

# Is EVA a Superior Measure of Shareholder Value? Evidence from CNX Nifty Constituent Firms

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## Abstract

Business organisations are under pressure to device measures to increase shareholder value, improve financial performance and incentivize compensation plans that motivates and encourages managers to increase shareholders wealth and contribute towards business growth. A recent innovative trade-marked version of residual income measure known as economic value-added (EVA) is being experimented and implemented in many organisations. This paper attempts to empirically test if any residual income components such as Net Operating Profit after Tax (NOPAT), Return on Net Assets (RONA) and cash flow measure i.e., Free Cash Flow (FCF), the predictor variables, together variable wise and year wise from 2009 to 2012 has any influence on Economic Value Added (EVA), the criterion variable in the study. To examine the influence of the said variables data of 16 sample companies from CNX IT index has been taken and required financial information was sourced from CMIE's Capitaline database. The descriptive statistics, correlation and multiple regression analysis has been performed using SPSS 20.0 version through ENTER method and STEPWISE method for every year across the sample companies. Statistical results prove that NOPAT has highest influence on EVA throughout the study period compared to other variables. Also compounded annual growth rate (CAGR) of EVA and year on year growth rate (YoYGR) of all variables has been computed.

**Keywords:** Value based measure, Economic value added, Net Operating Profit after Tax (NOPAT), Return on Net Assets (RONA), Free Cash Flow (FCF), Compounded Annual Growth Rate (CAGR), Year on Year Growth Rate (YoYGR), Correlation, Multiple Regression Analysis.

## Introduction

Economic Value Added (EVA) is the best available measure for evaluating shareholders value. It is a measure of economic profit and not accounting profit. EVA calculation shows the difference between the cost of capital and the return on that capital. The shareholders of the company invest with the aim of getting return and increase in the value. Although business concern exists to create value for their shareholders, the corporate executives and managers do not always represent to maximize shareholder value, because of perceived conflict with other goals. Shareholder value does not necessarily conflict with good conduct toward employees, customers, suppliers, the environment etc. Companies tend to outperform others, suggesting that value can be delivered to shareholders only if it is first delivered to other stakeholders.

Value-based management strategies existed since businesses evolved. Under EVA approach performance measurement gains a new meaning in contrast with the traditional approach which is merely based on the simple notions of accounting profits and the relevant ratios derived from them, such as the return on equity (ROE) and the return on assets (ROA). The difference is that the traditional performance measurement benchmarks do not consider the cost of invested capital (equity and debt) in order to generate the profits made by a company. Thus, under the traditional approach two companies that have the same ROE would be considered as equally successful, whereas under the EVA approach the same conclusion could not be reached if these two firms had a different cost of capital, in other words if their economic profit or residual income was different.

Economic value added (EVA) is proved to be the best metric available because the other measures have significant drawbacks:

1. Traditional income measures, including net income and earnings per share, can be easily manipulated, and they do not account for the cost of equity.
2. Market-based measures, including market value added (MVA), excess return and future growth value (FGV), can only be calculated for publicly-traded entities.
3. Cash flow measures, including cash flow from operations (CFO) and cash flow return on investment (CFROI), include neither the cost of equity nor the cost of debt.

EVA is highly accurate because it includes the cost of debt financing and equity financing. It is a motivational tool deep within the organization. Traditional managers understand that their companies need to control operating costs and succeed in the commercial markets. Today, companies also must compete in the capital markets by keeping their cost of capital low.

EVA measures residual income; that is, it measures the difference between a firm's cost of capital and return on capital. EVA is expressed as either a positive or negative. To calculate EVA, assign a cost to each component of your firm's financing (equity and short- and long-term debt). The resulting weighted average cost of capital (WACC) is one of EVA's

most important components. It requires transparent, credible calculation, because there are differing ways of assigning costs to capital (in particular, to equity financing).

The simplest way to calculate EVA is to subtract capital charges (invested capital multiplied by the WACC) from net operating profit after taxes (NOPAT). EVA can be increased in several ways, by: 1) increasing NOPAT; 2) lowering the WACC; and 3) reducing invested capital. Often, companies refine their EVA calculations by making accounting adjustments to overcome the inherent limitations in generally accepted accounting principles (GAAP).

### **Literature Review**

Studies on EVA began with the publication of the book 'The Quest for Value by Stewart (1991), in which the author expressed his views about the usefulness of EVA as the basis of performance measurement of a company and its management at a total or a divisional level. In his empirical research he examined the informational content of EVA analyzing 613 American companies comparing two periods, namely 1984–85 and 1987–88 and found a strong correlation between EVA and MVA, which becomes more apparent when the changes in EVA and MVA are considered giving an  $R^2$  of about 97%. However, for companies with a negative EVA the association becomes less obvious, because of the increased probability of liquidation or acquisition, which sets a lower limit on the market value of these companies. David Crowther, et.al. (1998) critiques economic value added techniques as a means of calculating changes in shareholder value, contrasting such techniques with more traditional techniques of measuring value added. It considers the merits of the respective techniques in explaining shareholder and managerial behaviour and the problems with using such techniques in considering the wider stakeholder concept of value. It concludes that this economic value added technique has merits when compared with traditional accounting measures of performance but that it does not provide the universal panacea claimed by its proponents. Banerjee and Jain (1999) attempted to trace out the explanatory influence of EVA on shareholders' value. Having adopted Backward Elimination Method, they evidenced that, inter alia, EVA was the most powerful explanatory variable on shareholders' value. In line with this finding, Farsio, Degel and Degner (2000) found out that shareholders' value creation was measured primarily on the basis of EVA and EVA was only the factor explaining the volatility in shareholders' value. These findings were based on the analysis of EVA and stock returns of S&P 500 firms. Kramer and Peters (2001) empirically test the relation between capital intensity and the ability of EVA to serve as an effective proxy of market value added. They find that EVA is no less "at home" in the information economy than it is in traditional manufacturing businesses. However, their results indicate that in most of the industries studied, the marginal costs of using EVA as a proxy for market value added are not justified by any marginal benefits. Kang and Kim (2002) found out significant controversy around the validity of EVA as the final answer to shareholders' value creation. They think as with any other management tool, EVA should be used to guide and support corporate decisions and should be applied cautiously. This measure can be modified and adjusted in order to apply it to not-for-profit organizations. Their study compares and contrasts EVA to traditional performance measures. They examine the effectiveness of EVA in evaluating a firm's financial performance. Thus, they question whether or not EVA adds any value in performance

evaluation over the conventional measures. Issham Ismail (2006) studied if positive EVA outperform negative EVA in predicting company performance and either the period of study may play a vital role in explaining the variation of the stock return. Their study found that neither value creator nor value destroyer had a relationship with stock return, as both models prove to be statistically insignificant. The value creators had a better relationship with earnings than value destroyers and indicated that, value creators have better earnings multiplier than value destroyers. It also indicates that, EVA had a better relationship with stock return over a longer period of their study. Dimitrios I. Maditinos (2006) introduced the concept of Economic Value Added in the Greek context and explained on the utilization of both earnings and EVA in the ASE. Their study relating to the period 1995-2001 provided evidence to establish EVA as a superior performance measurement and incentive compensation system and claimed that it is really better to use EVA than traditional accounting performance measures such as earnings, EPS, ROI or ROE. Both relative and incremental content approaches were tested. Relative information content tests revealed that stock returns are more closely associated with EPS than EVA. Anil K. Sharma, et.al. (2010) presented a comprehensive literature review and a critical analysis to move towards the advances in EVA. Maja Ilic (2010), aimed to show practical examples of the extent to which traditional assessment of the company success may differ from the business overviewed from the perspective of economic value added. Amalendu Bhunia (2012) examined the relationship between shareholder's value and financial variables and tested whether value based frameworks are applicable in Indian condition. By adopting linear regression, factor analysis and multiple discriminant analysis empirical results showed that effect on shareholder value creation might lead to more information and insight. H.M. Van Der Poll (2011) determined the extent to which EVA is used by South African organisations and also their investigation focused on methods used by these organisations to calculate EVA and aimed to determine the South African business sectors in which it is most likely to be implemented. Mehdi Arab Salehi (2011) examined assertions that Economic Value Added is superior as a performance measure compared to traditional accounting measures. The investigation is performed using a panel data procedure for a sample consisting of 76 Iranian listed companies in the Tehran Stock Exchange from 2001 to 2008 and explained theoretical foundation of *EVA* with its origination, definition, ways to make it tailored, adjustments required, scope and some other related issues. Fayeze Salim Haddad (2012) studied sample consisting of 15 banks listed in Amman Stock Exchange (ASE) during the period 2000-2009 to examine the relationship between economic value added (EVA), return on assets (ROA), return on equity (ROE), and Capital Adequacy Ratio as explanatory variables for stock returns. The results showed positive and significant relationship between EVA and stock returns, but insignificant relationship between ROA, ROE, and Capital Adequacy Ratio with stock returns. Pratapsinh Chauhan (2012) analysed the performance of the petroleum companies and used EVA, MVA, NOPAT, PAT, Market Capitalization and EPS data provided by CMIE Prowess database for the period of 10 years (2001-02 to 2010-11). For each of the 07 companies, we have calculated the 10-year correlation between EVA of each year and each year's MVA, NOPAT, PAT, EPS and Market Capitalization. To test hypothesis t-test was applied. EVA has been found to have significant correlation with OP,

NOPAT, EPS, Market Capitalization and MVA figures of firms and the firms have created positive EVA and MVA. Rasool et al.(2013) identified the relationship between financing methods and economic value added (EVA)and found financing through owners' equity and maintaining stock profit (dividends policy) have a positive and meaningful relationship with economic value added. Also they showed that there is a reverse and meaningful relationship between using debts and economic value added. Seyed Mojtaba Hasani (2012) evaluated performance of 70 companies in securities bourses using traditional method with only accounting profit and one of the value- based criteria is the economic value added criteria. The correlation results, using Pearson index between two indices, the economic value added index and the index of stock market value, show that at 1% level, these two variables are correlated, and the correlation is positive. Also, the results of the panel regression estimation indicate a positive and significant relationship between two indices of the economic value added and stock market. Akbar Parvaeil & Soran Farhadi (2013) examined the main performance measures (Net income (NI), residual income (RI), economic value added (EVA) & free cash flow (FCF)) of firm and management to find out whether EVA works better than other performance measures in terms of evaluating the firm's performance and also examined the predictability of Economic Value Added for future performance by employing both relevant information content and incremental information content of measures. The results showed that EVA is the best measure for evaluating the performance of firm and management among other measures.

### **Objectives of the study**

For carrying out the study, the following specific objectives have been set for the study.

- To study value based measure Economic Value Added.
- To examine the correlation between EVA and NOPAT, FCF & RONA
- To know the impact of predictors on EVA

### **Hypotheses Formulation**

H<sub>0</sub>: EVA does not depend on time factor.

H<sub>1</sub>: EVA of CNX IT is not influenced by RONA, FCF and NOPAT

### **Methodology of the study**

#### **Selection of Sample**

The sample companies are derived from CNX IT index comprising of 20 companies, out of which 16 companies have been selected based on the availability of data required for the study. The study period is from 2009 to 2012. The data is collected from Capitaline database maintained by Centre for Monitoring Indian Economy (CMIE) based on the either financial year results or calendar year results. Both the periods were considered in order to analyse the results. Some companies have been eliminated due to non-availability of required information in terms of stock returns for the said period for analyzing the data.

## Data Collection

For the purpose of the study, only secondary data have been used. The relevant secondary data have been collected from the Capitaline database, provided by Centre for Monitoring Indian Economy (CMIE). The study required variety of data; therefore websites like [www.rbi.org.in](http://www.rbi.org.in), [www.nic.in](http://www.nic.in), [www.indiastat.com](http://www.indiastat.com) have been comprehensively searched.

## Model Development

To test the hypotheses and as a part of analysis, some statistical tools like descriptive statistics, ANOVA, correlation analysis, multiple regression analysis has been used. Also CAGR (Compounded annual growth rate) of EVA, the criterion variable, and YoYGR (Year on year growth rate) of all variables has been computed. The following is the description of the model fit used in the study.

$$EVA = \alpha + \beta_1 (NOPAT) + \beta_2 (FCF) + \beta_3 (RONA) + e$$

The above model connotes Residual Income measure viz., Economic Value Added (EVA) as dependent variable or also known as criterion variable and Net Operating Profit after Tax (NOPAT), Free Cash Flow (FCF) and Return on Net Assets (RONA) as independent variables or also known as predictor variables.

$$EVA = \text{Net Operating Profit after Taxes (NOPAT)} - (\text{Capital invested} * \text{WACC})$$

$$NOPAT = \text{Operating Income} \times (1 - \text{Tax Rate})$$

$$WACC = (k_e * w_e) + (k_d * w_d)$$

$$k_e = \text{Cost of equity : calculated using CAPM model i.e., } k_e = R_f + \beta (R_m - R_f)$$

$$R_f = \text{Treasury bill rate}$$

$$R_m = \text{Market return}$$

$$\beta = \frac{\text{Covariance}(r_s, r_b)}{\text{Variance}(r_b)}$$

Where,  $r_s$  is the return on the stock and  $r_b$  is the return on a benchmark index.

$$w_e = \text{Equity share capital} / \text{Capital invested}$$

$$k_d = \text{Cost of debt} = \text{Interest} / \text{Total debt}$$

$$w_d = \text{Total debt} / \text{Capital invested}$$

$$FCF = \text{Net cash flow from operating activities} - \text{Net cash used in investing activities}$$

$$RONA = \text{Operating profit} / \text{Net Assets}$$

Along with the above connotations other co-efficients also have been incorporated, such as, 'α' is the intercept and 'β<sub>1</sub>' is the coefficient of NOPAT, 'β<sub>2</sub>' is the coefficient of FCF and

' $\beta_3$ ' is the coefficient of RONA which indicate the variability in the criterion variable i.e. EVA from its mean value caused by predictor variables and 'e' is the error term.

To examine the correlation between the variables Karl- Pearson's correlation co-efficient has been employed which facilitate to evaluate the strength of the linear relationship among the stated variables. To validate the model regression analysis is run separately for individual year from 2009 to 2012 using criterion and predictor variables of all 16 sample companies from CNX IT index. It is done to test the impact of predictor variables on criterion variable independently in each year and to examine if any single predictor variable exclusively or all predictors influenced EVA during the study period. In order to study the special contribution of each predictor variable to the equation, beta coefficients ( $\beta$ ) of the un-standardized variables are taken into account.

Also the compounded annual growth rate (CAGR) and year on year growth rate (YoYGR) of EVA has been computed.

### Empirical Results

Inorder to test the impact of all predictor variables on Economic value added of the sample companies certain statistical tools were used to analyse the data. The SPSS 20.0 was used to ascertain the results and the output was condensed into tabular form to avoid consumption of space. Some observations have been interpreted to state relevant findings.

Table 1. Descriptive analysis

Variables		2009	2010	2011	2012
EVA	Mean	676.83	742.22	687.56	837.68
	S.D	1235.19	1438.74	1864.99	2678.58
NOPAT	Mean	634.37	715.94	852.95	1138.82
	S.D	1277.87	1466.42	1989.25	2853.63
FCF	Mean	266.42	75	372.39	321.39
	S.D	548.51	544.68	1238.95	923.36
RONA	Mean	2.22	2.52	2.05	2.11
	S.D	2.25	2.13	1.66	1.85

Table 1 shows the descriptive statistics of all variables. According to the table, the mean statistics indicate that all variables have a positive mean and also NOPAT (1138.82) has largest mean in 2012 and RONA (2.05) has the lowest mean in 2011 among the variables. The standard deviation of EVA is the highest in 2012 compared to other stated variables throughout the study period. The standard deviation shows how much variation from the mean occurs. A low standard deviation indicates that the data points tend to be very close to

the mean and a high standard deviation indicates that the data points are spread out over a large range of values. Hence EVA is spread amongst all the predictor variables.

Table 2. ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	259587.123	3	86529.041	.024	.995
Within Groups	2.137E8	60	3562172.176		
Total	2.140E8	63			

To check whether there is a significant influence of time period from 2009 to 2012 on Economic value added of 16 CNX IT firms, one way ANOVA is applied. The table 2 result indicates that the time period is not significant on EVA at 5% level.

**Graph showing mean values of the variables**

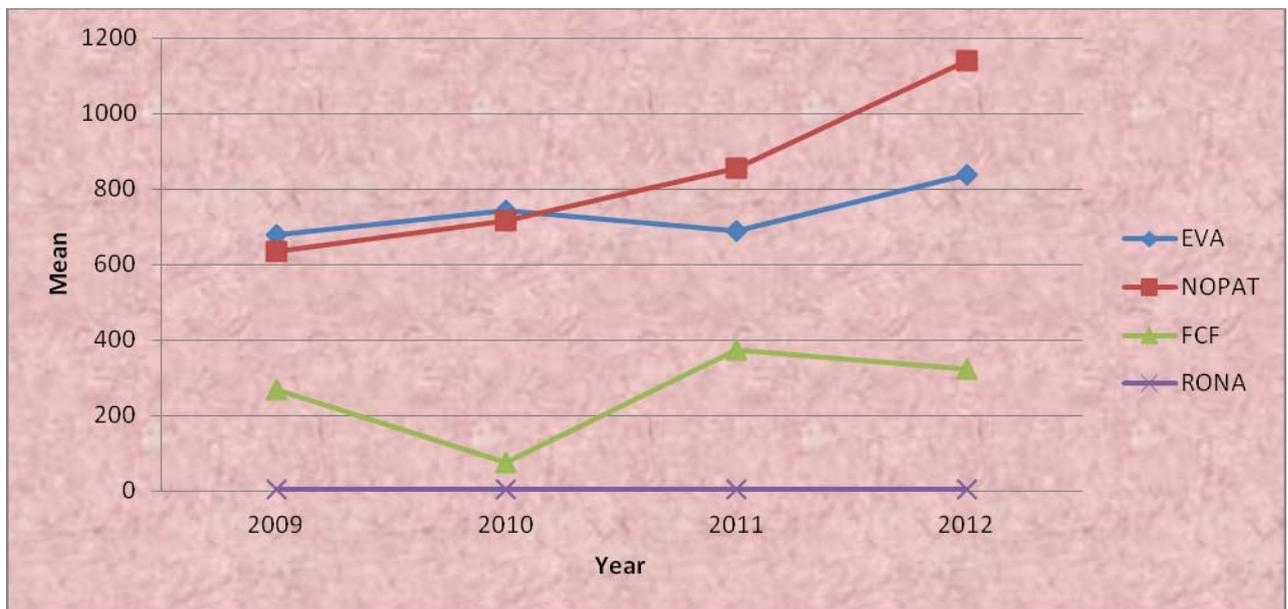


Table 3. Correlation among the variables

		EVA	NOPAT	FCF	RONA
EVA	Pearson Correlation	1	.990**	.880**	.098
	Sig. (1-tailed)		.000	.000	.220
	N	64	64	64	64
NOPAT	Pearson Correlation	.990**	1	.894**	.128
	Sig. (1-tailed)	.000		.000	.157
	N	64	64	64	64
FCF	Pearson Correlation	.880**	.894**	1	.060
	Sig. (1-tailed)	.000	.000		.320
	N	64	64	64	64
RONA	Pearson Correlation	.098	.128	.060	1
	Sig. (1-tailed)	.220	.157	.320	
	N	64	64	64	64

\*\* . Correlation is significant at the 0.01 level (1-tailed).

From the above table 3, the Pearson correlation among the variables is strong and positive between EVA and other predictor variables during the study period. The absolute value of the co-efficient measures how closely the variables are related. The closer it is to 1 the closer is the relationship. A correlation co-efficient over 0.8 indicates a strong correlation between the variables.

Table 4. Summary statistics of the model pertaining to overall analysis between EVA as the criterion variable and NOPAT, FCF, RONA as predictor variable

**(ENTER method)**

Year	$\alpha$	R	R <sup>2</sup>	Adj. R <sup>2</sup>	Std. Error	Sig. F	D.W
2009	36.589	0.995	0.989	0.986	54.471	363.617	2.514
2010	30.571	0.996	0.993	0.991	56.123	560.129	1.562
2011	-26.491	0.997	0.993	0.991	71.245	574.169	1.284
2012	65.585	0.995	0.989	0.986	122.679	363.499	1.596
Unstandardized beta coefficients and 't' statistic							
Predictor	NOPAT		FCF		RONA		
Year	' $\beta$ ' and ('t' value)		' $\beta$ ' and ('t' value)		' $\beta$ ' and ('t' value)		
2009	1.019 (18.198)*		-0.033 (-0.589)		0.029 (0.946)		
2010	1.016 (28.027)*		-0.748 (0.469)		0.078 (0.939)		
2011	1.149 (6.632)*		-0.148 (-0.864)		-0.053 (-1.726)		
2012	1.106 (6.400)*		-0.096 (-0.556)		-0.105 (-3.403)*		
*Significance at 5%							

Table 5. Summary statistics of the model pertaining to overall analysis between EVA as the criterion variable and NOPAT, FCF, RONA as predictor variable

(STEP method)											
Year	Model	$\alpha$	R	R <sup>2</sup>	Adj. R <sup>2</sup>	Std. Error	R <sup>2</sup> Change	Sig. F	Predictors	' $\beta$ ' and ('t' value)	D.W
2009	1	67.389	0.994	0.998	0.987	39.607	0.988	1137.469	NOPAT	0.994 (33.726)	2.662
2010	1	42.399	0.996	0.993	0.992	35.928	0.993	1871.594	NOPAT	0.996 (43.262)	1.685
2011	1	-108.635	0.996	0.991	0.991	49.144	0.991	1600.960	NOPAT	0.996 (40.012)	1.549
2012	1	-219.696	0.989	0.978	0.977	110.084	0.978	635.342	NOPAT	0.989 (25.206)	1.695
	2	75.426	0.994	0.989	0.987	118.125	0.010	575.691	NOPAT RONA	1.011 (33.732) -0.104 (-3.479)	

From the above tables, table 4 is divided into two parts. Part 1 contains summary statistics of the model using regression analysis through ENTER method that disclose if the criterion variable EVA depended significantly on the said predictor variables together. It is found that Significance F in all the years was below 0.05 and hence it is inferred that EVA of the companies depended significantly on NOPAT, FCF and RONA and therefore reject null hypothesis. It proves that EVA of CNX IT firms depended on NOPAT, FCF and RONA together throughout the study period from 2009 to 2012. Part 2 contains unstandardised beta coefficients and t-values of predictor variables. It shows that the EVA depended significantly depended on NOPAT than other predictors (FCF & RONA) from 2009 to 2011. In 2012 EVA depended on NOPAT and RONA i.e., initially NOPAT played significant component in the dependency of EVA whereas in further years even RONA began influencing EVA.

Table 5 contains the summary statistics through step-wise multiple regressions. It is noted that the R, R<sup>2</sup>, and Adj. R<sup>2</sup> values remain same in both Enter and Step-wise method. The FCF variable has no influence on value based measure EVA through the study period as similar to ENTER method. The Durbin Watson statistic in both tables one and two in every year indicates that auto correlation among determinant variables in all the models throughout the study period was within the limits.

Table 6. Compounded Annual Growth Rate

Year	2009	2010	2011	2012
CAGR	7.37%	21.54%	6.45%	-1.68%

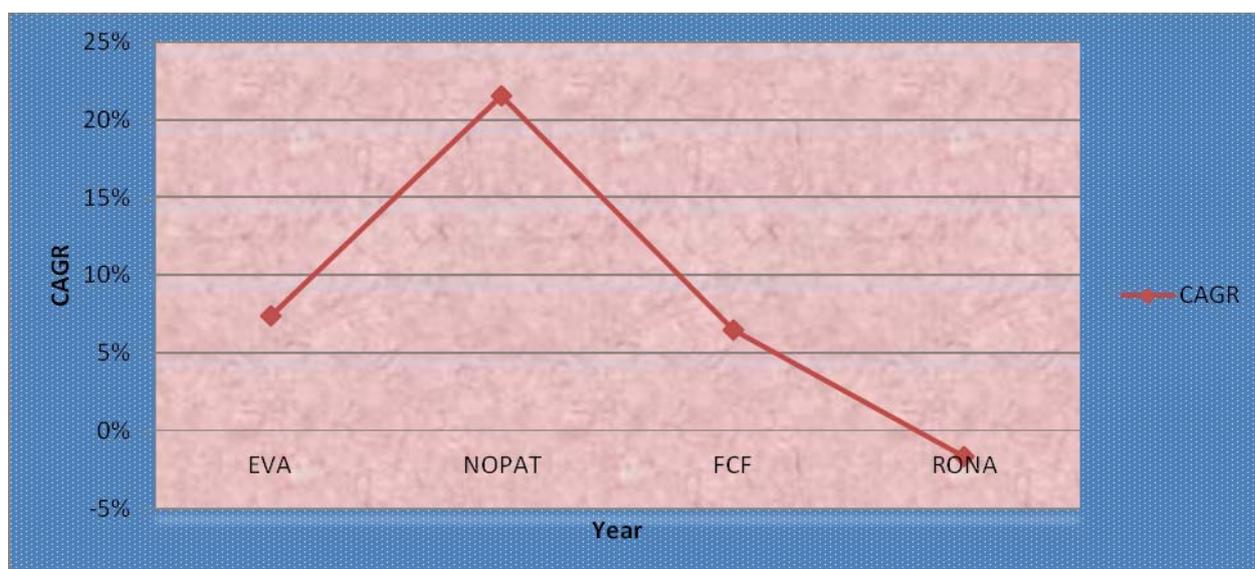
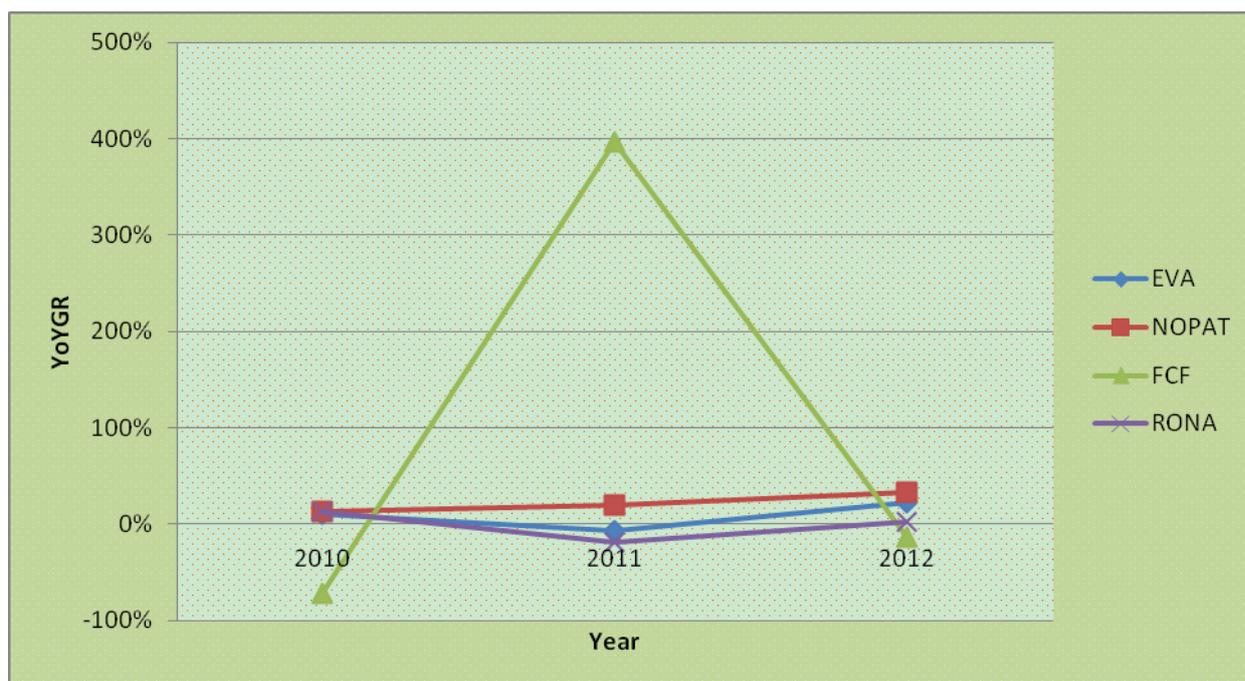


Table 6 and graph shows the compounded annual growth rate of EVA, NOPAT, FCF and RONA from 2009 to 2012. It reveals that the growth rate of NOPAT is high when compared to the growth rate of other variables. Hence NOPAT is more influential variable than any other variable on EVA.

Table 7. Year on year growth rate

Variables	EVA	NOPAT	FCF	RONA
2009	-	-	-	-
2010	10%	13%	-72%	14%
2011	-7%	19%	397%	-19%
2012	22%	34%	-14%	3%



To be more specific on the growth of the study variables, apart from compounded annual growth rate as shown in the previous table and graph, year on year growth rate has also been computed and depicted in table 7 and the above graph. It reveals that there is more fluctuation in growth of FCF than other variables. The growth of EVA is in line with NOPAT and RONA.

### Conclusion

Compared to conventional measures, EVA is an epochal measure since it can be maximized and it is better if EVA is larger. EVA helps enormously the management and employees and the constituencies to see what should be real objective of the company, since it makes clear to all what profitability really is. EVA as a value based measure is influenced by certain variables. In the study it is found that majorly Net Operating Profit after Taxes had major influence in the initial period and at the end of the study period Return on Net Assets had influence on EVA. This indicates that to shareholders value creation would be effected if there is minimum profit after taxes.

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