DETERMINANTS OF ECONOMIC VALUE ADDED. EMPIRICAL EVIDENCE FROM ROMANIAN MARKET

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Abstract: Maximize enterprise value as a fundamental objective of the management of the enterprise acquired new interpretations given the economic climate changes. In this respect firstly shall be identified procedures for creating value for shareholders. Once achieved this aim we will create value for all parts interested. This objective can be reached only by integrating the concept of performance in enterprise valuation and through a properly applied methodology, taking into account all factors that may arise. The present research is oriented towards performance analysis using the indicator economic value added EVA-more precisely by its determinants. For analysis were selected 65 companies listed on the Bucharest Stock Exchange Market.

1   Introduction

Through Alfred Marshall studies the analysis of this indicator starts from the classical economic theory. He referred to the economic profit of a company as being "What remains of its profits after deducting interest on capital at a specific interest rate ". Thus, since the classics, there is a difference between what we call economic profit and accounting profit that lies in the fact that a company is not fully profitable unless two conditions are met cumulatively: his income covers operational expenditure and provides a surplus income at the disposal of equity investors. This surplus is currently called EVA (Grant, 2003).The indicator is based on the term of residual income which appeared in the accounting literature in 1917 in Church and Scovell's studies-1924 and in management in 1960 (Shil, 2009, p. 170).

Used for the first time in the 1920s by the experts from General Motors, under the terms of residual cash flow, the indicator will then be picked up by those from the consultancy company Stern Stewart &Co in the 1980s as a replacement for the traditional indicators of measurement of value (Black & Wright , 2000, p. 59).Only in 1994 appeared the term of economic value added (Sulger, 2008, p. 155).

Economic value added can be defined as the surplus value created by an investment or a portfolio of investments (Sulger, 2008, p. 155). EVA is the most common indicator for measuring economic profits of a company and performs a technical analysis that stresses the importance of cash flow increases over the weighted average cost of capital (Tabără & Dicu, 2007, p. 371). EVA is the source of the money that the companies can use to remunerate direct and indirect participants for their work: employees, creditors, stockholders (Onofrei, 2007, p. 73).

This study aims to identify which are the determinants of EVA by using a sample of companies listed on BVB for a time period on nine years. The study wil be conducted by usig a statistical tool, more precise multiple regression analysis.

2   Related work

Empirical research carried out to determine the relevance of performance estimation based on traditional indicators and those based on value creation are numerous but have controversial results. Several studies have shown the superiority of EVA as a performance measure (Stewart, 1991; O' Byrne, 1996; Uyemura, Kantor and Petit, 1996; Milunovich and Tseui, 1996; Bao Bao, 1998; Forker and Powell, 2004; Worthington and West, 2004), while others (Biddle, Bowen and Wallace, 1997; Chen and Dodd, 1996; 1997. de Villiers and Auret, 1998; Turvey et al 2000;. Chen and Dodd, 2001; Worthington and West, 2001; Copeland 2002; Sparling and Turvey, 2003) showed the opposite (Maditinos & Zeljko, 2005, p. 6).

Thus, the question of the relevance of a particular type of indicators remains topical.

The studies provided by the literature track various issues relating to the calculation and adjustment required and those relating to the application and the opportunity to use EVA in analyzing the performance. Another current is guided in making comparisons between EVA and other indicators.

Anil Sharma and Satish Kumar achieve a more thorough study of the literature on the basis ofEVA. They analyzed 112 papers published between 1994 and 2008, provide a classification scheme, identife the weaknesses of empirical studies with reference to EVA and suggests directions for future research. Studies are categorized and presented according to the spaces, problematic, distribution of literature on various sources, methodology used, by country, publication, contributions from authors about the concept. With regard to the field approached we have the following structure:52% refers to the correlation between EVA and share performance, 22% correlation between EVA and market value added, 11% the analysis of the concepts and it's limitations, 7% the link between EVA and management performane, 8% other fields of study.

As can be seen from the analysis of empirical studies, most were made with the a sample of companies from the U.S. market (51). They were followed by India (21), South Africa (8), Australia (5), the UK (2), China (2), miscellaneous (23) (Sharma & Kumar, 2010, p. 219).

3   Concepts and Terms Regarding economic value added

Economic value added is measured by the difference between the production of the company and its foreign consumption (coming from third parties), the procurement of goods and services from the outside or streams of such elements of the organisation representing intermediate consumption (Colasse, 2010, pg. 239-241).

EVA calculation Equation is as follows:

Equation 1 EVA | EVA= net operating profit after taxes-the cost of opportunity of invested capital

More precise:

Equation 2 EVA 2

$$EVA = R_{exp}net - CI \times CMPC = R_{exp}\left(1 - Ipr\right) - CI \times CMPC$$

where:

$R_{exp}net$ = net operating profit = (operating incomes – operating expense)*(1-16%);

CI= invested capital= equity+long term debts;

CMPC= weighted average cost of capital.

To calculate EVA we must do some accounting adjustments such as: recognition of research and development expenditure as capital investment, depreciation added to profits, the adjustment of fees.

Economic value added is a management tool that allows you to measure the performance of the company, or an investment. Starting from this relationship we can obtain an expression of market value of the enterprise (Bucătaru, 2006, pg. 114-115).

Enterprise value = Capital invested in assets + present value of EVA for the existing assets + present value of EVA specific to the new projects (Sulger, 2008, p. 157). Taking into account the factors that influence the level of EVA, it follows that companies can create value by acting on the following key tools:

1. increase the profitability of the existing equity by increasing the efficiency of use of assets while maintaining a constant cost of invested capital;

2. reduction of capital invested while maintaining a constant profit;

3. capital investment in projects with a higher net present value;

4. the restructuring of the business by eliminating those areas with a yield lower than the cost of capital;

The market value of the enterprise can be defined as the amount of the book value and the present value of the future EVA (Shil, 2009, p. 174).

Asemeni oricărui indicator sau tehnică de analiză economică, măsurarea performanțelor întreprinderii prin intermediul EVA prezintă atât avantaje cât și dezavantaje.

Like any economical indicator or technical analysis, performance measurement of enterprise via EVA presents both advantages and disadvantages.

Among the advantages of using this method we can include primarily the simplicity and the fact that it does not require making predictions about future results. To the same extent, this indicator is oriented directly towards creating value for shareholders on long-term, representing at the same time a tool for improving the overall management of the enterprise or any of its subdivisions. An increase in EVA will always mean an increase in value for shareholders, as opposed to the increase in net profit, return rates that can sometimes be concomitant with a decline of shareholders' wealth.

In addition to measuring performance, EVA is also an instrument of financial management through which shall be taken coercive measures on the company's strategy or even plot guidelines. The indicator measures the performance of the company (Tabără & Dicu, 2007, p. 373).

EVA determines a wealth creation in the cash and not in percentage. The indicator enables the calculation of the company's performance for periods shorter than a year as it is expressed in terms of the outcome (Shil, 2009, p. 174).

Deficiencies of this indicator occur in comparison between two or more companies or production units, paying no attention to their size and capital structure. And in the case of this indicator we can mention the possibility of accounting manipulations, it is built on data from accounting which may be subject to questionable approach. It can be considered as a defect and the perspective in which this indicator is built, namely that of the investor, ignoring the interests of other

partners. Another problem is the moment when this indicator can be calculated. In this sense, it is based on information in the annual report.

Cost of equity is difficult to determine. Although we should have a forward-looking vision, often we calculate it by using chronological series. A significant change in the interest rate will have a direct impact on the value of the indicator that will remain unchanged in the model. In such circumstances, the use of EVA in order to know if the result obtained is superior is problematic.

4   Determinants of EVA

By using the Equation for the calculation of economic value added we can observe the factors that determine variantions in it's value. To this end, we have invested capital, net operating result and the weighted average cost of capital (Damodaran, 1999, p. 31). By analysing the composition of the three items we can sustain that EVA is influenced by: the income from exploitation (Mix products, mix of customers, market size, market share, revenue per unit of product, productivity, the efficiency of sales departments or of marketing department), gross margin (operating production capacity management, variable expenditures, the level of the fixed costs, the cost per unit of product, utilization of production capacity, the rent payment), income tax adjusted, net assets (the size of claims, the volume of stocks, the level of debt, the average recovery of claims, the average duration of the renewal of the stocks, the average payment to suppliers), fixed assets (machinery, equipment, investments in intangible assets), CMPC (capital structure, cost of capital, cost of debt contracted, contracting of loans, issue or redemption of shares) ((Dorgai, 2002)citat de (Sulger, 2008, p. 158)).

Invested capital is the capital of the company, namely, all sources of stable financing made available to the enterprise. They shall finance the totality of fixed and current assets less debts. The invested capital may be named and the right of shareholders to the residual assets of the company after the deduction of all liabilities. To determine the amount of invested capital used to calculate EVA the best solution is to take into account the market value of capital invested in the company. To facilitate the calculation we can be considered it equal to the book value although it underevaluate the size of the capital and is deeply influenced by accounting policies. Market value can be determined on the basis of the book value by making some adjustments such as capitalization of operating expenses which do not create profit in the current period, capitalization of rents for operational leasing payment, failure to take into account of operations that have negative impact on capital but does not affect the actual size of the share capital (Sulger, 2008, p. 156).

To determine the market value of the net operational result we should make some adjustments relating to research and development expenses and the related operational leasing.

To determine the weighted average cost of capital we should make certain clarifications with regard to the cost of equity and the cost of capital borrowed.

The **cost of equity** is in fact the rate of return required by shareholders of the enterprise in order to remunerate their investment in the company, subject to certain risc conditions. The cost of equity depends on the following factors: capital gain, dividends expected, risk-free rate of return, the risks assumed by the investor, the current course of action.

The first way of determining the cost of equity is the **Capital Asset Pricing Model CAPM Model** (for listed companies). This model seeks to determine the cost of capital in a methodical manner, making a comparison of investment alternatives and performance in general. At the base of the model is the correlation between share return rate and the average rates of return of the market. Thus, the rate of return of an asset under risk is given by the sum of the risk-free rate of investment and risk premiums. The cost of equity based on this model is calculated as follows:

CKpr = Rf + (Rm – Rf) x β, where:

CKpr = cost of equity;

Rf = risk-free rate of return is considered to be the theoretical rate of return of an investment risk=0. Risk-free rate of return is the return that an investor is expected as a result of putting his monetary availabilities in an investment at risk=0, for a certain period of time. Because such a rate exists only in theory, if the evaluation theorists use the actual rate of the State bonds. In Europen Union Euribor is used. In practice there are three known methods for calculating this rate: yield of mature government bonds for 1 year; yield of mature government bonds for 10 years, yield of mature government bonds for 30 years;

Rm = the average market yield is equal to the stock market capitalization divided by the total number of shares available on the market;

Rm-Rf = stock market risk;

β= the enterprise risk coefficient (Comparing Risk Index: Beta). β is the parameter of the field of activity of the enterprise. The value of β larger than 1 is obtained when: the price of the action listed increases by 30%, while the prices of all other shares on the market grow by 20%, the price of the action listed decrease by 30%, while the prices of all other shares on the market decrease by 20%, the action will have a volatility of 50% higher compared to that of the stock market as a whole, b = 1.5. The value of the coefficient β < 1 will be obtain when: the price of the action increases by 5%, while the prices of all shares rise by 10%, the price of the action decreases by 5% while prices of all shares fall by 10%; the volatility of the action will be half of that of the stock market as a whole, b = 0.5.

Determining the cost of equity through this method presumes the following stages: determining and checking the coefficient β for the sector in question; determining the risk-free rate of return-the yield on long-term government bonds; determination of gain of the overall market and specific sector, average annual profitability calculation.

A second way to determine the cost of equity is the ***traditional approach*** based on dividends which begings from some variables such as: dividends distributed or sperate (D) and the annual increase(g), the current price action (C1), the net profit of an action (Pn). Dividend-based approach starts from the relationship: CKpr = D1/C1 $\times$ 100 where: D1 = dividend hoped for the current year, C1 = current price (rate) action. The method can take into account the introduction of the growth rate g in the Equation as follows: D1/C1 CKpr = $\times$ 100 + g where: g = future growth rate of dividends or course of action.

In the case of unlisted companies it is more difficult to estimate the cost of equity and can be used several methods. One of those is the ***Henry Mauguire*** model. According to this the cost of own capital of unlisted companies is a function of three parameters:

1. pure Rate (i.e. risk-free rate of return as determined on the basis of return on government bonds in the long run). Pure rate of return risk-free Rf is 5% and 7% before tax. Rf can be set as an average for invested capital or through an inverse of price earnings ratio: Rf = 1/PER.
2. the monetary factor (expected inflation). Inflation rate determines the purchasing power of the national currency and affects the level of economic and financial indicators in real terms. This rate may result in potential losses for lenders through the interest rate and repayment rates. Therefore it is necessary to recalculate the real interest depending on the nominal interest rate and the inflation rate: (DN-Ri)/(1 + R) = where: DN = nominal interest rate, DR= real interest rate, Ri = the rate of inflation. The actual rate of interest must be applied to steady financial flows at comparable prices and the nominal interest rate must be applied to the current cash flows.
3. the risk premium is the risk assumed by the investor who placed the capital in an investment that could be less profitable than other similar and it applies to the risk-free

rate of return. We have the following: low risk 25%, medium risk 25%-50% low high risk 50%-100%, high risk 100%-150% , very high risk 150%-200%. Risk premiums for the businesses listed are usually published by sector of activity and must be associated with the risk-free interest rate. The premium risk depends on two categories of risks: a) the external risks-that due to the following factors: dependence on suppliers, demand for the company's products, the likelihood of change in the prices of raw materials and utilities and b) risks within the company: quality of products and services, funding structure,

The cost of borrowed capital. Borrowed Capital represents the total of credits and loans with repayment period over one year, according to the contract. Borrowed capital is debt incurred by an enterprise on a certain period of time and at a certain cost (interest rate) set out in the contract, with the right to preferential payment towards the cost of equity. The most common business uses bank loans and issue bonds to attract the capital borrowed in financing activity.

CD = d (1- Ci) , where: CD = cost of borrowed capital; d = interest rate; Ci = tax rate

Starting by defining equity cost and debt cost we can obtain the weighted average cost of capital:

Equation 3 CMPC $\quad$ CMPC= CKpr $\quad$ — $\qquad$ —

where: CMPC= weighted average cost of capital; CKpr = equity cost; Cp= equity; CI= invested capital (Cp + D>1 year); CD= the cost of borrowed capital; D= financial debts (debts>1 year); I= tax rate.

Costul mediu ponderat depinde de: structura finanţării, rata de remunerare a capitalului propriu(

Weighted average cost of capital depends on: the structure of financing, rate of return, the interest rate on the loan and taxes.

However, the same problem occurs. We should estimate CMPC based on the market value of assets and capital invested in the company. But predicting them leads to the introduction of increased opportunities in the Equation.

5 Empirical study using EVA

This tudy aims to study the connection(links) and inter- linkkages between a number of variables that characterize economic value added, with the ultimate objective of generating a statistical regression model to explain the influence of net result, weighted average cost of capital, long term debt and equity on EVA.

Statistical Hypothesis:

H1: An increase in operational net result leads to an an crease of EVA.

H2: An increase in weighted average cost of capital leads to a decrease of EVA.

The study was conducted in Romania using data compiled for the period 2003-2011 for the companies coted on Bucharest Stock Exchange market. All the information were available on bvb.ro. BVB has a total number of 105 companies coted(february 2013):

Tabel 1 Companies coted on BVB

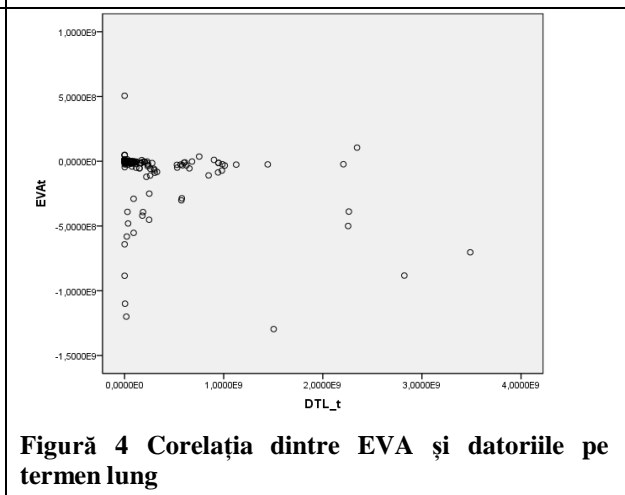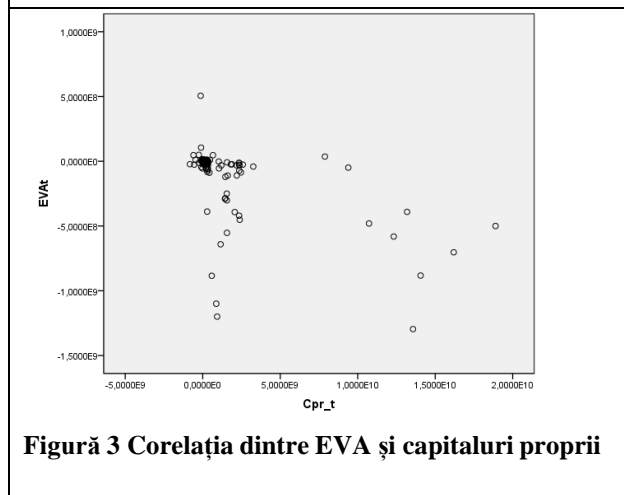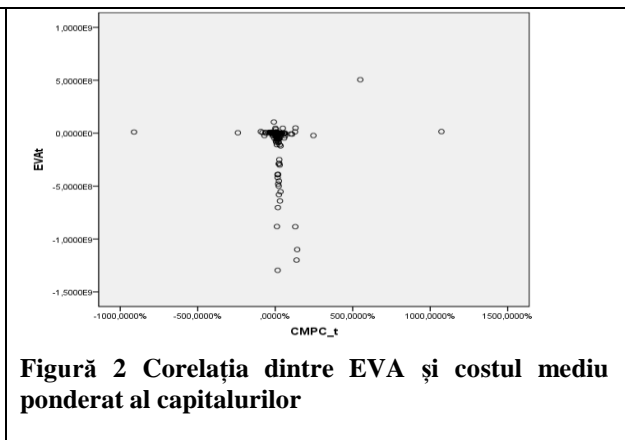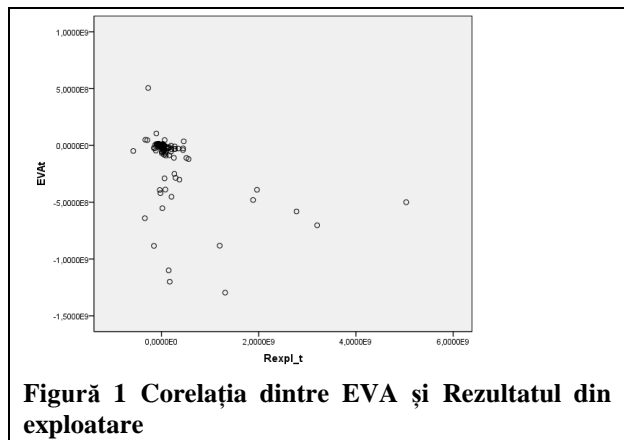| Section	Category	Number of entities
BVB	INTL	2
BVB	I	25
BVB	II	51
BVB	III	1
BVB	Nelistate	25

In this study we will not enter the unlisted companies and international ones and also we will not enter the banks and financial institutions. At BSE in category I or II are listed the following banks: Commercial Carpathian Bank, theTransilvanian Bank, Romanian Bank for development. We have a number of six financial institutions:-SIF2, SIF1, SIF4, SIF5 SIF3,, BRK and BSE, the Property Fund. According to this principle, we have a number of 11 financial companies excluded from the sample. We remain with a possible sample of 66 companies. Of those, 15 are in category I, 50 in category II, and i only one in category III. For this study we focus on the analysis of the 66 companies. The 66 companies presents a total of 564 observations. For some companies we replaced the missing values with the media.

Tabel 2 The variables used in the econometric model

Variabile	Statistical expression
Economic Value Added	Dependent variable, resultative
Operationl net result	Independent variable, predictor factor
Weighted average cost of capital	Independent variable, predictor factor
Equity	Independent variable, predictor factor
Long term debts	Independent variable, predictor factor

In the methodological approach was used multiple regression model using SPSS statistical tool.

The first determinant step, in the correlation and regression analysis, in obtaining an effective statistical model, is the appropriate estimation of the model. In this case, we showed the existence of a linear link between the variables. The correlation between the independent and dependend variables can be aproximate as shown in the ScotterPlot figures below as being a linear regression model. The result of this initial step justifies the continnuation of the analysis in this direction.

Figură 1 Corelația dintre EVA și Rezultatul din exploatare

Figură 2 Corelația dintre EVA și costul mediu ponderat al capitalurilor

Figură 3 Corelația dintre EVA și capitaluri proprii

Figură 4 Corelația dintre EVA și datoriile pe termen lung

The study of the correlation between the variables of the model, through the value of the coefficient of determination R^2=0.378 reveals that37.8% of the variation of the economic value added can be explained by the variation of the independent variable. The difference is put on the account of randomnes and other factors. Sig value=0, lower than the superior limit accepted of 0.05 shows that the linear model is validated through the Sig value. That means that the rish of being wrong when concluding that between the variables of the model is a the most appropriate one to express the correlation between variables. This first step of analyse is presented in the figure below:

Tabel 3 Model Summary- Linear regression model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	,615[a]	,378	,374	98226356,8032135	,378	89,603	4	589	,000

The parameter's estimation of the regression model and the validation test are showed in the figure below:

Tabel 4 Corellation Coefficients

| Model		Unstandardized Coefficients		t	Sig.	95,0% Confidence Interval for B	
		B	Std. Error			Lower Bound	Upper Bound
1	(Constant)	-5318526,325	4237403,531	-1,255	,210	-13640785,834	3003733,184
	Rexpl_t	,067	,027	2,511	,012	,015	,120
	CMPC_t	-74603,171	60899,464	-1,225	,221	-194209,702	45003,361
	Cpr_t	-,054	,005	-10,071	,000	-,065	-,044
	DTL_t	-,019	,017	-1,120	,263	-,051	,014

The equation of the regression model, according to the date showed above, is the following

Equation 3 Regression equation

The model reflects the influence of the independet variables on the economic value added:

1. If we maintain constant the structure of capital, a percentage increase in the level of operational net result leads to an increase f the economic value added with 0.67%.
2. Any modification on the financial structure that lead to an increase of CMPC will lead to a decrease on economic value added.

To obtain a valid regression model an relevant conclusions, is required an independed variables collinearity diagnostics. This implies the absence of influence between predictors. We have to evaluate collinear statistics such as: tolerance and variance inflation factor VIF. Once we have approximated the linear regression model we have to test it's linearity by using residue analysis process. From the histogram and scatter plot charts showed below we can see that we have a normal distribution of the residuals around the mean which corresponds to the assumption of the linearity of the model.

Figure 5 Linearity through histogram

Figure 6 Linearity through Scatterplot
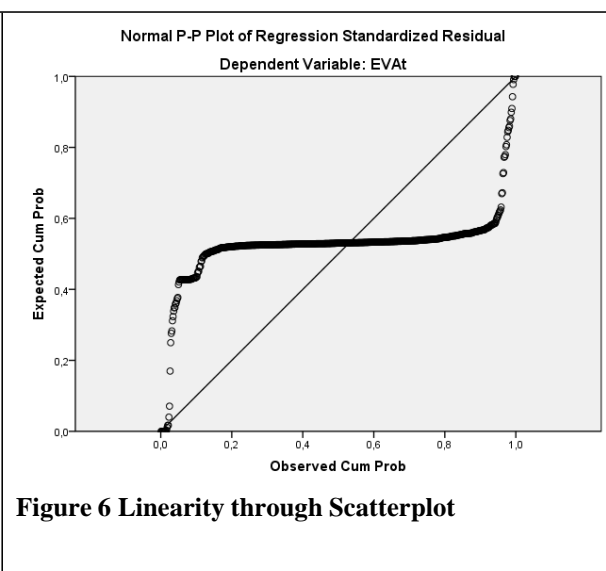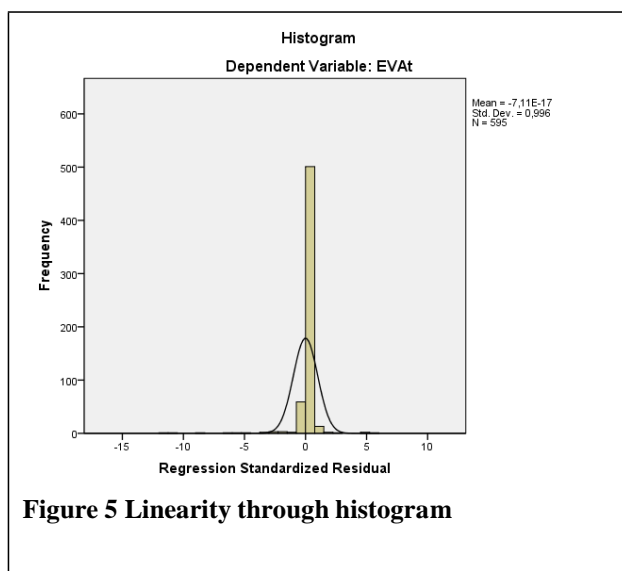
6   Conclusions

While traditional performance indicators have emerged in the 1900s, the indicators-based on the creation of value were imposed only after the introduction of methods of updating of cash flows in determining performance (Miller and Modigliani, 1961, FCF), the incorporation of growth rate in the

analysis based on the model of Gordon (1962), the determination of the weighted average cost of capital using the CAPM model (Sharpe, 1964, Lintner, 1965 and Black, 1972) and last but not least after developing the concept of residual profit (Solomon, 1965) (Maditinos & Zeljko, 2005).

Modern financial indicators are based on the concept of value creation and a strong relevance of expressing real financial performance. Maximizing the value of these indicators leads to the creation of value, thus increasing the overall value of the company. The literature and the high-profile companies have been developing many indicators of this kind. One of them is economic value added.

In this research we analyzed what are the determinants of EVA and how strong the correlation is between them. For this purpose we used a database built on 66 companies listed on the BSE during a period of 9 years. Using regression analysis, we determined that 37.8% of the variation in economic value added is due to the operational net result, equity capital , long-term debt and the weighted average cost of capital. Of these four independent variables CMPC has the most powerful influence and only Rexpl is linked directly, the other as inverse.

7   Future Research:

Obviously, there is an important field of research in the area of performance indicators and for sure empirical exploration remains to be conducted. We intend to study the correlation between EVA and market value added, stock performance and EVA, earnigs per share, return on investment, return on equity. Of course, we intend to study and other methods for valuing equity and companies.

The study represents a preliminary analysis undertaken within the research thesis where we want to give an answer to the following question: to what extent EVA represents the most effective indicator for measuring the performance of the company?

8   Aknowledgements

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