.84	0.95	.98	.83
ONGC	1.27	1.10	1.15	1.06	.99
NTPC	0.46	0.70	0.60	0.53	0.42
COAL IND	0.90	0.91	0.96	0.91	0.85
IOCL	0.95	0.91	0.75	1.18	1.27

Source: self compiled

The table above depicts the Beta values of the Maharatna companies. The table shows that the securities of the Maharatna companies are less volatile SAIL, ONGC and IOCL are the most volatile amongst the Maharatna companies

Computation o Eva of Maharatna Companies

Table 1.3 Depicting EVA of the Maharatna Companies (*amt represents Rs in crore*)

Company	2013-14	2014-15	2015-16	2016-17	2017-18
SAIL	3079.31	1383.20	-5038.46	-1559.59	-264.54
BHEL	3474.47	1375.94	-952.84	795.81	930.05
GAIL	4388.73	2854.90	1960.15	9859.37	4731.95
ONGC	21775.21	16818.03	16273.18	20867.04	21650.23
NTPC	10854.21	9794.67	9275.28	10892.47	13766.34
COAL IND	14789.38	12425.34	14922.23	15744.27	9177.91
IOCL	8335.34	5341.49	11475.70	21578.69	22832.66

Source Self computed

The table above depicts the EVA of the Maharatna Companies the data reveals that in the year 2013-14 ONGC was the company which had the highest EVA followed by COAL IND, NTPC, and IOCL while SAIL, BHEL and GAIL occupied the last three position. In the year 2014-15 also ONGC continued to be the top EVA creating company followed by COAL IND and NTPC in the second and third position. In the year 2015-16 also EVA remain s the top EVA creating company while COAL IND giving a tough competition ,which is followed by IOCL and NTPC in the third and forth position while SAIL, BHEL were seen to be destroying wealth with a negative EVA. In the year 2016-17 the company with the highest EVA is IOCL which leaves behind ONGC in the second and NTPC in the third position respectively BHEL seemed have recovered from the last year by creating a positive EVA of 795.81. While SAIL continues with a negative EVA. In the last year of the study period the IOCL continues to rank first in the list of Maharatna in creating wealth ONGC being the second and most consistent wealth creating company followed by NTPC and COAL IND in the third place. GAIL have consistently occupied the fifth EVA creating company followed by BHEL while SAIL continues to have a negative EVA which is evident also from the Net Operating Profit of the company.

Table1.4 Year wise Total book value of shares of the selected Maharatna companies (*Amount represents Rs in crore)*

COMPANY	2013-14	2014-15	2015-16	2016-17	2017-18
SAIL	42668.37	43502.74	39194.6	36009.96	35712.56
BHEL	6609.49	6817.05	6436.20	6458.72	6520.40
ONGC	68362.88	72298.42	82885.88	9277.64	96692.2
NTPC	85818.75	81654.79	91293.73	96262.76	101773.7
IOCL	65991.68	67970.46	88135.14	99729.93	110170.8
COAL IND	16447.8	16732.04	16043.55	13917.01	12694.15
GAIL	27071.9	29119.23	35095.04	38148.96	40327.42

Source: self computed

The table above depicts the total book value of the share capital of the Maharatna Companies. The total book value has been computed with the help of outstanding value of equity shares with that of the book value of the share. The table so reveals that corporate giants ONGC and IOCL have the highest book value. It can be mentioned here that while analyzing the financial statement it was seen that almost all Maharatna companies had very little or almost no debt in their capital structure. The company with the lowest total book value of shares is BHEL as per calculations.

Table 1.5 Year wise Total Market Value of the shares of Maharatna Companies
(*amt represents Rs in crore)*

COMPANY	2013-14	2014-15	2015-16	2016-17	2017-18
SAIL	29491.98	27839.77	17802.58	25320.15	28996.32
BHEL	9597.04	11520.85	5573.185	7971.833	5973.368
ONGC	136332.2	131049.2	91586.84	118707.7	114087.7
NTPC	98863.07	121084.6	107108.5	136874.6	139925.5
IOCL	68383.21	93876.69	93270.21	183436.2	167393.7
COAL IND	182384.9	229220.7	184406.1	181659.9	175855.9
GAIL	47701.19	49191.65	45208.63	63753.55	74090.32

Source self calculated

The table above reveals the total market value of the Maharatna companies. The total market value of the companies are calculated by multiplying the market price of the equity shares at the end of the financial year with the outstanding number of equity shares appearing in the balance sheet. It can be seen from the table the Market value of the companies like ONGC and NTPC, IOCL are quite high as compared to companies like GAIL, BHEL and SAIL. Signifying that the companies with high market value has greater market price and has a higher market value and the companies with low market value signifies that that the companies share prices are low.

Table 1.6Year wise Market Value Added of the Maharatna Companies (*amt represents Rs in crore)*

COMPANY	2013-14	2014-15	2015-16	2016-17	2017-18
SAIL	-13176.4	-15663	-21392	-10689.8	-6716.24
BHEL	2987.54	4703.79	-863.024	1513.106	-547.036
ONGC	67969.33	58750.76	8700.96	25936.02	17395.48
NTPC	13044.32	39429.79	15814.79	40641.87	38151.74
IOCL	2391	25906.23	5135.075	83706.22	57222.85
COAL IND	165937.1	218488.7	168362.6	167742.8	163161.8
GAIL	20629.29	20072.43	10113.59	25604.59	33762.91

Source self computed

The table above reveals the Market Value Added of the Maharatna Companies. The market value added is the difference between the total book value and the total market value. This reveals whether the companies have actually been able to create shareholders wealth or not. It can be seen from the table that SAIL have not been able to create or add any value. Rather it has been destroyed value during the study period. BHEL on the other hand started off with a positive MVA but during the year 2015-16 ended up with a negative MVA. While ONGC had been creating wealth during the study period and maintained a positive MVA at an increasing rate. NTPC has also showed a positive MVA all throughout the study period. IOCL has shown a remarkable growth in its market value added since the year 2013-14 to 2017-18 from 2391 to 57222.85. Another consistently positive value creating company has been COAL IND. While GAIL have maintained a constant MVA all throughout the five year of study.

Relationship between EVA and MVA Analysis

To examine the impact of Economic Value Added in increasing shareholders wealth or MVA; in Central Public Sector Undertakings with a ratna status. In order to achieve the aforesaid objective a Karl Pearson's correlation coefficient method has been used to test whether EVA and MVA are related and then a regression line is bee fitted to test the impact EVA on MVA. Here MVA or shareholders value is the dependent variable while EVA is the independent variable. Thus the regression model is

$$MVA = \alpha+\beta EVA +€$$

€ = when € denotes the disturbance terms which incorporates the effect of other factors on EVA besides MVA.

After putting in the data the in the following equation revealed the following.

Correlation between EVA and MVA

	N	EVA	MVA	Pearson Correlation	P value
		Mean±SD	Mean±SD		
Total	155	3697.3±5522.4	13052.4±34223.9	**.563****	**0.000**
MahaRatna	35	9017.37±7744.167	40806.56±6.099	**.500****	**0.002**

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

From the above table it is shown the relationship between MVA and EVA of different category of corporate agencies. The relationship between MVA and EVA found positively correlated and significant. Relationship of MVA and EVA for overall is (Pearson r=.563, p=0.000) significant at <1% level. For MahaRatna (Pearson r=.500, p=0.002) the relationship found significant at 1% level. Hence, it can be conclude that there is positive relationship between MVA and EVA and found significant, i.e. while MVA increased EVA also increased positively.

The study reveals the following.

Economic Value Added as a performance measure reveals the value generated by the company. The basic concept promises that the amount remains with the company after paying off its equity and debenture holders. The amount that retains with the corporate houses can be used by the company to generate wealth. The mangers can invested the retained earnings in avenues which generated more Net Present Values which will improve the overall profitability of the firms.

The real key to the EVA framework popularity lies in using improvements in EVA in a unique type of bonus plan. EVA has gained more popularity amongst the corporate houses not because of its being a better performance measurement but because of associating bonus schemes with growth of EVA. Many large concern in private sector has seen significant impact in profitability by using EVA as a incentive scheme and hence increasing the value of firms, this bonus schemes can be positively used by the Central public sector units to increase its profitability and value and improve managerial ability in public sector firms.

From the study conducted it can be inferred that EVA as a performance shows it result in creating wealth or adding value to the firm only in the long run as in the short run the MVA of the firm do not depict any incredible changes.

The research conducted reveal that most of the central public sector units accorded with the ratna status showed a positive EVA on the ground that they earned regular profits. EVA or value addition focuses on the creation of net wealth by proper investment during a specific period of time. Enterprises which tend to ignore generation of wealth for shareholders do not survive the competition. A company without adding value cannot survive for long. Companies which do not earn profit will eventually result in poor health putting the company in sick category while it being unable to generate wealth will lead to its closure. This

was seen in case of many public sector units which lead to its closure. Thus EVA a performance measure which makes the company aware of its general well being.

In all public sector units of Maharatna stature. In spite of its qualifying criteria were few companies seemingly profit making units hence the EVA of most of them were positive the researcher have not come across any unit with a negative EVA and gradually moving to a positive EVA. Yet literature review conducted during the study revealed many corporate have moved to a positive EVA or have added value to their organization after using EVA as a performance measurement index.

Conclusion

Economic Value Added is a performance tool which is based on economic profit which implies cost of capital is deducted from the profit to result in economic profit. This profit has gained popularity as other performance measures do not take into consideration the cost of capital while measuring the performance. The popularity of the measure is justified on the ground that a company cannot get away without paying its shareholders and no company can say that it have earned profit if it is unable to pay its shareholders the expected return. Other performance measures recognize profit to have been earned without taking an account of the cost of capital. Another very important reason behind EVA finding its popularity as the profit here is calculated by moving away from accounting profit to a cash basis of determining the profit. Here the traditional ways of determining the profit with the help of Generally Accepted Accounting Principles are done away with. Here the profit so determined is cash based profit. The non cash transactions which did not result in actual inflow and outflow of cash were adjusted by either adding back or deducting it, as it may appear in the financial statements. This resulted in more disposable income in the hands of the managers for payment to shareholders and debenture holders and more residual income in the form of EVA which can be effectively invested in avenues which generate better Net Present Values which in the long run improves the MVA or shareholders value. Another very important aspect of EVA being a popular performance measure is its linkage to bonus plan or incentive plan. An incentive or bonus plan is so designed that mangers earn bonus on the basis of value created for the firm. More the EVA more is the bonus earned; hence the mangers are in a constant endeavour to improve the EVA. This also leads to better corporate governance.

Many corporate houses have been seen to have benefitted by using EVA as a performance measurement tool. Yet in Indian perspective it is yet to find its significance. Hence the researcher in this research work has made an attempt to apply the concept of EVA on the Central Public Sector accorded with Maharatna status operating in India While doing so the researcher have set in the objective to compute the EVA of the CPSE'S accorded with the ratna status and compute and understand the relationship of EVA with MVA.. The researcher after calculation of EVA according to the formula propounded by Stern Stewart revealed that almost all the companies under the Maharatna category had positive EVA while only SAIL was seen to have been in loss and hence had a negative EVA.. While analyzing the significance of EVA with MVA it can be said that EVA and MVA are positively correlated and companies with a negative EVA also depicted a negative MVA.

Hence it can be concluded that EVA is an effective performance measurement tool as it helps the organisation to predict its value. But in the long run EVA or any other value based measures can help in generating wealth and can create shareholders wealth which reflects in their MVA.

Thus EVA finds its popularity amongst the corporate and the investors for it being more transparent and intriguing yet further improvement to this performance measure can be made making it more cost effective, understandable and universal in its application.

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