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The Relationship between the Market Value Added of SMEs Listed on AIM Italia and Internal Measures of Value Creation

The Role of Corporate Strategic Planning

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Abstract

Objectives - In saying that measurement of financial performance plays an important role in the capital allocation choices, the aim of this study is to test the relationships between Market Value Added (MVA), stockholders value measures and presence of formal strategic plan.

Methodology - The study is among descriptive and correlational researches and using panel data methodology on sample of SMEs listed in AIM Italia. The time under study was from 2010 to 2015. In addition, the hypotheses of the research have been tested using Rahavard Novin software for data collection and SPSS 20.0 for data analysis.

Findings - The results indicate that Refined Economic Value Added (REVA) has more correlation with Market Value Added (MVA) than Economic Value Added (EVA); in addition, the results obtained using panel data methodology shows that the use of strategic plans influences the relationship between value performance measures and MVA.

Research limits - Data used for this study need to be subjected to more statistical tests in order to establish a more robust validity and reliability. It is necessary to acquire further strengthened data and assume a variety of conditional situations. It is expected that subsequent studies can use larger samples and diversified by sector, a broader geographic base and a multi-faceted analyses.

Practical implications - This work offer necessary evidences in order to help capital market participants to make rational decision in investment process.

Originality of the study - The originality of this study is the correlation between MVA, financial measures and use of strategic planning for value management.

Keywords: EVA, REVA, MVA, strategic planning

1. Introduction

Creating shareholder value is the key to success in today's marketplace. Long since CFOs are committed to measuring, monitoring and managing business value drivers. Studies devoted to shareholders value analysis have suggested several measures. Some of financial measures for stockholders wealth evaluation are: Refined Economic Value Added (REVA), Economic Value Added (EVA), Total Shareholder Return (TSR), Stock Value (SV), Price Earning (PE), Price/Book Value (PBV), Earnings Per Share (EPS), FCFE Growth Rate (FCFEGR), Dividend Per Share (DPS), Residual Income (RI), Residual Operating Income (ReOI), Net Operating Assets (NOA), Profit Margin (PM), Investment Turnover (IT).

Several researches have been conducted internationally consistent with the view that REVA has most correlation with market value than EVA. The most important purpose of the present research is to make clear the theoretical indices of value creation, test these indices and offer necessary evidences in order to help capital market participants to make rational decision in investment process.

In this research, we test information content of aforementioned measures in AIM Italia. Then, to obtain the most suitable internal measure as a measure of MVA, we look for the measures that have the most relationship with

Market Value Added (MVA).

MVA represent the value added to the particular share over its book value. MVA informs how much value a shareholders has added to this wealth, which he has invested in the share. Accordingly, a company with an objective of enhancing the shareholder's wealth should attempt to capitalize on its MVA.

Findings show that REVA has more correlation with Market Value Added (MVA) than EVA during 2010-2015.

Without prejudice to the aforementioned considerations, we believe that a company increases its value if driven by a growth strategy whose guidelines are included in the strategic plan.

As stated Rappaport (1981): «A principal objective of corporate strategic planning is to create value for shareholders. By focusing systematically on strategic decision-making, such planning helps management allocate corporate resources to their most productive and profitable use. It is commonly assumed that the market value of the company's shares will increase as the plan materializes, thus creating value for shareholders».

The correlation between strategic plan and business value is even more evident if we consider studies on Value Based Management (VBM). As evidenced by Arnold (2005): «Value -based management is a managerial approach in which the primary purpose is long-term shareholder wealth maximization. The objective of a firm, its systems, strategy, processes, analytical techniques, performance measurements and culture have as their guiding objective shareholder wealth maximization».

Some studies show that MVA is the core of a vast system (known as Value Based Management) that includes various management processes, from strategic planning to the incentive of resources, able to effectively contribute to create value over time (Ryan & Trahan, 1999; Ittner & Larker, 2001; Malmi & Ikäheimo, 2003; Lueg & Schäffer, 2010; Dekker et al., 2012; Burkert & Lueg, 2013; Elgharbawy & Abdel-Kader, 2013). Other studies conducted on SMEs show that their loss of value is closely linked to the lack of strategic planning systems (Garengo et al., 2005; Cocca & Alberti, 2010).

Furthermore, some meta-analysis studies show a positive relationship between strategic planning and financial performance; among these we may mention the studies conducted by: Boyd (1991), Capon et al. (1987, 1990, 1994).

Our work highlights that use of strategic plans influences the relationship between value performance measures and MVA during 2010-2015.

The remainder of the work is organized as follows. Section 2 explains literature reviews. Section 3 explains our hypotheses and present the model. The results and conclusions are discussed in Sections 4 and 5.

2. Theoretical Background

Over time different schools of thought have formed on the correlations existing between MVA and theoretical measures of value creation.

Stewart's research (1990, 1991) found really high values of R^2 (97%) between the values and changes in values, of EVA and MVA of companies. One important side note is that these correlations were only this high for companies with a positive value of EVA, for companies with a low, or negative EVA, the correlation was not high at all and could even be negative. According to Stewart this was due to the fact that the MVA always reflects the value of the assets of the company, even if the company has negative returns.

Dodd and Chen's studies (1996) focused on the correlation analysis between Stock Market Returns (SMR) and Economic Value Added (EVA), Return On Assets (ROA), Return On Equity (ROE), Residual Income (RI) and Earnings Per Share (EPS). Their empirical analysis on a sample of 566 US companies showed that ROA, in comparison with other measures, shows the greatest correlation ($R^2 = 24.5\%$). Follow other measures: EVA 20.2 per cent, RI 19.4 per cent and between 5 per cent to 7 per cent for ROE and EPS.

Grant (1996) states that EVA is strongly linked to MVA; such a link is justified by company's residual return on capital.

Bacidore et al. (1997) investigated the relationships between traditional and new performance evaluation measures and MVA. Their results show that the ability of REVA in stock value prediction is more than other measures.

Ittner and Larcker (1998) shows that level of Economic Profit (EP) explain about 31 per cent of the level of MVA; the authors add that correlation level of EP is not very different from the other measures investigated.

Fernandez (2001) studied the relationship between MVA and shareholders value creation. In particular, the author analyzes 582 US companies using data provided by Stern Stewart. For each of the 582 companies, we have

calculated the 10-year correlation between the increase in the MVA each year and each year's EVA, NOPAT (Net Operating Profit After Taxes), WACC (Weighted Average Cost of Capital). He observed that one cannot introduce EVA as the best performance index and a representative of MVA.

Sandoval (2002) in an empirical study for Chilean companies examined a sample of 62 Chilean companies over the period 1994-1999 using quarterly data. This sample comprises the most traded and representative industrial companies on the Chilean stock market. The study shows evidence about whether EVA dominates REVA.

Swain et al. (2002) in a study of Indian pharmaceutical industry shows that EVA, NOPAT and sales outperform other financial and economic measures in predicting MVA in most of the companies.

Worthington and West (2004) compared the relationships between MVA and traditional performance evaluation measures with stock return. Their results show that accounting income and stock return still has the most relationship.

Singh (2005) in a study of Indian banking listed on the Bombay stock Exchange shows that over 80 per cent of the banks not reach sufficient margins to cover cost of capital. The author points out the statistical significance of the relationship between EVA and MVA and adds that some finer models, such as industry-specific models, may provide additional insights.

Ferguson et al. (2005) studied the relationships between EVA and other performance evaluation measures in improving stock performance during the period of 1983 to 1998 in the Stern Stewart companies. The study shows that EVA and MVA have the most relationship compared to other measures.

Hejazi and Hosseini (2006) studied about the issue that: «Which one of measures (EVA or accounting measures) has most correlation with MVA?» Their results indicate EVA and MVA have more correlation than other measures.

Seoki and Woo (2009) explored the relationships between EVA, MVA and REVA in the U.S. Their results point out that REVA and MVA has the most relationship compared to other measures.

Kangarlouei et al. (2012), in a study of companies listed in Tehran Stock Exchange (TSE) conclude that REVA and MVA have the most positive relationship in TSE and it determinates 27.5 per cent of MVA.

Asadi et al. (2013) shows that the information content of EVA has no priority in explaining the changes in MVA.

3. Hypothesis, Data and Empirical Model

The aim of this study is to test the relationships between research variables. Our quantitative research approach is descriptive and correlational.

The research data consists of companies listed on AIM Italia (the market of Borsa Italiana devoted to the Italian small and medium enterprises, which wish to invest in their growth) during the period of 2010 to 2015.

Statistical sampling is conducted with systematic elimination method. The sampled SMEs must meet the following criteria: i) presence of homogeneous data over the past five years; ii) availability of useful data to test research hypotheses.

As a result of these conditions, a sample of 75 firms (of which 50 have presented strategic plans and numerically quantified targets, and others 25 not) was obtained. Table 1 shows the number of firms object of investigation.

Table 1. Structure of the sample

Presence of strategic plan	SMEs listed on AIM Italia
Yes	50
No	25
Total	75

Financial statement and notes issued by AIM Italia were used as a research tool. We used Rahavard Novin software for data collection and SPSS 20.0 for data analysis.

Our analysis model formulates Market Value Added (MAV) as a result of traditional and non-traditional financial measures:

- Refined Economic Value Added (REVA);
- Economic Value Added (EVA);

- Total Shareholder Return (TSR) = (Capital gains + Current income) ÷ Initial stock price. We refers to the summation of dividend received during the year and difference between the ending price of the stock and the beginning price of the stock, divided by the beginning price of the stock;
- Stock Value (SV) = $D \div WACC - g$;
- Price Earning (PE) = $P \div E$. The share price at the end of the fiscal year was divided by the company's diluted EPS for PE. PE shows the amount of investment in common stock costs per euro of earnings;
- Price/Book Value (PBV) = $P \div BV$. The PBV ratio is the market price per share divided by the book value per share. The market price per share is simply the stock price. The book value per share is a firm's assets minus its liabilities, divided by the total number of shares;
- Earnings Per Share (EPS) = (Net income - Dividends on preferred stock) ÷ Average outstanding shares. We used the diluted EPS reported in the company's financial statements as the EPS. Diluted EPS is the ratio of adjusted income available for ordinary shares (reflecting conversion of diluted securities) to the weighted average number of ordinary and potential ordinary shares outstanding;
- FCFE Growth Rate (FCFEGR) = Retention rate × ROE. Measures growth in income from both operating and cash assets. In terms of fundamentals, it is the product of the retention ratio and the return on equity. The use of the retention ratio in this equation implies that whatever is not paid out as dividends is reinvested back into the firm (Damodaran, 2008);
- Dividend Per Share (DPS) = Total dividends paid out to shareholders ÷ Number of shares outstanding. Is the amount of dividends that the shareholders receive on a per-share basis. It is calculated using the total dividends paid out to shareholders over one fiscal year and the number of shares outstanding;
- Residual Income (RI) = NOPAT - Required profit. Is the NOPAT minus the profit required to cover the cost of financing;
- Residual Operating Income (ReOI) = NOPAT - (WACC × Net Operating Assets);
- Net Operating Assets (NOA) = Total Assets - Operating Liabilities;
- Profit Margin (PM) = NOPAT ÷ Sales;
- Investment Turnover (IT) = Sales ÷ Investment capital.

With MVA as the dependent variable and REVA, EVA, TSR, SV, PE, PBV, EPS, FCFEGR, DPS, RI, ReOI, NOA, PM, and IT as the independent variables, the following models are built (1):

$$MVA = \alpha + \beta_1 REVA + \beta_2 EVA + \beta_3 TSR + \beta_4 SV + \beta_5 PE + \beta_6 PBV + \beta_7 EPS + \beta_8 FCFEGR + \beta_9 DPS + \beta_{10} RI + \beta_{11} ReOI + \beta_{12} NOA + \beta_{13} PM + \beta_{14} IT + e_i \quad (1)$$

As financial management practices, standardized MVA is calculated by dividing the change in MVA by the adjusted equity value at the beginning of the year (2):

$$\text{Standardized MVA} = \text{Change in MVA for the Year} \div \text{Adjusted Equity at Beginning of Year} \quad (2)$$

REVA is a refined value based on EVA. When researching enterprise value, we should consider more on an enterprise's market value instead of its book value. EVA, reflecting an enterprise's future value through its book value, will possibly neglect some subtle factors difficult to identify in the market. REVA replaces the book value in EVA with the market value (3):

$$\text{Refined Economic Value Added (REVA)} = \text{NOPAT} - \text{WACC} (MV_{t-1}). \quad (3)$$

Where, NOPAT is the operating profits after tax at end of period; WACC is the Weighted Average Cost of Capital and MV_{t-1} is the market value of equity plus the book value of total corporate liabilities after subtracting current interest free liabilities (all of which are related to the period t-1).

Standardized REVA is calculated by dividing the change in REVA by the adjusted equity value at the beginning of the year (4):

$$\text{Standardized REVA} = \text{Change in REVA for the Year} \div \text{Adjusted Equity at Beginning of Year} \quad (4)$$

Economic Value Added (EVA) refers to the residual income that is obtained after deducting costs of capital by net operating profit after-tax (5):

$$EVA = \text{NOPAT} - \text{WACC} \times (NA). \quad (5)$$

Where, NOPAT is the reported operating profit plus any increase in doubtful receivables reserves, evaluation reserves based on the last incoming first issued; amortization of goodwill, net amounts invested as R&D costs, and operating profits (including return on investment) after subtracting taxes on cash activities, WACC is the Weighted Average of the Cost of Capital, and NA is Net Assets (book value of net assets at the beginning of the period).

Standardized EVA is calculated by dividing the change in EVA by the adjusted equity value at the beginning of the year (6):

$$\text{Standardized EVA} = \text{Change in EVA for the Year} \div \text{Adjusted Equity at Beginning of Year}. \quad (6)$$

In the light of our considerations, we formulate four research hypotheses:

- RH₁ - There is a relationship between REVA and MVA in AIM Italia.
- RH₂ - There is a relationship between EVA and financial performance measures (e.g., TSR, SV, PI, PBV, EPS, FCFEGR, DPS, RI, ReOI, NOA, PM, and IT) with MVA in AIM Italia.
- RH₃ - Compared to other financial performance evaluation measures, REVA and MVA have the most correlation in AIM Italia.
- RH₄ - The use of strategic plans influences the relationship between value performance measures and MVA.

4. Findings

Since the normality of dependent variable (MVA) leads to the normality of the model, the normality of dependent variable should be controlled before regressing the model.

To test hypothesis Kolmogorov-Smirnov test is conducted. The Kolmogorov-Smirnov test (KS-test) tries to determine if two datasets differ significantly. The KS-test has the advantage of making no assumption about the distribution of data.

Therefore, null and alternative hypotheses are:

- H₀ - the data (MVA) is normally distributed;
- H_A - the data (MVA) is not normally distributed.

The hypothesis regarding the distributional form is rejected at the chosen significance level (p) if the test statistic is greater than the critical value. The fixed values of p are generally used to evaluate the null hypothesis (H₀) at various significance levels. A value of 0.050 is typically used for most applications.

As can be in table 2, all the coefficients are statistically significant.

Table 2. KS-test for MVA

N.obs	Mean	S.D.	Absolute value of the most S.D.	Most positive deviation	Most negative deviation	KS-test	p-value
520	0.678082	0.85818	0.056	0.056	-0.046	1.109	0.094

Source: our elaboration on "AIM Italia" data

According to the Table 2, significance level for MVA is more than 5 percent ($p > 0.050$) so null hypothesis (H₀) showing the normality of dependent variable is accepted.

In order to establish if REVA and MVA are related (RH₁), we did Pearson's chi-squared test and check the p-values.

Like all statistical tests, chi-squared test assumes a null hypothesis and an alternate hypothesis. The general practice is, if the p-value that comes out in the result is less than a pre-determined significance level, which is 0.050 usually, then we reject the null hypothesis:

- H₀ ($p > 0.050$), there is not a significant relationship between REVA and MVA in AIM Italia (the two variables are independent);
- H_A ($p < 0.050$), there is a significant relationship between REVA and MVA in AIM Italia (the two variables are related).

Table 3 highlights the main results of testing data for the first hypothesis.

The significant relationship between REVA and MVA is indicated by beta coefficients ($\beta = +0.876$; $p < 0.050$; adjusted $R^2 = 0.399$). In addition, the number of Durbin-Watson Test is 1.998, which shows that there is not auto correlation problem. With respect to significance level and the number of F and T statistic, H₀ hypothesis is rejected. Thus, the study fully supports the first research hypothesis (RH₁). These findings indicate that there is a significant relationship between the Refined Economic Value Added and the Market Value Added which is in line with the results of the study done by Seoki and Woo (2009).

Table 3. Estimation results (RH₁)

Variable	Pearson correlation coefficient	R ²	Adj R ²	Durbin Watson test	F Statistic	T Statistic	n. obs	α	β	p-value
Statistical relationship between REVA and MVA	0.618	0.415	0.399	1.998	110.290	15.210	520	0.289	0.876	0.005

Source: our elaboration on “AIM Italia” data

Competing hypothesis 2 (RH₂), argues that there is a relationship between EVA and financial performance measures (e.g. TSR, SV, PE, PBV, EPS, CFEGR, DPS, RI, ReOI, NOA, PM, and IT) with MVA in AIM Italia. The descriptive statistics for the second hypothesis are reported in table 4.

Table 4. Estimation results (RH₂)

Variable	Pearson correlation coefficient	R ²	Adj R ²	Durbin Watson test	F Statistic	T Statistic	N. obs	β	p-value	H ₀ or H _A
Statistical RS (EVA and MVA)	0.509	0.125	0.122	1.839	91.602	10.711	520	0.711	0.006	H _A
Statistical RS (TSR and MVA)	0.044	0.018	0.016	1.689	0.421	0.628	520	0.009	0.101	H ₀
Statistical RS (SV and MVA)	0.039	0.015	0.014	1.587	0.329	0.558	520	0.007	0.118	H ₀
Statistical RS (PE and MVA)	0.027	0.014	0.013	1.389	0.298	0.498	520	0.004	0.187	H ₀
Statistical RS (PBV and MVA)	0.056	0.009	0.007	1.401	0.587	0.642	520	0.012	0.100	H ₀
Statistical RS (EPS and MVA)	0.031	0.009	0.006	1.409	0.301	0.500	520	0.006	0.189	H ₀
Statistical RS (CFEGR and MVA)	0.401	0.104	0.101	1.820	88.602	10.006	520	0.708	0.007	H _A
Statistical RS (DPS and MVA)	0.368	0.102	0.100	1.755	78.871	9.589	520	0.655	0.008	H _A
Statistical RS (RI and MVA)	0.320	0.099	0.097	1.700	69.896	8.687	520	0.612	0.009	H _A
Statistical RS (ReOI and MVA)	0.290	0.087	0.085	1.698	61.220	8.458	520	0.578	0.011	H _A
Statistical RS (NOA and MVA)	0.285	0.079	0.076	1.690	58.999	7.998	520	0.555	0.014	H _A
Statistical RS (PM and MVA)	0.274	0.077	0.075	1.690	51.001	7.511	520	0.425	0.017	H _A
Statistical RS (IT and MVA)	0.224	0.070	0.068	1.685	50.158	6.008	520	0.398	0.018	H _A

Source: our elaboration on “AIM Italia” data

The empirical evidence shows that some variables (EVA, CFEGR, DPS, RI, ReOI, NOA, PM, and IT) are related to MVA whereas others (TSR, SV, PE, PBV, EPS) are independent and assumes null hypothesis (H₀). As a result, MVA and all the variables in the second hypothesis other than TSR, SV, PE, PBV, and EPS have relationships.

With reference third hypothesis (RH₃), we can say that REVA and MVA, compared to other indices, are more related. In effect, the data showed that the high of adjusted R square is 0.399. It shows that the independent variable (REVA) in this study is able to explain 39.9% variation in the MVA. This statistical evidence confirms our third hypothesis. The results of testing correspond to the findings observed by Bacidore et al. (1997), Fernandez (2001), Seoki and

Woo (2009). On the other hand, this finding is contrary to the results of the study done by Sandoval (2002), Swain et al. (2002).

After testing relationships between dependent and independent variables, we regress the model for single independent variable. Here we use multiple regressions to show the effects on the dependent variable. The accepted hypotheses are shown in table 5.

Table 5. Multiple regression (RH3)

Accepted Hypothesis	Adj R ²	Regression Model	p-value	Independent Variable	Dependent Variable
H _A	0.399	$y = 0.289 + 0.876x + e_i$	0.005	REVA	MVA
H _A	0.122	$y = 0.301 + 0.711x + e_i$	0.006	EVA	MVA
H ₀	0.016	$y = 0.456 + 0.009x + e_i$	0.101	TSR	MVA
H ₀	0.014	$y = 0.401 + 0.007x + e_i$	0.118	SV	MVA
H ₀	0.013	$y = 0.398 + 0.004x + e_i$	0.187	PE	MVA
H ₀	0.007	$y = 0.501 + 0.012x + e_i$	0.100	PBV	MVA
H ₀	0.006	$y = 0.306 + 0.006x + e_i$	0.189	EPS	MVA
H _A	0.101	$y = 0.346 + 0.708x + e_i$	0.007	CFEGR	MVA
H _A	0.100	$y = 0.277 + 0.655x + e_i$	0.008	DPS	MVA
H _A	0.097	$y = 0.201 + 0.612x + e_i$	0.009	RI	MVA
H _A	0.085	$y = 0.222 + 0.578x + e_i$	0.011	ReOI	MVA
H _A	0.076	$y = 0.201 + 0.555x + e_i$	0.014	NOA	MVA
H _A	0.075	$y = 0.301 + 0.425x + e_i$	0.017	PM	MVA
H _A	0.068	$y = 0.299 + 0.398x + e_i$	0.018	IT	MVA

Source: our elaboration on “AIM Italia” data

The descriptive statistics, correlation and multiple regression analysis has been performed using SPSS 20.0 version through ENTER (Tab. 6).

Based on the results of the ANOVA test or F-test in table 6 obtained F count is 34.221 with a significance level of 0.001. Because the significance level of $0.001 < 0.050$, it can be stated that the regressed model is accepted.

Table 6. The result of F-Test - ANOVA (RH₃)

Model	F	p-value
Multiple Regression	34.221	0.001

Source: our elaboration on “AIM Italia” data

Table 7 contains the summary statistics through ENTER multiple regressions. Established that p-value is less than 5% (table 6), regression model accepts null hypotheses for the variables they have level of T-statistic higher than 5%. It follows that EVA, TSR, SV, PE, PBV, and EPS variables are eliminated from the regression model because they do not have significant relationships with dependent variable (MVA).

However, null hypothesis is not accepted for other variables and these variables must not be omitted from the regression model. Less tolerance indicates that variables' data is low which makes a problem in the regression; but, as it is shown, the tolerance value is acceptable and therefore it does not make a problem in multiple regressions.

Table 7. Summary of Multiple Regression Applying the Enter Method (RH₃)

Var.	<i>Unstandardized coefficients</i>			T Statistic	p-value	Position Index	<i>Collinearity Statistics</i>	
	β	Std. Error	Standardized Coefficients				Variance Inflation Factor	Tolerance
Constant	0.105	0.080	-	1.298	0.160	1.000	-	-
REVA	0.521	0.062	0.425	4.125	0.001	2.007	1.763	0.567
EVA	0.016	0.087	0.068	0.784	0.108	2.121	1.267	0.789
TSR	0.004	0.004	0.020	0.878	0.109	2.687	1.474	0.678
SV	0.003	0.003	0.021	0.897	0.118	2.787	1.287	0.777
PE	0.002	0.002	0.018	0.901	0.187	2.874	1.912	0.523
PBV	0.008	0.008	0.028	0.871	0.100	3.001	1.506	0.664
EPS	0.003	0.003	0.023	0.945	0.189	3.487	1.386	0.721
CFEGR	0.421	0.058	0.341	3.128	0.007	2.788	1.187	0.842
DPS	0.325	0.078	0.231	3.009	0.008	2.987	1.267	0.789
RI	0.500	0.075	0.398	2.989	0.009	3.598	1.226	0.815
ReOI	0.401	0.077	0.299	2.789	0.011	4.878	1.305	0.766
NOA	0.420	0.054	0.301	2.128	0.014	4.999	1.287	0.777
PM	0.376	0.048	0.294	2.001	0.017	5.001	1.669	0.599
IT	0.298	0.037	0.201	2.879	0.018	5.215	1.663	0.601

Source: our elaboration on “AIM Italia” data

Based on the evidence presented so far, the multiple regression model is shown in the formula (7):

$$y = 0.10 + 0.521 REVA + 0.421 FCFEGR + 0.325 DPS + 0.500 RI + 0.401 ReOI + 0.420 NOA + 0.376 PM + 0.298 IT + e_i. \quad (7)$$

Table 8 highlights the main results of testing data for the fourth hypothesis. Here, the research variables are tested concerning strategic plan as a control variable.

The statistical results in table 8 show, for SMEs with a strategic plan, the greatest relationship between REVA and MVA; in fact, the coefficient “Adj R²” has a higher value than the other variables.

With respect to F and T statistic, null hypothesis is rejected for all the variables other than TSR, SV, PE, PBV, and EPS; moreover, for all variables different from TSR, SV, PE, PBV and EPS, significance of the regression model is accepted.

This means that the use of strategic plans influences the relationship between value performance measures and MVA.

It can be concluded that the presence of the strategic plan affects the relationship between dependent and independent variable so our fourth hypothesis is accepted.

Table 8. Estimation results (RH₄)

Var.	<i>Presence of a Strategic Plan</i>						<i>Absence of a Strategic Plan</i>							
	R ²	Adj R ²	n. obs	F Statistic	T Statistic	p-value	H ₀ or H _A	R ²	Adj R ²	n. obs	F Statistic	T Statistic	p-value	H ₀ or H _A
REVA	0.612	0.420	347	16.456	7.120	0.001	H _A	0.478	0.298	173	14.256	6.189	0.001	H _A
EVA	0.401	0.301	347	12.001	5.345	0.002	H _A	0.320	0.210	173	10.998	4.997	0.001	H _A
TSR	0.088	0.072	347	1.401	1.146	0.090	H ₀	0.062	0.022	173	1.201	1.100	0.080	H ₀
SV	0.080	0.070	347	1.306	1.107	0.110	H ₀	0.058	0.012	173	1.287	1.101	0.100	H ₀
PE	0.091	0.080	347	1.198	1.012	0.098	H ₀	0.060	0.040	173	1.099	1.000	0.091	H ₀
PBV	0.073	0.068	347	1.311	1.121	0.090	H ₀	0.041	0.020	173	1.216	1.107	0.088	H ₀
EPS	0.090	0.072	347	1.234	1.098	0.112	H ₀	0.075	0.066	173	1.109	1.012	0.110	H ₀
CFEGR	0.301	0.206	347	8.301	3.118	0.003	H _A	0.290	0.153	173	7.001	2.987	0.002	H _A
DPS	0.280	0.189	347	7.222	3.002	0.004	H _A	0.245	0.140	173	6.333	2.452	0.002	H _A
RI	0.228	0.174	347	6.457	2.990	0.005	H _A	0.201	0.137	173	5.089	2.002	0.002	H _A
ReOI	0.200	0.156	347	6.001	2.798	0.011	H _A	0.188	0.122	173	4.999	2.098	0.011	H _A
NOA	0.194	0.139	347	5.732	2.653	0.012	H _A	0.174	0.110	173	4.222	2.035	0.012	H _A
PM	0.184	0.111	347	4.897	2.620	0.014	H _A	0.164	0.108	173	3.129	2.030	0.012	H _A
IT	0.179	0.104	347	4.119	2.512	0.015	H _A	0.157	0.100	173	3.025	2.000	0.013	H _A

Source: our elaboration on “AIM Italia” data

5. Conclusion and Suggestion Remarks

In line with research objective, this study asked two research questions: i) which financial indicators are most able to capture the dynamics of the market value of the companies listed in AIM Italia?; ii) the presence of a strategic plan can influence MVA or the ability of the company to create value for its shareholders? These questions led us to formulate four research hypotheses.

The first question aims to provide useful evidence to help investors make correct decisions in the investment process in AIM Italy, while the second question aims to offer useful indications to CEOs and CFOs (of firms listed in AIM Italia) engaged to maximize and protect shareholder value.

In answer to the first question, our study indicates that there is no strong evidence to support scientific literature claim that EVA is superior to traditional performance measures in its association with MVA. We can say that although EVA does measure performance well, REVA is a more appropriate measure. In fact, statistical analysis has highlighted that REVA and MVA, compared to other indices, are more related (Adj R² = 0.399). The consensus is based on using the market-value of the firm in valuing calculations as opposed to book-value figures. Finally, we can conclude that thesis of Bacidore et al. (1997), Seoki and Woo (2009) and Kangarlouei et al. (2012) are proved in AIM Italia.

As regards the second question, in line with VBM management approaches (Rappaport, 1981; Arnold, 2005), the presence of a corporate strategic planning allows managers to focus on value creation rather than on short-sighted accounting numbers. This shift in focus should ultimately enhance the Market Value Added of the SMEs. The study results indicate that REVA with 0.420 adjusted R² have the most positive and liner relationships with MVA. Findings of our study converge, in part, with the empirical studies of Boyd (1991), Capon et al. (1987, 1990, 1994) who see strategic planning as instrument to improve performance.

Considering the results of the study, following remarks are suggested:

- REVA is suitable indicator to support decision-making processes as it able to give significant information in medium to long-term planning.
- Capital market participants must necessarily see in REVA the most suitable indicator for evaluating performance

of value-oriented firms.

- Managers must utilize REVA along with other measure to evaluate firms' financial performance and to make the sound decisions about investments.
- Decision-making process must be supported by a strategic plan because it has a significant effect on the relationships between financial performance measures and MVA.
- The research variables strong related to MVA are concrete and directly manageable by managers and can be used when establishing strategic planning for value management.
- All the findings in this research can be used for supporting or even completing other studies with similar or same concept, after necessary adjustments have been made.

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THE INFLUENCE OF ECONOMIC VALUE ADDED AND MARKET VALUE ADDED ON CORPORATE VALUE

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ABSTRACT

This research aims to determine the influence of economic value added and market value added on corporate value of manufacturing companies on sector consumer goods industry listed in Indonesia Stock Exchanges of 2011-2014. The sample of this research was 10 manufacturing companies on sector consumer goods industry listed in Indonesia Stock Exchanges. The method used was purposive sampling technique. This research used confirmatory factor analysis to form a combined proxy of corporate value comprised price earning ratio, price to book value and Tobin's Q.

KEY WORDS

Market, corporate value, technology, economy.

Technology has been growing fast so that the business competence among the companies is tighter, so is the smaller or bigger manufacturing companies. This encourages a manager to be more careful to make a decision. Because investor will truly pay attention the performance of company's financial where s/he invests. For that matter, company's financial performance is the basis of significant assessment for investor, creditor, management, banking or government to assess the stability of company's financial management. Company's performance assessment is generally assessed with a financial ratio which actually is a technique or a method to analyze financial statement. Good company's performance is reflected by its financial statement consisted of; revenue, gross profit, and net income that result in a positive value at every end of the administration period. This information can be a company's procedure driver and is used by management to formulate a policy in the effort of being in accordance with the continuously changing condition.

EVA is a modern company's financial performance assessment method popularized and has been granted patents by Stern Stewart management Service's Consultant Company of Stern Stewart & Co New York America. Company's performance assessment is truly needed by a company to maximize the invested funds by the external party to the company's internal party. EVA Approach is where EVA tries to measure the added value resulted by a company through subtracting the cost of capital rising because of investment that has been conducted. EVA sets a good benchmark that company has given a value added to the shareholder. For that matter, finance manager focusing on EVA will help to ensure that they operate in a consistent way to maximize shareholder value Brigham & Houston (2011, as cited in Zulfia, 2013). EVA's present value expected is MVA which is company's debt and capital market value from total capital used to support added value. In addition to EVA, MVA is also a measurement used to assess the success in maximizing shareholder's wealth by allocating the proper sources. MVA is also able to measure how much the company's wealth resulted by its investor or NVA which states the size of welfare achieved.

The objective of this research is to determine and analyze the influence of EVA on corporate value and to analyze the influence of MVA on corporate value.

LITERATURE REVIEW

Signalling Theory. Signalling theory was initially developed by Ross in 1979. This theory was the result of information asymmetrical in which a condition where the manager

has more information on operation and company's prospect in the future Tambunan (2008, as cited in Mursalim, 2009). *Signalling theory accentuated the importance of information issued by the company towards foreign company's investment decision. Information is an important element for investor and other business people since it actually presents past, present and future description, notes or illustration for company's continuity. Complete, relevant, accurate, and meet deadline information is truly needed by an investor in the capital market as an analysis tool to make an investment decision.*

One of the information types issued by a company which can be a good signal for foreign parties, especially investor is an annual report. Information disclosed in annual report can be an accounting information i.e. information related to the financial statement and non-accounting information, that is information which is not related to the financial statement. The annual report should contain relevant information and reveals information considered important to be known by those using the report both external and internal party. All investors need information to evaluate company's relative risk so that able to conduct portfolio diversification and investment combination with risk preference wanted. If a company wanted to get an investor, it had to conduct financial statement disclosure openly and in a transparent way.

Agency Theory. Barleg and Mean (1933, as cited in Muhammad Umar Mai, 2010) states about ownership separating and company's control so that share ownership distribution was important for a company. When a company is no longer managed by the principals but trusted to someone else, so the problem arises was the potential of conflict in the relationship between principals and agent which was commonly called agency problem.

Jensen (1986, as cited in Muhammad Umar Mai, 2010) explains that the conflict of manager interest and shareholder interest occurred with shareholders and manager assumption in which each of them wanted to get a higher return on investment projects but different interests on risk. This conflict can be found at a company with bigger free cash flow since the manager will make an investment for the excess cash obtained from internal fund sources to optimize its personal gains by not making cash dividend payment to the shareholder. Agency problem exists since there was information asymmetrical between shareholder and manager, which was when one of the parties has information that another party has not.

At a modern company whose ownership was spread and the management was separated, capital needs were not only supplied by principals or shareholder but were possible to use funds from other sources that are debtholders, in this matter agency problem can be wider. In an implicit way, there are three forms of agency relationship i.e. relationship between principals and management, a relationship between creditor and management, and a relationship between government and management. Hence the principals or the company owner can be the shareholder, creditor, or government. Agency theory identified the potential of conflict of interest between various concerned parties within the company. Those conflicts were caused by a goal difference of each party based on the position and its interest towards the company. In order to solve this problem, it needed a mechanism control and interest balance between manager and stakeholders.

Company's Financial Performance. According to the Minister of Finance Decree No. 740/KMK.00/1989 concerning the Improvement of Efficiency and Productivity of State-Owned Enterprise, "Financial Performance was an achievement resulted by a company in a particular period reflecting the level of company health. Company's Financial Performance was one of the bases of assessment on financial conditions that could be conducted based on the analysis of financial ratio." While according to Mursalim (2009) current performance measurement was a combination between finance and non-finance information which would also produce a financial report (e.g. profit and cost of share increases) and non-finance performance (for example customer satisfaction). Company's financial performance could be measured by analyzing and evaluating company's financial statements. Along with the current development and information needs regarding company's performance, it appears a value-based new measurement tool. Those measurement methods were among other EVA and MVA.

Economic Value Added (EVA). EVA was initially popularized by Stern Steward Management Service's consultant company from the United States in the 1980s. EVA was after-tax operating income subtracted by the total cost of capital. The total cost of capital was the rate of cost of equity multiplied by invested total capital Utama (as cited in Resmi, 2003). Positive EVA expressed the resulted rate of return was higher than the rate of capital return asked by an investor, which meant a company had maximized the corporate value. Conversely, negative EVA meant the corporate value decreases so that the rate of return gained was lower than the rate of return expected by the investor which meant the company did not succeed to create value for the capital owner (Resmi, 2003).

Market Value Added (MVA). The major target of almost all companies was maximizing shareholder's wealth. It would be maximized by minimizing the difference between market value of company's share and total equity capital which has been given by shareholder. The difference was called Market Added Value Brigham (as cited in Zaky & Ary, 2002). MVA was a difference between company's market value (including equity and money) and the whole capital invested in a company. Market value was corporate value. It meant the total market value of all capital claims towards a company by a capital market in particular date. MVA increased if only the capital invested a larger return than the cost of equity. The larger the MVA, the better the result. Negative MVA meant the value from the investment run by management was less than the capital given to a company by the capital market. It meant the wealth has been destroyed (Younf, 2001:27).

Corporate Value. Financial management actually aimed to maximize the corporate value. Corporate value could be seen from market value or company's book value from its equity. Because of the balance sheet, the equity demonstrates total company's capital. In addition, the capital market can be a measurement of corporate value. Company assessment did not only refer to par-value. It was caused by a company condition which experiences many changes every time significantly. Before getting a crisis, the corporate value and par-value are high, but after getting a crisis the company condition decreased while the par-value was as common. A company was said having good value if the company performance was also good. Corporate value can be reflected from the previous price. If the share value was high, the corporate value was possible to be good too.

METHODS OF RESEARCH

This research was undertaken at manufacturing companies on sector consumer goods industry listed in Indonesia Stock Exchanges. The duration of the research was 2 months that was from November 3rd until December 29th, 2015.

The population of this research was 39 manufacturing companies on sector consumer goods industry listed in Indonesia Stock Exchanges with the observation period of 2011 until 2014. The method used to get the sample was purposive sampling method; the sample was selected based on the sample characteristic relevance with determined selection criteria.

Table 1 – Sample Collection Criteria

Criteria	Total Company	Total Observation Data
Total manufacturing companies on sector consumer goods industry listed in Indonesia Stock Exchanges 2011-2014	39	-
Sample reduction criterion 1: Manufacturing companies on sector consumer goods industry having no listing age more than 5 years in ISE	-	-
Sample reduction criterion 2: A company which did not publish the 2011-2014 financial report completely and continuously	23	-
Sample reduction criterion 3: A company suffering from assets and equity loss	3	-
Total sample used in the research (13 x 4)	13	52

Source: processed secondary data.

Type of data used to conduct this research was quantitative data, while the data source used was secondary data obtained from the financial report which can be accessed in electronic media like www.IDX.com and www.sahamoke.com. The data needed to conduct this research was financial statement summary data of a company which has gone public.

The researcher used a documentation method collected from secondary data search. Documentation was conducted by collecting documentary data sources like a summary of company's financial statements.

Data analysis techniques used was quantitative analysis. Quantitative analysis was a measurement used in a research which can be benefited with a particular total unit or stated by numbers. This analysis comprised data processing, data organizing and finding the result. The data testing provided to this research was using regression model and analysis tool used was factor analysis and multiple regression.

Dependent Variable. Dependent variable used to conduct this research was Corporate Value variable. Corporate Value used to conduct this research was:

- PER can be calculated using Formulation Tandellin (2007, as cited in Kurniawan, 2009):

$$PER = \frac{\text{Price of per sheet share}}{\text{Gains of per sheet share}}$$

- Corporate Value's PBV was calculated by dividing current capital close price with recent quarter book value per share. It was also known as "price-equity ratio". Measurement scale used was formulated as follow (Wulandari, 2009):

$$PBV = \frac{\text{Price of per sheet stock market}}{\text{Value of per sheet stock market}}$$

- Tobin's Q, this ratio was a valuable concept since indicating an estimation of current financial market concerning return result value of every dollar of incremental investment. Tobin's Q was calculated by comparing the ratio of company's capital market value with company's equity book value. It can be calculated as follow:

$$Q = \frac{(EMV + D)}{(EBV + D)}$$

Where: Q = corporate value; EMV = equity market value; EBV = book value from total active; D = book value from total debt.

Independent Variable. EVA was after-tax operating income subtracted by the total cost of capital. The total cost of capital was the rate of cost of equity multiplied by invested total capital Utama (as cited in Resmi, 2003). If EVA was positive so that the resulted rate of return was higher than the rate of capital return asked by the investor, which meant that a company had maximized the corporate value. Proxies representing EVA value were NOPAT, Capital Charges, WACC, and Invested Capital.

NOPAT was profits gained from company operation after being subtracted by income tax. NOPAT could be formulated as follows: Amin Widjaya Tunggal (as cited in Rina Ulfiani, 2006).

$$\text{Net Operating Profit After Tax} + \text{rate}$$

Capital charges were EVA' essential aspect. Since Capital Charges was also cash flow needed to replace the investor for the business risk of the capital invested. Capital Charges could be formulated as follow: Amin Widjaya Tinggal (as cited in Rina Ulfiani, 2006).

$$\text{Capital Charges} = \text{WACC} \times \text{Invested Capital}$$

WACC was the cost of equity and cost of debt which each of them was multiplied with the percentage of equity and debt in a company model Lisa Linawati Utomo (as cited in Rina Ulfiani, 200:58). The way to calculate WACC was using formula as follow: Yevi Dewiyanti (as cited in Rina Ulfiani, 2006).

$$\text{WACC} = \{D \times r_d (1 - \text{Tax})\} + \{E \times r_e\}$$

Invested Capital was the whole total of company loan excludes short-term loans without rate. For example accounts payable, funds that still should be paid, tax payable added by equity. Invested Capital could be calculated using the formula below: Yevi (as cited in Rina Ulfiani, 2006).

$$\text{Invested Capital} = \text{Total Debt and Equity} - \text{short-term debt without interest}$$

Djawahir Kusnan (2007) states that market value added reflected shareholder expectation towards the company in creating wealth in the future. MVA was the difference between market value of equity and book value of equity. Market Value Added (MVA) could be calculated using such below formula by Agus Sartono (as cited in Yevi Dewiyanti in Rina Ulfiani, 2006):

$$\text{MVA} = (\text{Stock Price} - \text{Book Value}) \times \text{Outstanding Share}$$

Positive MVA showed that management had been able to increase shareholder's wealth while negative MVA caused the reduced capital value of shareholder, if MVA was 0, so the company was not able to increase wealth for the shareholder. Hence maximizing MVA value should be the company's principal goal to increase shareholder's wealth (Zaky, 2002).

RESULTS AND DISCUSSION

The object of this research was manufacturing companies on sector consumer goods industry listed in Indonesia Stock Exchanges of 2011-2014. According to the sampling selection as the determined criteria, so it was chosen 13 companies fulfilling the criteria of the sample.

Data Analysis Result. Confirmatory Factor Analysis was used to obtain factor score which was a general index value of single proxy creating Corporate Value variable. Each ratio value used as Corporate Value Proxy was calculated every year for a sample company and then used as data input in the analysis factor process.

Confirmatory Factor Analysis in Table 1 above indicated that not all correlation value was above 0.30, however; some of the correlation value was above 0.30 so that factor analysis can be continued. Correlation presented was bivariate Pearson correlation coefficient by 0.375, 0.187, and 0.235.

According to the Kaiser-Meyer-Olkin-Measure of sampling adequacy which was above 0.50, that is 0.583; the value was categorized as "more than enough" of suitable to conduct

factor analysis. In addition to KMO test, it was also conducted Anti Image Correlation (MSA) test to know if variables were partially proper to be analyzed and were not issued in the test. According to table 1 above, it was shown that three variables which would be analyzed indicating higher MSA value than 0.50, i.e. 0.570, 0.562 and 0.668.

Table 1 – Factor analysis result of Corporate Value Proxy

A. Bivariate Person Correlation Coefficient				
Single Proxy of Corporate Value		PER	PBV	Q
Correlation	PER	1.000	.375	.187
	PBV	.375	1.000	.235
	Q	.187	.235	1.000
B. KMO and Bartlett's Test				
Kaiser-Meyer-Olkin Measure of Sampling Adequacy				.583
Bartlett's Test of Sphericity	Approx. Chi-Square			10.830
	Df			3
	Sig			.013
C. Measure of sampling adequacy (MSA)				
Anti-image Correlation	PER	.570a		
	PBV		.562a	
	Q			.668a

Source: processed secondary data.

Table 2 – Multiple Regression Result

EVA and MVA regression analysis on combined proxy of Corporate Value (PER, PBV and Tobin's Q)						
Model		Unstandardized Coefficients		Standardized Coefficients	t-count	Sig.
		B	Std. Error	Beta		
1	(Constant)	-0,027	0,166		-0,164	0,87
	EVA	0.007	0	-0,168	-1,165	0,25
	MVA	-0,015	0	0,13	0,901	0,372
R	0,188					
R ²	0-,004					
F count	0,897					
Sig F	0.415 N 52					
T table	1.677					
a. Predictors: (Constant), EVA, MVA						
b. Dependent Variable: NP						
EVA and MVA regression Analysis on PER						
Model		Unstandardized Coefficients		Standardized Coefficients	t-count	Sig.
		B	Std. Error	Beta		
1	(Constant)	2380.317	547,574		4,347	0
	EVA	-0,001	0,001	-0,13	-0,894	0,376
	MVA	0.012	0	0,044	0,302	0,764
R	0,128					
R ²	-0,024					
F count	0.406					
0.415 N 52	0,669 N 52					
T table	1,677					
a. Predictors: (Constant), EVA, MVA						
b. Dependent Variable: PER						
EVA and MVA regression analysis on PBV						
Model		Unstandardized Coefficients		Standardized Coefficients	t-count	Sig.
		B	Std. Error	Beta		
1	(Constant)	271,668	40,561		6,698	0
	EVA	-0,005	0	-0,18	-1,279	0,207
	MVA	0.012	0	0.256	1,817	0,075
R	0,278					
R ²	0,04					
F count	2,057					
0.415 N 52	0.139 N 52					
T table	1,677					
a. Predictors: (Constant), EVA, MVA						

Table 2 - Continue						
b. Dependent Variable: PBV						
EVA and MVA regression analysis on Tobin's Q Proxy						
Model		Unstandardized Coefficients		Standardized Coefficients	T count	Sig.
		B	Std. Error	Beta		
1	(Constant)	583.814	521.143		1,12	0,268
	EVA	0	0,001	-0,032	-0,222	0,825
	MVA	-0,012	0	-0,056	-0,383	0,704
R	0,071					
R ²	-0,036					
F count	0.123					
0.415 N 52	0,885 N 52					
T table	1,677					
a. Predictors: (Constant), EVA, MVA						
b. Dependent Variable: Q						

Table 1 above concluded that those three corporate value's proxies met the qualification so that factor score value obtained was then used as the value representing Corporate Value's single proxy. This factor score was a general factor of Corporate Value in which factor score value obtained will be used more in regression analysis.

In order to achieve the research objective and to know if the independent variable had an influence on the dependent variable or not, so multiple regression analysis should be conducted. Multiple regression results can be seen in table 2.

According to the regression estimation result as shown in Table 2 above, so multiple regression equation was as follow:

- Multiple Regression analysis of corporate value's equation:

$$NP = -0.027 + 0.007EVA - 0.015MVA + e$$

The equation above was explained as follow:

Multiple regression equations indicated constant value by -0.27 and had a negative value. That value means if independent variable i.e. EVA and MVA were 0 (zero) or constant, so the corporate value was -0.027. β_1 value by 0.007 indicated that if EVA variable increases 1%, so the corporate value would increase by 0.007. β_2 value by -0.015 means if MVA decreases by 1%, the corporate value increases by 0.015.

- Multiple regression of PER proxy equation

$$PER = 2380.317 - 0.001EVA + 0.012MVA + e$$

Multiple regression equations indicated constant value by 2380.317 and had a positive value. That value means if independent variable i.e. EVA and MVA were 0 (zero) or constant, so PER value was 2380.317. β_1 value by -0.001 meant if EVA variable decreased by 1%, so PER increases by 0.001. β_2 value by 0.012 means if MVA variable increases by 1%, so PER will increase by 0.012.

- Multiple Regression analysis of PBV proxy equation:

$$PBV = 271.668 - 0.005EVA + 0.012MVA + e$$

The equation above was explained as follow:

Multiple regression equations indicated constant value by 271.668 and had a positive value. That value means if independent variable both EVA and MVA is 0 (zero) or constant, so PBV value is 271.668. β_1 value by -0.005 meant if EVA variable decreased by 1%, so PBV increased by 0.005. β_2 value by 0.012 means if MVA variable increases by 1%, so PBV increases by 0.012.

- Multiple Regression Analysis of proxy Q equation.

$$Q = 583.814 - 0.0EVA - 0.012MVA + e$$

Multiple regression equations showed constant value by 583.814 and had a positive influence. That value meant if independent variable both EVA and MVA were 0 (zero) or constant, so Q value was 583.814. β_1 value by -0.0 meant if EVA variable decreased by 1%, so Q value increased by -0.0. β_2 value by -0.012 meant if MVA variable decreased by 1%, so there would be an increase by 0.012.

DISCUSSION OF RESULTS

The Influence of Economic Value Added (EVA) on Corporate Value. Positive EVA value meant a company was able to produce effective and efficient financial performance which meant the rate of return resulted did not exceed the cost of equity for the rate of return expected by the investor. Positive EVA also indicated that company was able to create maximum corporate value for capital owner assisted with the increase of cost of equity which will be able to increase rate of return, hence according to the research result, EVA did not have a significant influence on corporate value (PER, PBV and Tobin's Q) which meant even though corporate's EVA value increased, it did not guarantee the corporate value would increase too, and vice versa.

This finding was not consistent with the research conducted by Melinda Septiyanti et al. (2013) revealing that Economic Value Added (EVA) had a significant influence on Corporate Value (Tobin's Q). This inconsistency showed that EVA analysis was not always used as a basis of decision making by an investor to buy or sell company's share and was also not used by management to make a decision of dividend share. EVA was not always used as a basis of performance since EVA calculation was not simple compared to performance size which was commonly used like financial ratio.

Signaling theory was an effect of financial report disclosure understood by the reader, especially actors of the stock exchange, information about what happened at manufacturing companies on sector consumer goods industry today showed investor characteristic which will assess it as bad signal, so the investor will not buy a share from the company.

The Influence of Market Value Added (MVA) on Corporate Value. Positive MVA showed that company's market value is higher than company's book value. This should make investor interested in making an investment in a company. The number of investors who were interested should be able to increase the number of demands of share so that being able to increase the share price. The increase of share price will bring a positive influence on the return reflected from the increase of corporate value. However, according to the analysis result, it was known that Market Value Added (MVA) did not have a significant influence on Corporate Value, while MVA had a not significant influence on PBV. This showed that even though company's MVA value increases, it does not guarantee the corporate value (PER, PBV and Tobin's Q) increases too, and vice versa. This research was not consistent with the study carried out by Melinda Septiyanti et al. (2003) finding that Market Value Added (MVA) had a significant influence on Corporate Value. This inconsistency has shown that MVA analysis was not always used as a basis of decision making by management, as Puji Astuti (2006) said that MVA was only used as a method of alternative financial performance reflected by MVA showing weak effect on financial performance.

This research result also told us that interest conflict between manager and shareholder has been attacking manufacturing companies on sector consumer goods industry, with assumptions that each shareholder and manager wanted to get a high return to the investment projects but different interest to the risk. Pawlina and Renneboog (2005, as cited in Muhammad Umar Mai, 2010) also state that this conflict attacked a company with bigger free cash flow since the manager will make an investment for excess cash obtained from internal funds source to maximize his/her personal gains by not making cash dividend payment to the shareholder. If this information is published and investor considered it as a decision to make an investment so that the investor will not since every investor aimed to get a dividend in the future.

CONCLUSION AND SUGGESTIONS

Economic Value Added (EVA) has a negative and not significant influence on corporate value (PER, PBV and Tobin's Q). Market Value Added (MVA) has no influence on Corporate Value, PER and Tobin's Q proxy, but MVA has a positive and not significant influence on PBV proxy. Negative EVA shows that a company less succeeds in creating value added to shareholder since EVA shows a residual profit after all cost of capital, while MVA shows the difference between market value equity and book value of equity.

It is better for further study to add other independent variables which can influence Corporate Value like Leverage, Systematic Risk and etc. which can influence Corporate Value. In addition, a further study can use much more companies as the sample, such as all manufacturing companies listed in Indonesia Stock Exchanges. Moreover, it also can use a selection of year of longer observation period since the longer the observation period the more the company grows.

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CHAPTER-2

PART II

MARKET VALUE ADDED (MVA)

AND FINANCIAL RATIOS-

A THEORETICAL PERSPECTIVE

CHAPTER -2

PART II

MARKET VALUE ADDED (MVA) AND TRADITIONAL FINANCIAL RATIOS- A THEORETICAL PERSPECTIVE

2.7 Introduction

Concepts such as **Market Value Added (MVA)** and traditional financial ratios are discussed in second chapter- part 2.

This chapter shows calculation of MVA and traditional financial ratios and also indicates limitations of Financial Ratio Analysis.

2.8 Concept of Market Value Added (MVA)

Market Value Added (MVA) is a tool to measure shareholder's value at a particular moment this was introduced by Stewart in 1991. Market Value Added (MVA) is the additional market capitalization over and above the book value of equity (Gupta & Kundu, 2008).

From an investor's point of view, MVA is the best final measure of a Company's performance. Stewart (1991) states that MVA is a cumulative measure of corporate performance and that it represents the stock market's assessment from a particular time onwards of the net present value of all a Company's past and projected capital projects. MVA is calculated at a given moment, but in order to assess performance over time, the difference or change in MVA from one date to the next can be determined to see whether value has been created or destroyed.

MVA can be summarized that there are basically only three ways in which a Company can increase its MVA (Stewart, 1991; Ernst & Young, 1994; Firer, 1995; Davidson, 2003):

- By making new investments in projects with a positive return spread (positive EVA);
- expanding current projects earning a positive EVA; and
- By scaling down or eliminating projects that have a negative EVA.

The Market Value Added (MVA) measure is based on the assumption that the total market value of a firm is the sum of the market value of its equity and the market value of its debt. Stewart (1991) defines Market Value Added (MVA) as the excess of market value of capital (both debt and equity) over the book value of capital.

In another words Market Value Added (MVA) is the difference between the current market value of a firm (V) and the capital contributed by its investors (K):

$$\text{Market Value Added (MVA)} = V - K$$

If the Market Value Added (MVA) is positive, the Company has created wealth for its shareholders. If it is negative, then the firm has destroyed value. The capital is the amount that is put in the Company by the shareholders.

According to Stern and Shiely (2001), in order to calculate the market value of a firm, we have to value the equity part at its market price on the date the calculation is made. The total investment in the Company since day one is then calculated as the interest-bearing debt and equity, which includes retained earnings. Present market value is then compared with total investment. If the former amount is greater than the latter, the Company has created wealth.

Stewart (1991) states that Market Value Added (MVA) is an cumulative measure of corporate performance and that it represents the stock markets assessments from a particular time onwards of the net present value of all of a Company's past and projected capital projects. The disadvantage of the method is that like EVA there can be a number of value based adjustments made in order to arrive at the economic book value and that it is affected by the volatility from the market values, since it tends to move in tandem with the market.

2.7 Calculation of Market Value Added (MVA)

Market Value Added (MVA) is the difference between the total market value of the Company and the economic capital (Firer, 1995; Reilly & Brown, 2003). A Company's total market value is equal to the sum of the market value of its equity and the market value of its debt. In theory, this amount is what can be "taken out" of the Company (i.e. when all shares are sold and debt is repaid) at any given time.

$$\text{MVA} = \text{Market value of Company} - \text{Invested Capital}$$

$$\text{MVA} = \text{MV} - \text{IC} \quad (1)$$

Where;

MV: Market Value of Company

WACC: Weighted Average Cost of Capital

IC: Invested Capital

MVA: Market Value Added

From an investor's point of view, MVA is the best final measure of a Company's performance. Stewart (1991) states that MVA is a cumulative measure of corporate performance and that it represents the stock market's assessment from a particular time onwards of the net present value of all a Company's past and projected capital projects. MVA is calculated at a given moment, but in order to assess performance over time, the difference or change in MVA from one date to the next can be determined to see whether value has been created or destroyed.

Company creates value when $MVA > 0$ that is when the market value of capital exceeds the capital invested. A negative value for MVA proves that the provisions concerning the ability of management to use efficiently the capital are unfavorable. The link between EVA and MVA is that MVA is the present value of all the future EVAs a Company is expected to generate, discounted at the WACC.

$$\text{Market Value Added (MVA)} = \text{PV (EVA)}$$

Theoretically, MVA is equal to the present value of all future EVAs. On the assumption that there will be no future growth in the current EVA, or that the expected future growth in EVA will be at a constant rate, g , the theoretical MVA can be calculated as perpetuity. The result shows that MVA is a multiple of the current EVA. If no future growth in EVA is expected, the theoretical MVA can be calculated as follows:

$$\text{MVA} = \text{PV (future EVA)}$$

$$\text{Market Value Added (MVA)} = \text{current EVA} / \text{WACC} \quad (2)$$

Where,

PV: Present Value

EVA: Economic Value Added

WACC: Weighted Average Cost of Capital

2.8 Financial Ratios

Financial ratios are used to supplement the analysis and decision making process by allowing easy measurement and interpretation of important indicators within, and across, the key statements. An analyst uses financial ratios to understand the relationships among various financial statement accounts. These ratios yield information about a Company's ability to meet short term obligations on time, remain solvent over a long period, manage assets, and operate efficiently.

The use of ratios and margins in financial analysis enables the analyst to interpret the financial situation of an enterprise in a more meaningful manner than by just looking at the absolute numbers. Financial ratios consider the relationships that exist within various accounts and, thus, facilitate an understanding of a Company's financial condition with greater depth and clarity. Ratio analysis is another tool that helps to identify changes in a Company's financial situation. A single ratio is not sufficient to adequately judge the financial situation of the Company. Several ratios must be analyzed together and compared with previous-year ratios, or even with other Companies in the same industry. This comparative aspect of ratio analysis is extremely important in financial analysis.

It is important to note that ratios are parameters and not precise or absolute measurements. Thus, ratios must be interpreted cautiously to avoid erroneous conclusions (Citibank, 1995; Walsh, 2003; DiGiacomo & et al, 2003; Callahan & et al, 2007; Mladjenovic, 2006; Banks, 2007; Marion, 2008; Crosson & et al, 2008; The Editors of Career Press, 1998; Siegel, 2007; Bodie & et al, 2004; Groppelli & Ehsan, 2000).

2.9 Types of Financial Ratios

There are several types of traditional ratios or relationships. They are categorized as follows:

Liquidity ratios - measure the ability of the enterprise to meet its short-term financial obligations in a timely manner

Leverage ratios - measure the solvency position or viability of the enterprise on a long-term basis

Activity ratios - measure how effectively the Company's assets are managed

Profitability ratios — measure the efficiency of operations within the enterprise

2.9.1 Liquidity Ratios

Liquidity ratios measure the relationship of the more liquid assets of an enterprise (the ones most easily convertible to cash) to current liabilities.

The most common liquidity ratios are:

- 1) Current ratio
- 2) Quick ratio

2.9.1.1 Current Ratio

((Quantitative Relationship between current assets and current liabilities))

The current ratio is frequently used to measure liquidity because it is a quick and easy way to express the quantitative relationship between current assets and current liabilities. It answers the question: "How many Rial in current assets are there to cover each Rial 1.00 in current liabilities?" The current ratio is the ratio of current assets to current liabilities:

$$\text{Current Ratio} = \text{Current Assets} / \text{Current Liabilities}$$

A rule of thumb is that a current ratio close to 2.0 is good, but this is a much generalized statement.

2.9.1.2 Quick ratio

Quick ratio is also known as liquid ratio or acid test ratio. Current ratio provides a rough idea of the liquidity of a firm so subsequently a second testing device was developed named as acid test ratio or quick ratio. It establishes relationship between liquid assets and current liabilities. In many businesses a significant proportion of current assets may comprise of inventory. Inventory, by nature, cannot be converted into ready cash abruptly. The term liquid assets does not include inventory.

$$\text{Quick ratio} = (\text{Total Current Assets} - \text{Inventory}) / \text{Current liabilities}$$

Thus eliminating inventory from current assets and then doing the liquidity test is measured by this ratio. The ratio is regarded as an acid test of liquidity for a Company. It expresses the true working capital relationship of its cash, accounts receivables, prepaid and notes receivables available to meet the Company's current obligations.

2.19.2 Profitability Ratios

Companies are in business for the purpose of making profits. If a Company accumulates considerable losses year after year, it will not stay in business for long. Profits are the driving force of growth and are the main source for repaying loans, making new investments, and providing an adequate return to owners so they retain their interest and financial backing.

Profits are also important for another reason — they measure the relative success of a Company and can readily be compared to other Companies and to the capital market. Therefore, profits reflect (and profit ratios measure) the effectiveness and efficiency of management. The common profitability ratios are:

- 1) Return on Sales 2) Return on Assets 3) Return on Equity

2.9.2.1 Return on Sales (ROS)

((Rial profit per Rial 100 in sales))

The return on sales ratio (profit on sales) measures how many dollars of profit are made for every Rial 100 in net sales. The figure is a percentage and is calculated as:

$$\text{Return on Sales (ROS)} = \text{Net Income} / \text{Net Sales}$$

2.9.2.2 Return on Assets (ROA)

((Relationship between profits and resources invested))

Return on assets is a good indicator of the productivity of the firm and of management's abilities and efficiency. The index measures the relationship between profits and total resources invested. Return on Assets (ROA) is a measure of how effectively the firm's assets are being used to generate profits. It is defined as:

$$\text{Return on Assets} = \text{Net Income} / \text{Total Assets}$$

2.9.2.3 Return on Equity (ROE)

((Return on Capital and Profits generated by each Rial 1 invested))

Return on equity (ROE) measures the profits generated by each rupee accumulated in the business by stockholders. Return on equity is defined as follows:

$$\text{Return on Equity} = \text{Net Income} / \text{Shareholder Equity}$$

Or

$$\text{ROE} = \frac{\text{Net Income after tax}}{\text{Shareholder Equity}}$$

Determining return on equity is important for measuring the degree to which the profits of the firm provide a return to the shareholders. The figure can be compared to a marginal investment rate in the community, such as a time deposit rate in a local bank. ROE measures whether the enterprise can produce an amount sufficient to cross this hurdle rate and provide an incentive to take on additional risks of equity investment.

If the ROE figure is very low in comparison to time deposit rates, the owner is further ahead to liquidate the Company's assets and deposit the money in a bank. In these situations, the creditor should question the owner's commitment to the firm, especially if the financial situation deteriorates further. These will enable the Company to grow, given suitable market conditions, and this in turn leads to greater profits and so on. All this leads to high value and continued growth in the wealth of its owners.

At the level of the individual business, a good return on equity will keep in place the financial framework for a thriving, growing enterprise. At the level of the total economy, return on equity drives industrial investment, growth in gross national product, employment, government tax receipts and so on. It is, therefore, a critical feature of the overall modern market economy as well as of individual Companies.

2.9.3 Return on Investment (ROI)

The generic phrase 'return on investment' relates to one of the most important concepts in business finance. Each rupee of assets has to be matched by a rupee of funds drawn from the financial markets. These funds have to be paid for at the market rate. Payment can come only from the operating surplus derived from the efficient use of the assets. It is by relating this surplus to the value of the underlying assets/funds that find a measure of return on investment. If this return on investment is equal to or greater than the cost of funds, then the business is currently viable. However, if the long-term rate is less than the cost of funds, the business has no long-term future. Return on investment (ROI) is computed as:

$$ROI = \frac{(\text{Gain from Investment} - \text{Cost of Investment})}{\text{Cost of Investment}}$$

2.9.4 Earnings per share (EPS)

'Earnings per share' is one of the most widely quoted statistics when there is a discussion of a Company's performance or share value. While the absolute amount of earnings per share tells nothing about a Company's performance, the growth in EPS over time is a very important statistic. Many chairpersons stress it as a prime target in annual reports. Furthermore, growth in earnings per share has a significant influence on the market price of the share. EPS is calculated by the following formula:

$$\text{Earnings Per Share (EPS)} = \text{Net Earnings} / \text{Number of Outstanding Shares}$$

Growth in EPS tells more about a Company's progress than growth in absolute profits. Growth in profits can result from many things. For instance, a Company could acquire another for shares and thereby increase its profit. However, if the percentage increase in profit is less than the percentage increase in the number of shares, earnings per share will fall even with higher profits. Not only is growth in EPS most important, so also is its' stability. Investors look closely at the quality of earnings. They dislike the erratic performance of Companies with widely fluctuating profits. A high-quality rating is given to earnings that are showing steady, non-volatile growth.

2.9.5 Price-to-Earnings ratio (P/E)

The price-to-earnings ratio can also double as a profitability ratio because it's a common barometer of value that many investors and analysts look at. The formula is:

$$P/E \text{ ratio} = \frac{\text{Price per Share}}{\text{Annual Earnings per Share}}$$

Or

$$P/E \text{ ratio} = \text{Market price per share (MPS)} / \text{Earnings per share (EPS)}$$

Or

$$P/E \text{ ratio} = \frac{\text{price (per share)}}{\text{Earnings per share (EPS)}}$$

2.9.6 Leverage ratios

The term "leverage" refers to how much debt a firm has in the capital structure. Leverage ratios compare this debt to other items on the income statement or the balance sheet. It also determines whether interest payments that must be made are covered by current earnings.

Leverage ratios are important in determining the likelihood of the firm paying its debt obligations. The more debt a firm has relative to its assets, income producing ability, and equity, the more likely it is to have difficulty meeting those obligations.

2.9.6.1 Debt Ratio (DR)

Debt ratio indicates what proportion of debt a Company has relative to its assets. The measure gives an idea to the leverage of the Company along with the potential risks the Company faces in terms of its debt-load. This ratio is computed as:

$$\text{Debt-to-Equity Ratio} = \frac{\text{Total Debt}}{\text{Total Equity}}$$

A debt ratio of greater than 1 indicates that a Company has more debt than assets; meanwhile, a debt ratio of less than 1 indicates that a Company has more assets than debt. Used in conjunction with other measures of financial health, the debt ratio can help investors determine a Company's level of risk.

2.10 Limitation of Financial Ratio Analysis

Although the financial ratio analysis of the Company is often used by several Companies in order to measure their performances, it does not mean that the financial ratio analysis is the best measurement to determine the performance of the Company.

Warsono (2003) stated that financial ratio analysis has six limitations:

1. The results should be compared with other Companies' financial ratio analysis.
2. The ratios appear from the financial ratio analysis calculation are only estimation, because the data found is not based on the research done within the whole Company's condition and performance.
3. The differentiation of implementing accounting standard within Companies can influence the results in measuring the financial ratio analysis.
4. Financial ratio analysis only can give guidance of the financial condition of the Company.
5. Some Companies experience fluctuation in its financial condition, so the balance will differ along the year where the report is prepared.

With so many limitations in measuring the financial performance using financial ratio analysis, many experts in management tried to find the new method in calculating the financial performance. And finally they found the exact method called EVA (Economic Value Added) method.



The Impact of Profitability on Market Value Added: Evidence from Turkish Informatics and Technology Firms

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ABSTRACT

The purpose of this study is to examine empirically the relationship between economic value added (EVA), return on assets (ROA), and return on equity (ROE) with market value added (MVA) in Istanbul stock exchange (BIST). This study also examine the performances implemented by Turkish Informatics and Technology Firms during the global financial crisis of 2008–2009. Using the experimental data were drawn from a panel consisting of 13 Turkey firms listed in the BIST, from informatics and technology companies, observed over the 10-year period. Multicollinearity various regression models were examined in order to test the hypotheses included in the examined literature. In the research methodology such as fixed effects and random effects were examined in order to test our hypotheses proposed. Finally, evidence is presented that EVA has a negative and significant relationship with MVA, while ROA and ROE have no significant relationship with MVA in the long-term.

Keywords: Market Value Added, Economic Value Added, Financial Crisis, Return on Asset, Return on Equity

JEL Classifications: G32, M40, M41

1.INTRODUCTION

Information technology projects and technological capabilities is of vital importance to the initiatives connecting business process in order to catch up with such technological companies. Thus, informatics and technology frontier can effect on a business performance in the listed firms (Li et al., 2006), which is generated competitive advantage for a company. Despite these corporate benefits, the ability of informatics and technology to generate competitive advantage in the Turkey has been questioned as the technological capabilities shift from unique resources to financial markets. Similarly, advances in informatics and technology in the world have made it increasingly for business to make decisions regarding business performance. Business performance play an important role in the financial reporting besides providing value relevance information users such as shareholders and investors in the listed firms of Turkey.

Today, value and value creation for shareholders are among the most important goals of firms and owners (Hajiabbasi et al.,

2012). Maximizing shareholder value has become the new corporate paradigm. Different metrics are used for accounting and financial performance. Accounting based income is very important traditional performance evaluation criteria. However, the accounting based income can be manipulated through different methods (Abdoli et al., 2012). Therefore, firms need more reliable and accurate performance measures than traditional accounting performance measures.

In the recent years, value based measures have been received a lot of attention (Thenmozhi, 2000). During the last two decades, value based economic value added (EVA) is paid close attention by several accounting, business and finance researchers, corporate professionals, and consultant firms and thus they accept the limitations of traditional measures of performance (Bhasin, 2013; Sharma and Kumar, 2012). Thus, many scholars criticize traditional measures (e.g., Hunt, 1985; Verrecchia, 1986; Dyl, 1989; Jensen and Murphy, 1990; Gomez-Mejia and Balkin, 1992). Their findings suggest that traditional measures are not proper guidance to make strategic decision (Panahi et al., 2014) according to value based metrics.

Therefore, we can say that traditional measures still play an important role as instruments for assessing the economic and accounting performance of firms. However, traditional measures only provide information from judgments on past performance (Pinto and Santos, 2011). The purpose of this study is to investigate the impact of profitability on market MVA, which is a external performance measure, as compared to three accounting performance measures such as EVA, return on assets (ROA) and ROE of firms listed on BIST during the pre and post global financial crisis.

EVA is an value based financial measure, which deals with the benchmark of cost of capital and it provides a road map to the critical target of improving MVA (Rajesh et al., 2012). EVA is an internal measure of performance that drives market value added (MVA). Stewart (1991) is defined as EVA takes into account the full cost of capital, including the cost of shareholders' equity (Wet and Hall, 2004). According to Bhasin (2013), EVA is the financial performance measure that comes closer than any other traditional measures in capturing the true economic profits of an enterprise. Similarly, EVA is a important method of measuring the economic value of a business after considering cost of capital including debt cost and equity cost. Thus, EVA encourages managers to optimize the use of resources for business. EVA provide investments to choose low-risk options in order to evaluating the company value (Nakhaei and Hamid, 2013). EVA is the performance measures most directly linked to the creation of shareholders wealth over time in business (Acma, 2009). Therefore, EVA is recognized as an important tool of business performance measurement and management. However, there are still mixed evidences regarding the superiority of EVA over traditional performance measurement tools (Sharma and Kumar, 2010).

Unlike traditional measures, EVA is superior to accounting profits as a measure of value creation because it recognizes the cost of capital (Lehn and Makhija, 1996). Stewart (1994) examined general accounting measures variables with EVA. The findings suggest that EVA is a strong and efficient measure to describe the companies' operation. It is stronger than general and traditional measures to describe companies' shares value (Fathabadi et al., 2014). Thus, EVA is the most important metrics for measuring corporate operating value in order to evaluate firms' assets.

MVA is a measure of external performance, which is considered the best indicator of shareholder value creation (Khan et al., 2012). The positive MVA indicates that the value and investment created by the management is more than the capital supplied by the investors, vice versa (Wibowo and Berasategui, 2008). This study analyze whether the impact of profitability have any link BIST listed firms' MVA. These study also examine and correlates ROA and ROE variable with MVA as an market based value performance so as to test whether EVA has provide over traditional accounting performance metrics.

Our research motivation is to examine the impact of MVA metrics on measures of performance of business as profitability indicator. One example of this motivation is Errunza and Senbet (1981) where they test the hypothesis that a firm's operations can affect

its performance depend on market value. Their empirical result suggest that the growth of investment is positively related to excess value in the capital market. To do so, performance measure the incidence of profitability on listed firms of Turkey such as traditional and value based metrics. We conclude that there is a correlation between EVA and business performance as measured by MVA. Hence, the purpose of these study is to explore two main research question:

RQ₁=How role and contribute to the profitability on MVA of BIST listed informatics and technology companies?

RQ₂=How does impact of MVA on global financial crisis selected companies in Turkey?

To explore the above-stated main research questions, these paper begins by re-examining the issues related to the business performance. The current study combines prior methodologies in order to explore certain causal relationships considering the MVA of BIST listed informatics and technology firms. The value of these study is determining to empirical analysis of these relationships in the context of the Turkish economy and the follows value-added relevance for the measurement of MVA.

The remainder of these study is organized as follows. Section two discusses the literature review and hypothesis development. Section three discusses the research design. Section four shows the empirical results of robustness. Finally, section five summarizes the findings and concludes.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. Literature Review

The value relevance of both traditional accounting and value based performance measures has long been debated in the recent years. Stewart (1991), for example, investigated the relationship between EVA and MVA of US companies and he found a positive and strong relationship between EVA and MVA. Similarly, Lehn and Makhija (1996) found that both EVA and MVA were correlated positively with stock returns (Madininos et al., 2006). Kramer and Pushner (1997) implied that MVA and NOPAT were positive result but EVA over the period was negative outcomes on average. Ferguson et al. (2005) found that EVA and MVA have the most relationship compared convenient and as per availability of selected data (Prasad and Shrimal, 2005).

Prior studies show that impact of profitability on MVA has still mixed evidences regarding the accounting based performance measure and value based measures in the literature. Maditinos et al. (2006), for example, examined if EVA is more highly link with stock returns than accounting performance measures. They provided mixed and controversial results in their sample. Reddy and Reddy (2011) suggest that EVA is the best appropriate metric for measuring the value of shareholders. Bernier and Mouelhi (2011) investigated the relationship between MVA and EVA, ROA and ROE in the 24 U.S. stock listed insurance firms. They found the relationship between EVA and other value based performance

measures with MVA. Kangarlouei et al. (2012) investigated the relationship between EVA and ROA in Tehran stock exchange (TSE). They found that there was no relationship between EVA and ROA in TSE.

Khan et al. (2012) examined whether EVA of the companies listed firms in BSE securities market creating value for shareholders. Nakhaei and Hamid (2013) observed that there were significant relationship between EVA, and ROE with MVA, but there was not significant association between ROA and MVA. Likewise, Bhasin (2013) found that EVA is not excellent measures in its link with MVA.

Prasad and Shrimal (2015) examined the relationship between selected accounting measures and MVA of infrastructural companies in India. They found that there is significant relationship between ROCE, ROE and EPS with MVA. Yaqub et al. (2015) examined the significance of EVA among other traditional accounting measures in determining stock returns. They implied that there is a positive and direct relationship between EVA and MVA during the selected period. Kashinant and Kanahalli (2015) focused on whether the EVA would drive the MVA or not in select Indian public sector banks during the period of 2010–2014. Their findings suggest that EVA has an impact on MVA.

2.2. Hypothesis Development

Information technology is best defined not only as a traditional capital investment but also as a universal purpose technology. More importantly, using information technologies in companies are economically beneficial mostly because they provide complementary innovations (Brynjolfsson and Hitt, 2000). Therefore, such firms of value based performance measure are an important value driver in the economy. Finding a superior measure to evaluate a business's value based performance is one of the important issues of recent accounting and financial researches as most of business diversify such as banks industry and informatics and technology firms.

MVA is an option to estimate the shareholder value creation. MVA is a difference between market value of company and capital supplied by the investors over a period of time. Therefore, MVA is linked to EVA because of the present value of future EVA value. Moreover, EVA is a measure of business performance in a given fiscal year, while MVA is a market generated number that we calculate by subtracting the capital invested in a firm from sum of the total market value of the firm's equity and the book value of its debt (Nakhaei, 2016, p. 434-436). This study also examines the economic crisis to be an exogenous interference, and attempts to establish a fundamental relationship between the performance of the Turkish informatics and technology firms, the moderating effect of the crisis and MVA.

Alipour and Pejman (2015) concluded that return on sales (ROS) and ROA are more powerful than EVA in explaining firm market value for the period 2003–2008. Kramer and Peters (2001) argued that the marginal cost of using EVA as a proxy for MVA are not justified by any marginal advantages. Misra and Kanwal (2007) findings that traditional accounting measures cannot predict

business performance and that EVA is significantly associated with MVA.

Thus, MVA is particularly useful proxy in evaluating shareholder value, considering the opportunity cost of capital as well as Turkish informatics and technology firms' performance. The most recent global financial crisis of 2008–2009 concerned particular attention from researchers, since it led to dramatic structural changes in certain companies such as Turkish informatics and technology firms. However, research into the core strategies of a company which successfully survives a global financial crisis has not been frequently undertaken. Cipollini and Fiordelisi (2012), Berger et al. (2009) and Beck et al. (2011) find a negative link between bank market power and distress. Their results suggest that the overall risks taken by banks do not necessarily increase probably due to sound risk-mitigating techniques. Likewise, Shakina and Barajas (2016) findings suggest that a lower drawdown in MVA and EVA has been observed with a negative moderation effect both pre and post the financial crisis for high-performing companies.

Thus, the following hypotheses are considered relevant for the study:

- H₁: There is a significant relationship between EVA and MVA.
- H₂: There is a significant relationship between ROA and MVA.
- H₃: There is a significant relationship between ROE and MVA.
- H₄: There is a significant relationship between EVA and MVA before global financial crisis.
- H₅: There is a significant relationship between ROA and MVA before global financial crisis.
- H₆: There is a significant relationship between ROE and MVA before global financial crisis.
- H₇: There is a significant relationship between EVA and MVA after global financial crisis.
- H₈: There is a significant relationship between ROA and MVA after global financial crisis.
- H₉: There is a significant relationship between ROE and MVA after global financial crisis.

3. RESEARCH DESIGN

3.1. Sample Selection

Information and technology can be considered the important factor driving economic growth in industrial societies. Investing in this area is commonly regarded as having huge potential for reducing costs, enhancing productivity, and improving living standards (Hajli et al., 2015) for individual and business context. More importantly, informatics and technology firms has faced greater modification due to changes in technological, as well as having to respond to rapid changes in the needs of shareholders such as costumers, employee, communities and other information users. In highly uncertain external variation, the use of accounting performance measures may not be sufficient for performance evaluation and planning for the business's future. Thus, we focus on value based performance measures for informatics and technology firms.

Our sample comprises all listed informatics and technology firms in the İstanbul Stock Exchange (BIST). The data set was created from firms' financial statements. The sample consisted of 156 observation

of informatics and technology firms for financial statements data that have all data for 12-year period. Thus, to be included in the sample, a firm has to satisfy the criteria: has complete financial data reported in data stream for the year 2004 and 2015.

3.2. Measure of Business Performance

We use MVA as a market-based measure of business performance. For the additional test, we employ ROA, ROE and EVA as an accounting-based measure of firm performance. In this study, we use value based performance measures MVA as the external performance measure, while we use internal performance measures such as EVA, ROA and ROE. In this study, the model of research considers as we use EVA, ROA and ROE as independent variables.

Prior studies have extensively used MVA as a proxy for market based business performance. It has been shown robust to different selected sample time-periods and countries.

MVA is calculated as the difference between the firm's market value and the total capital invested in the business (Young and O'Byrne, 2000). It is an external value-based performance measure, which is considered to be the best index of creation shareholder value. MVA has presented a new shareholder value measure by Stewart (1991) which describes the market based value adds over the book value of invested capital. Likewise, MVA, studied by Stewart (1991) and Alipour and Pejman (2015) is used as a dependent variable and displays the value-added created for the shareholders and investors. In this context, the MVA is the difference between market capitalization of the company and total common shareholders equity as shown follows:

Market value added (MVA)=Market capitalization-total common Shareholder's equity or total shares outstanding×current market price-total common equity (1)

EVA, which is an first proxy independent variables, measures residual income as calculating the difference between a firm's cost of capital and return on capital, which is expressed as positive or negative result (Young and O'Byrne, 2000). EVA can be calculated in the following equation (Sharma and Kumar, 2010):

$$EVA = NOPAT - (TCE \times WACC) \quad (2)$$

Where, NOPAT=Net operating profit after tax,

TCE=Total capital employed,

WACC=Weighted average cost of capital.

Second proxy as an independent variables, ROA is an indicator of how profitable a company is relative to its total assets. That is;

$$ROA = \text{Net income} / \text{Total assets} \quad (3)$$

Third proxy as an independent variables, ROE is a profitability ratio that measures the ability of a firm to generate profits from its shareholders investment in the company. That is;

$$ROE = \text{Net income} / \text{Shareholder's equity} \quad (4)$$

Consequently, ROA is one of the most important traditional profitability ratio. ROA evaluates firm's ability in profit making according to total investments in assets (Kangarlouei, et al., 2012). Similarly, ROE is equal to profit division after tax deduction by average of total equity; and it shows the management efficiency (Fathabadi et al., 2014). Although ROA and ROE variables can give a general view of management efficiency, they are not perfectly accurate (Bernier and Mouelhi, 2011).

3.3. Empirical Model

We employ panel data techniques to estimates the regression models in the hypotheses. We focus on two techniques use to analyze panel data such as fixed effects and random effects for sample firms over time which can impact of business performance. We also estimate analyze panel data correcting for heteroscedasticity. Our methodology is based on similar study of Torres (2007), and Alipour and Pejman (2015). We use fixed effects and random effects models for panel data enabling and empirical estimate of link between EVA, ROA, ROE and MVA during the pre and post financial crisis. To investigate the relationship between MVA and its explanatory variables, the following model is developed:

$$MVA_{it} = \beta_0 + \beta_1 EVA_{it} + \beta_2 ROE_{it} + \beta_3 ROA_{it} + u_{it}$$

Where: MVA is market value added,

EVA is economic value added,

ROE is return on equity,

ROA is return on assets,

u_{it} is a random disturbance term.

4. EMPIRICAL RESULTS

4.1.Descriptive Statistics

This section contains the descriptive statistics and the results of regression analysis of 13 samples informative and technology firms listed on BIST during the 10 years of period from 2004 to 2015. The interpretations of the empirical findings are also presented in this section.

Descriptive statistics of study are given in Table 1. Table 1 provides statistics of the collected variables. The values of minimum, maximum, mean, standard deviation of dependent variables (MVA) and independent variables (EVA, ROA, and ROE) of sample 13 firms are calculated from 2004 to 2015. Total observations come to 156 for informative and technology firms.

The table reports descriptive statistics for all variables used in the paper's main analyses for the sample of 13 informative and technology firms. MVA is the Market Capitalization less Total Common Shareholder's Equity, and EVA is the difference between a firm's cost of capital and return on capital. ROE (ROA) is the informative

Table 1: Summary of descriptive statistics

Variable	N	Mean±SD		Minimum	Maximum
MVA	56	1.5608	6.3708	-1.5708	5.5909
EVA	156	-0.9526	3.7607	-3.0408	4.4607
ROA	156	0.04698	0.0879	-0.2167	0.7227
ROE	156	0.10801	0.1894	-0.8085	0.7898

SD: Standard deviation, MVA: Market value added, EVA: Economic value added, ROA: Return on assets, ROE: Return on equity

and technology firms' cumulative net income over the years 2004 and 2015, divided by the book value of equity (total assets).

According to Table 1, MVA, our measure of market valuation, has a mean value of 1.5608 and ranges from -1.5708 to 5.5909. EVA, our measure of market valuation, has a mean value of -0.9526 and ranges from -3.0408 to 4.4607. Firms' profitability, as measured by ROA, varies between -0.2167 and 0.7227%, with a mean of 0.4698%. Additionally, firms' profitability, as measured by ROE, varies between -0.8085 and 0.7898%, with a mean of 0.1080%. More importantly, descriptive statistics shows that EVA has a negative and significant relationship with MVA. The other descriptive statistics do reports statistically significant differences between MVA, ROA, and ROE for the period as a whole.

For each firm, the distribution and average MVA values for firms are presented in alphabetical order (A=Alcatel, B=Anel, C=Arena, D=Armada, E=Aselsan, F=Datagate, G=Escom, H=Indeks, I=Karel, J=Link, K=Logo, L=Netaş, M=Plastic) a graph was generated as shown in Figure 1. In the Figure 1 shows that E=Aselsan's MVA average is a high and negative value, so it bumps among other firms.

4.2. Impact of Profitability on Business Performance

The generally accepted way of choosing between fixed and random effects is running a Hausman test (Alipour and Pejman, 2015). To run a hausman test comparing fixed with random effects in Stata, we need to first estimate the fixed effects model, save the coefficients so that we can compare them with the results of the next model, estimate the random effects model, and then do the comparison. Run a fixed effects model and save the estimates, then run a random model save the estimates, then perform the test. This setting seen as follow in Table 2.

Figure 1: Distribution and average market value added values for firms

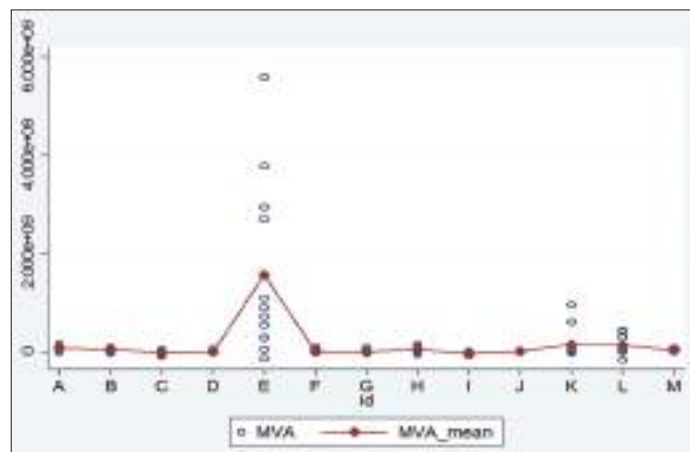


Table 2: Coefficients

Variables	(b)	(B)	(b-B)	Sqrt (diag (V _b -V _B))
	Fe	Re	Difference	SE
EVA	0.9124	-11.4842	-12.3966	1.3747
ROA	2.9308	4.0308	1.1108	3.3608
ROE	-2.3908	1.3408	3.7308	1.8908

Chi² (2)=(b-B)'[(V_b-V_B)⁻¹](b-B)=1.78, Prob>Chi²=0.4102, SE: Standard error, EVA: Economic value added, ROA: Return on assets, ROE: Return on equity

Prob>Chi²=0.4102. If this number <0.05 then our fixed effects model is accepted. Thus, we used random effects model. According to random effect model, we found that modified Bhargava *et al.* Durbin watson=0.396070 and Baltagi- wu LBI=0.734378 (Tatoğlu, 2013, p. 226). The values of DW test show that there is a problem of auto-correlation. On the other hand, we found a heteroskedasticity problem as the follow:

W0=37.97720 df (12, 143) Pr>F=0.00000000

W50=33.82810 df (12, 143) Pr>F=0.00000000

W10=35.60473 df (12, 143) Pr>F=0.00000000

The existence of heteroscedasticity is a major concern in the application of regression analysis, including the analysis of variance. Thus, we added the option robust estimator' to control for heteroscedasticity problem. The results are presented in Table 3.

Two-tail P-values test the hypothesis that each coefficient is different from 0. To reject this, the p-value has to be lower than 0.05 (95%, you could choose also an alpha of 0.10), if this is the case then we can say that the variable has a significant influence on our dependent variable.

According the results that there is a negative and significant relationship between MVA and EVA in the long-term. Thus, the first hypothesis (H1) is accepted. This indicates that increasing the amount EVA will result in a decrease in the market value added. On the other hand, there are no significant relationship between ROA, ROE and MVA. Thus, the second (H2) and third (H3) hypothesis are rejected. This indicates that increasing the amount ROA and return on equity will not effect market value.

Many papers examined relation between MVA and EVA, ROA, ROE for manufacturing and textil sectors. However, we did not find the study about informative and technology sector.

If we don't consider about the difference between sectors, we can say the findings of our results is consistent with prior empirical studies Bhasin (2013) found that do not support the claim of Stern Stewart's that EVA is excellent to the traditional performance measures in explaining MVA. The finding of this study is consist of with prior emprical evidence on Nakhaei and Hamid (2013) found that there are meaningful correlation between EVA. The result also indicate that BIST informative and technology firms show significant association between EVA and MVA, evidence supporting the prior study Kashinant and Kanahalli (2015); Kramer and Pushner (1997). On the other hand, the findings of our paper are not consistent with prior empirical studies (Stewart, 1991; Lehn and Makhija, 1996; Prasad and Shrimal, 2015; Yaqub et al.; Bernier and Mouelhi, 2011; Ghanbari and More, 2007).

4.3. Impact of Global Financial Crisis on MVA

Run a fixed effects model and save the estimates, then run a random model save the estimates, then perform the test for before global financial crisis (Table 4).

Prob>Chi²=5.15. If this number <0.05 then our fixed effects model is accepted. Thus, we used random effects model. According to random effect model, we found that modified Sargan-Hansen=-0.9241,

Table 3: Robust estimator test results

MVA	Coefficient	Robust SE	Z	P> z	(95% CI)	
EVA	-12.3967	0.9795	-12.66	0.000	-14.3165	-10.4768
ROA	1.1108	5.4308	0.20	0.839	-9.5408	1.1809
ROE	3.7308	1.7408	2.15	0.032	3.2407	7.1308
_Cons	-0.7318	2.7807	-0.26	0.793	-6.1907	4.7307
Sigma_u	0					
Sigma_e	4.41808					
Rho	0 (fraction of variance due to u)					

Wald Chi² (3)=348.40. Prob>Chi²=0.0000. MVA: Market value added, EVA: Economic value added, ROA: Return on assets, ROE: Return on equity, CI: Confidence interval

Table 4: Coefficients before global financial crisis

Variables	(b)	(B)	(b-B)	Sqrt (diag (V _b -V _B))
	Fe	Re	Difference	SE
EVA	5.0834	-0.3191	5.4025	0.3377
ROA	-3.5307	-0.8853	-2.6407	0
ROE	-4.8407	4.8007	-9.6307	0

Chi² (2)=(b-B)'[(V_b-V_B)⁻¹](b-B), Prob>Chi²=5.15. EVA: Economic value added, ROA: Return on assets, ROE: Return on equity, SE: Standard error

Durbin-Watson=1.32815 and Baltagi-wu LBI=1.96741. The values of Sargan-Hansen test show that there is a problem of auto-correlation. On the other hand, we found a heteroskedasticity problem as the follow:

i=13.04 df (12, 49) Pr>F=0.00000000

The existence of heteroscedasticity is a major concern in the application of regression analysis, including the analysis of variance before global financial crisis. Thus, we added the option robust estimator' to control for heteroscedasticity problem. The results are presented in Table 5.

Two-tail P-values test the hypothesis that each coefficient is different from 0. To reject this, the P-value has to be lower than 0.05 (95%, you could choose also an alpha of 0.10), if this is the case then we can say that the variable has a significant influence on our dependent variable.

Using a sample of 65 Turkish Informatics and Technology Firms from 13 companies over the period 2004 to 2008, we present the following key findings: According the results that there is a positive and significant relationship between MVA and EVA in the pre-financial crisis. Thus, the hypothesis H4 is accepted. This indicates that increasing the amount EVA will result in a decrease in the market value added. On the other hand, there are no significant relationship between ROA, ROE and EVA. Thus, the H5 and H6 hypothesis are rejected. This indicates that increasing the amount ROA and return on equity will not effect market value.

Run a fixed effects model and save the estimates, then run a random model save the estimates, then perform the test for after global financial crisis (Table 6).

Prob>Chi²=5.15. If this number <0.05 then our fixed effects model is accepted. Thus, we used random effects model. According to random effect model, we found that modified Sargan-Hansen=-0.9241, Durbin-Watson=1.32815 and Baltagi-wu LBI=1.96741 The values of Sargan-Hansen test show that there is a problem of auto-correlation. On the other hand, we found a heteroskedasticity problem as the follow:

i=13.04 df (12, 49) Pr>F=0.00000000

The existence of heteroscedasticity is a major concern in the application of regression analysis, including the analysis of variance after global financial crisis. Thus, we added the option robust estimator' to control for heteroscedasticity problem. The results are presented in Table 7.

Two-tail P-values test the hypothesis that each coefficient is different from 0. To reject this, the P-value has to be lower than 0.05 (95%, you could choose also an alpha of 0.10), if this is the case then we can say that the variable has a significant influence on our dependent variable.

Using a sample of 91 Turkish Informatics and Technology Firms from 13 companies over the period 2009 to 2015, we present the following key findings: According the results that there is a negative and significant relationship between MVA and EVA in the post-financial crisis. Thus, the hypothesis H7 is accepted. This indicates that increasing the amount EVA will result in a decrease in the market value added. On the other hand, there are significant association between ROE and EVA, while there are not significant relationship between ROA and EVA. Thus, the H8 hypothesis are accepted and H9 hypothesis are rejected. This indicates that increasing the amount ROA and return on equity will not effect market value (Table 8).

Finally, we examined the values of coefficients, standard error of dependent variables (EVA) and independent variables (MVA, ROA, and ROE) of sample 13 firms are calculated from 2004 to 2015 during the pre and post global financial crisis.

According the results that there is a negative and significant relationship between EVA and MVA in the post-financial crisis, while there is a positive and significant relationship between EVA and MVA in the post-financial crisis. In the contrary, there are no significant relationship between ROA, ROE and EVA during the pre and post global financial crisis.

5. CONCLUSION

This study examined the financial information content of MVA and three traditional accounting performance measures. Further, these study also examines the profitability and its effect on market value added of Turkish informative and technology firms listed on the BIST, covering a 10 years period in Turkey (2004–2015). Based on the findings of this paper EVA has a negative and significant relationship with MVA, while ROA and ROE have no significant relationship market value added.

Table 5: Robust estimator test results before global financial crisis

MVA	Coefficient	Robust SE	Z	P> z	(95% CI)	
EVA	5.0834	0.2272	22.38	0.000	4.58841	5.57833
ROA	-3.5307	5.5707	-0.63	0.539	-1.5708	8.6207
ROE	-4.8407	4.8107	-1.01	0.334	-1.5308	5.6407
_Cons	9.7707	447399	21.84	0.000	8.8007	1.0708
Sigma_u	2.11808					
Sigma_e	498945					
Rho	0 (Fraction of variance due to u _i)					

Wald Chi² (3)=228.42. Prob>Chi²=0.0000. MVA: Market value added, EVA: Economic value added, ROA: Return on assets, ROE: Return on equity, CI: Confidence interval**Table 6: Coefficients after global financial crisis**

Variables	(b) Fe	(B) Re	(b-B) Difference	Sqrt (diag (V _b -V _B)) SE
EVA	5.0834	-0.3191	5.4025	0.3377
ROA	-3.5307	-0.8853	-2.6407	0
ROE	-4.8407	4.8007	-9.6307	0

Chi² (2)=(b-B)'[(V_b-V_B)⁻¹](b-B), Prob>Chi²=-5.15. EVA: Economic value added, ROA: Return on assets, ROE: Return on equity**Table 7: Robust estimator test results after global financial crisis**

MVA	Coefficient	Robust SE	Z	P> z	(95% CI)	
EVA	-16.6071	1.0469	-15.86	0.000	-18.6589	-14.5553
ROA	-1.5408	6.1808	-0.25	0.803	-1.3709	1.0609
ROE	5.9708	2.7008	2.21	0.027	6.8207	1.1209
_Cons	6.0307	5.5507	1.09	0.278	-4.8507	1.6908
Sigma_u	1.56808					
Sigma_e	3.14608					
Rho	0 (fraction of variance due to u _i)					

Wald Chi² (3)=569.20. Prob>Chi²=0.0000. MVA: Market value added, EVA: Economic value added, ROA: Return on assets, ROE: Return on equity, CI: Confidence interval**Table 8: Impact of global financial crisis on EVA**

Variables	After financial crisis			Before financial crisis		
	Coefficients	SE	n	Coefficients	SE	n
MVA	-0.0432	0.0038	91	0.1278	0.0134	65
ROA	2363091	3.5807	91	1.3607	2.6307	65
ROE	2.4107	2.0307	91	1.1107	89617	65

SE: Standard error, MVA: Market value added, EVA: Economic value added, ROA: Return on assets, ROE: Return on equity

The empirical study results findings that there are significant relationship between EVA and MVA, evidence supporting the prior study Kashinant and Kanahalli (2015); Kramer and Pushner (1997). However, the findings of our paper are not consistent with prior empirical studies by Stewart (1991).

It can be concluded that the EVA of the firm's impacts their market value added negatively. On the other hand, we can say that there is no relationship between MVA and traditional performance measures of ROA and ROE. Likewise, the findings of this paper suggest that there negative and significant relationship link with MVA and EVA in the post global financial crisis period, while positive and significant relationship between MVA and EVA in the pre global financial crisis period.

The study is limited to sample of Turkish informative and technology industry firms. This study of informatics and technology companies of economic activity and the relatively narrow 12-year period of 12 years from 2004 to 2015 was selected for data collection are the principal limitations of the current study. Future research should investigate generalizations of the finding beyond Turkish informative and technology firms.

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Article

Measure the Performance with the Market Value Added: Evidence from CSR Companies

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Abstract: An increasing number of firms in OECD countries are obtaining certification as Socially Responsible. Literature is sensitive in testing whether there is a relation between firm performance and Social Responsibility certification. In order to overcome problems related to the multiplicity of Corporate Social Responsibility (CSR) definitions and certifications, our work implements a CSR index based on the intersection between two of the three main international indices (Domini 400 Social Index, Dow Jones Sustainability World Index and FTSE4Good Index). By using this database in a panel framework, our work shows that among Corporate Performance Measures (CPF), Market Value Added (MVA) is affected by a firm's social responsible behaviour and certification. The results support the idea that CSR firms have better long-run performance. Thanks to the reputation effect, they achieve higher sales volumes and profits and a reduction in long-run costs: these effects compensate the costs due to the certification.

Keywords: corporate social responsibility; growth; market value added; firms performance; certification

1. Introduction

Over the past two decades in OECD countries there has been an increase in Corporate Social Responsibility (CSR, hereafter) firms that according to [1–5] can be defined as a business organization's configuration of principles of social responsibility, processes of social responsiveness, and policies, programs, and observable outcomes as they relate to the firm's societal relationships'.

CSR firms adopt ethical behavior. They are socially sensitive, that is improve workers' conditions, respect all types of diversity, allow for good governance and transparency in the management of business. At the same time they invest in the environmental field using alternative energy sources, reclaiming polluted areas, respecting biodiversity, adopting environmentally friendly fuels [6]. The relevance of CSR firms is highlighted by [7,8], "the value of assets under management in the USA that fall into the SRI category grew at annual rates of about 12% over 1995–2005 and 18% over 2005–2007; by the end of 2007, these SRI assets accounted for 11% of total assets under professional management". Growing importance of CSR firms can also be seen by the rise of CSR reporting among S&P 500 companies: in the years 2011–2016 they increased from just 20% to 82%. In addition, in 2015, 92 percent of Global Fortune 250 (G250) companies published corporate responsibility reporting (CR) (9). The largest 100 companies (N100) in each country surveyed increased reporting by 20 percent since 2008 to 73 percent overall, with developing nations showing fast uptake.

Previous literature and data suggests that the growth rate of the CSR firms seems to depend on the economic development of the area referred to, and is not only time-related. It is useful to observe how the diffusion of the CSR phenomenon is not homogeneous from the geographical point of view. Sustainable indices may be a litmus test for diffusion of the phenomenon: it is not a coincidence that most of the sustainability indices arise in OECD countries. In the light of this insight, recent studies have observed that the level of economic development influences the phenomenon of social responsibility. It can be argued that the number of CSR firms has considerably increased but the highest number of CSR enterprises is from the United States and the European Union, i.e., two of the most developed areas. The number of CSR firms and their growth rates are showed in [7–12] showed the number of CSR firms and their growth rates. From this first rough observation, emerge that GDP is a crucial variable for the development of ethical conscience, and therefore CSR. Nevertheless, it should be noted that the type of index adopted is of crucial importance: use of the DJSI influences selection of the sample.

One of the main research topics related to CSR, is its impact on firms and economic system. This has been analysed by several works ([13–18]) focusing primarily on the link between CSR and the financial performance. Research suggests that financial performance prediction is sensitive to the Corporate Financial Performance (CFP, hereafter) used ([17,19]). Therefore performance measures are divided in: (a) Market measures, such as the market capitalization measure or Beta index for riskiness of a firm; (b) Accounting measures, as ROA, ROE, ROCE. Lastly, in the most recent research, Mixed measures such as Market Value Added (MVA, hereafter) or Tobin's q measure were used. However, these studies are still limited and do not provide sufficient evidence.

Our purpose is to verify whether certain performance indicators can be affected by a firm's social responsible behavior and its certifications. The novelties of the paper are two. First of all the originality lies in its dynamic aspect and the construction of a CSR index that intersects two of the three main international indices (Domini 400 Social Index, Dow Jones Sustainability World Index, FTSE4Good Index (We used these indices also in line with previous literature, like [20–27]. Among others. Moreover about this point, as far as we know, economic research uses in general only one of these indices ([20] is the only one to use two indices).)) for an objective and a representative sample. Secondly, the paper implement jointly accounting-based measures of performance and market-based measures. Among these, the attention is on the MVA.

The main results seem to support the idea that CSR firms, which are more virtuous, have better long-run performance: even if they have initial costs due to the certification, they achieve higher sales volumes and profits, thanks to the reputation effect, a reduction in long-run costs and increased social responsible demand. Moreover we also carried out some in-depth analyses focused on particular variables, like social capital, beta financial index and reputation, finding interesting results about CSR and non-CSR riskiness.

Our paper is organised as follows: in Section 2 we summarize the literature review and in which branch our paper is positioned, Section 3 lists the main CFP and variables used in the literature and the main results formerly achieved respectively, while in Section 4 the construction of the sample is explained. Section 5 shows the data used to run our analysis. In Section 6 the aim of this study is formalized and better explained and the formal regression is explained. The complete results are shown in Section 7, while in Section 8 we carry out some detailed examinations of particular and important variables. The conclusions are contained in Section 9.

2. Literature Review

Literature developed extensive fields of research on issues concerning the theme of sustainability and CSR [14].

Three are the main research lines. Firstly, we can cite studies related with CSR definitions [6,13,15,28,29] and CSR measurement [30]. Secondly, another field is focused on the reasons that lead firms to adopt sustainable behaviors, CSR reporting and then to obtain certification [7,16,31,32]. Thirdly, in the economic

perspective, researches assess the impact of CSR on the financial system [15,16,33–35], evaluating the role of the industrial sectors as in [36–38] or focusing on single countries ([20,21,39,40]).

As regard the first stream of study, definitions of CSR emerging in economic literature are not homogeneous [6]. Consequently, this concept is difficult to capture uniquely and correctly. Moreover, due to the fact that CSR is “not a variable and therefore it is not measurable”, the economic literature has introduced the concept of Corporate Social Performance (CSP, hereafter), which is a way of making CSR applicable and putting it into practice [41]. Because of the difficulty of measuring CSP directly, many authors propose to turn it into measurable variables [15], also in line with [16], describe CSP as “a concept of three categories”: CSP1: social disclosure about social concern ([17,19]); CSP2: corporate action, such as philanthropy, social programs and pollution control; CSP3: corporate reputation ratings or social indices that may be provided by social rating institutions, such as KLD, EIRIS; Fortune, Moskowitz, or ad hoc indices drawn up by the researchers themselves ([42–47]). In this regard, this paper refers to the category CSP3. Looking at previous studies, it emerges that economic research is often unidirectional and generally uses only one index. However, to overcome the problems related to the multiplicity of CSR definitions and certifications, our work builds a CSR index that intersects two of the three main international indices (Domini 400 Social Index, Dow Jones Sustainability World Index, FTSE4Good Index). In this way, empirical analysis can be conducted by using an objective and representative sample.

Looking at the second research field, related to the factors that drive companies to CSR, [16] identify different “starting points”: (a) disclosure of information about social natures ([16,48–52]); (b) the reasons behind spending on social performance, such as donations, philanthropy, etc. ([7,43,52–54]); (c) a variety of principles, processes, policies, programs and observable results relating to the company’s relationship with society. In this last case are defined some social indices, credit ratings provided by social institutions, such as EIRIS or KLD, or ad hoc indices drawn up by the researchers themselves ([42,44–47,55]). On this point, many researches have been carried out on the analysis of value creation ([1,2,20,56–64]). In order to obtain an unbiased estimate of future cash flows attributable to the firm’s tangible and intangible assets, the recent work of [20] chooses firm market value, adjusted for firm size, as the dependent variable. They follow the suggestions of [64] and therefore use the market value to book value ratio, also referred to as Tobin’s Q. The same variable is used in [65], in [66] and in the more recent [21] considering Tobin’s q as a more “forward-looking” performance measure which takes into account all the growth opportunities available to firms [67].

Strictly related to this conclusion and looking at the third research area, regarding the impact of CSR on the economic system, several works ([13–18]) have analyzed the relationship between CSR and the financial performance of the certified firms. About this, research shows that there is a difference in the prediction of financial performance by using different CFP ([17,19]). According to van Beurden [15] CFP are distinguished into two categories: market-based measures (CFP 1) that include stock performance, market return, market to book value, price per share, share price appreciation and other market based measures; accounting-based measures (CFP 2) such as ROE, ROA, ROCE and many financial indicators drawn up on the basis of book accounting. Summing up the huge literature about these impacts, many meta-analysis studies have been carried out [17,68–70]. These works generally endorse the argument that there is a statistically significant positive relationship between the financial performance and Corporate Financial Performance (CFP) measures though the magnitude of the observed link remains low. Analysis of the previous works suggest that further research is required.

Positioning in the field of studies based on Corporate Financial Performance measures [17,19] and using the definitions of van Beurden [15], this paper tests some indicators of financial performance, primarily focusing on the Market Value Added (MVA hereafter), as a summarizing indicator.

3. Corporate Financial Performance Measures

Economic literature classifies the variables representing performance into market and accounting measures. We summarize the variables useful for reaching our goal and that belong to both these sets:

1. **Market Measures:** (a) **MKTCAP** (It is the most important market-based performance measure with a huge amount of literature: [48,56,61,71–74]). (Market Capitalization) measures the market capitalization that defines the value of a firm; (b) **Beta** (It is a content of the CAPM (Capital Asset Pricing Model, see: [74–77]) and its importance has become one of the best known variables in investing and finance. Its main references are: [40,56,78]): describes the relation between the expected return of the whole market and the expected return of a financial portfolio (or a single stock). Its value represents also a risk measure: when its value is lower than one unit, the considered asset is likely to reduce the market fluctuations, while the opposite happens when its value is higher than 1. The economic literature shows that firms with high systemic risk use social certification to reduce their exposure risk: therefore, their beta coefficient reduces (see: [50,78]). Richardson et al. and Botosan [79,80] show that the reduction in the exposure to risk can also reduce the cost of capital and accordingly information asymmetries, thanks to the increased social information.
2. **Accounting measures:** (a) **ROE** (One of the most widely used performance measures (see: [1,2,21,78,81–86])). It is defined as the percentage of the yearly net income of a firm (before common stock dividends and after preferred stock dividends) with respect the total equity (excluding preferred shares), and corresponds to the rate of return of the shareholders invested risk capital.): this measure is useful to estimate the profitability of a firm, that is its efficiency in generating earnings from every dollar/euro of net assets (assets minus liabilities); (b) **ROA** (See [1–3,48,87,88]): describes “what the company can do with what it has got”, i.e., how many euros of earnings it can obtain from each euro of assets. Its average value strongly depends on the economic sector analyzed, so it could be useful to compare the profitability of the companies of the same industry; **ROCE** (This measure is commonly used to compare the performance between different businesses and to verify if the generated return is sufficient to pay back the cost of capital. It is defined as the pre-tax operative profit divided for the employed capital. See [1]: in finance it measures the return that a company is generating from capital employed.
3. **Mixed Measures: Market Value Added (MVA).** Firstly introduced by Simerly et al. and Cochran et al. [89,90], is defined as the difference of the current firm market value and the capital contributed by investors, as of the balance sheet. A positive MVA means added value in the company while distinguishing negative MVA that have destroyed value. This is a mixed measure because it combines both market and account values. MVA can also be seen as a manner to introduce the Tobin’s q, as in Shahzad et al. [65]. Bharadwaj et al. and Konar et al. [62,63] suggest that standard accounting measures of performance, such as (ROA) return on assets, lack in their ability to evaluate the future profit potential of such practices. To overcome these limitations some papers ([20,21,64,66]) consider the Market Value Added as a key variable of research.

3.1. Further Important Variables

Economic literature show further variables to investigate the relationship between firms performance and CSR certification:

1. **Industrial Sector.** According to Dierkes et al. [91], those firms whose economic activities are involved in the exploitation of natural resources (mining, forestry, oil, gas and so on) or that affect the environment are subject to stronger environmental controls than those of other sectors. So, industrial sector could be important for CSR. Furthermore some enterprises with a strong relation with consumers need to show a clear social behaviour, in order strengthen the firm’s reputation and achieve positive effects on the sales volumes (see: [85]). Moreover, in Patten et al. (1991) [92] the authors explain that the industrial sector (as a proxy of dimension)

affects the “fame policy” of a firm, forcing the management to take public opinion into account ([48]). Finally, this variable has effects on the number of enterprises belonging to the CSR group: low-labour intensity sector (i.e., banks, financial services, etc.) show higher number of firms than high capital intensity sectors. (About this, see [2]) Capelle-Blancard et al. [93] shows an interesting approach that takes into account the different weights of industrial sectors: the authors proposes an original weighting scheme, reflecting societal concerns and depending on sectors.

2. **Size** (Economic literature show different manners to measure firm size: by using the total asset value, or the number of employees, or the total sales. Belkaoui et al. [48] use the natural logarithm of the sales net value, while Spicer et al. [78] use both the total asset value and the sales value. Cowen et al. and Patten [85,92] also use the natural logarithm of sales the Fortune 500 index. Kimberly et al. [94] show that all these measures are strongly correlated and quite similar.): Waddock et al. [2] write that it is possible to assume that as the size of a firm increases, so does its behaviour to act responsibly. This should happen because big companies are more conscious of the importance of their relationship with the public (and external stakeholders) than the smaller ones. The work of Dierkes et al. [91] confirm that the size can affect the firm performance and social certification link: at the beginning the firm strategy is focused on basic survival, while the focus changes to its philanthropic and ethical responsibilities as its size increases.
3. **Age of Capital.** Roberts [95] assumes that the firms historically highly involved in social investment have a greater induced reputation, making the stakeholders more confident about the expected profits. Wood [96] measure the capital age as gross and net capital: the firm is relatively young when this index tends to 1. Therefore the age of capital is inversely correlated with the CSR variable: the younger the enterprise, the higher the ethical investment. It is interesting to stress that it is more expensive to change a firm’s structure than to create a new one and that new firms do not have transformation costs for new lines of production.
4. **Intangible Assets Expenses.** Even if economic literature is strongly focused on R&D expenses, this variable is very close to the total expenses (also considering costs related to the CSR index). Indeed, R&D is a subset of total intangible assets and could also be their proxy variable. In McWilliams et al. (2001) [3] the authors show the correlation between the financial performance and the CSR index. Indeed innovation and R&D expenses are some of the main variables that can affect economic growth in the medium-long run. Moreover, R&D expenses are sometimes used as a proxy for social certification.
5. **Leverage.** It is defined as the total debt and shares ratio. Myers and Wallace et al. [97,98] have shown a positive relation between CSR index and the leverage. (CSR index is defined by social disclosure, that is social information). Jensen et al. [99] supported this result by explaining that a firm tends to increase its social information in order to reduce rising monitoring costs from high leverage. Ahamed et al. [100] show a similar explanation, stressing that as the weight of the bond in the balance sheets increases at the expense of the ordinary stocks, so does importance of the social information and social certification. Roberts [50] did not find any statistical evidence in the test of the hypothesis that the higher a firm’s leverage, the higher creditors’ expectations. However, Belkaoui et al. [48] showed negative correlations.

4. The Sample

In order to avoid redundancy of CSR certified firms literature presented in the previous paragraphs suggests two solutions. The first one is to identify the best (most influential) rating agencies and take only the criteria that they express. The second one is to use multiple assessments, so that the certification of a firm can be confirmed by several rating agencies. In our opinion, the most powerful way is to combine the two solutions, that is use multiple evaluation criteria characterized by good quality ([11,12]).

Therefore, our paper's first goal consists in defining a database of CSR firms that combine more than one certification index. In detail, we selected the firms for our sample following the steps below:

1. We selected the CSR firms belonging at least to two of the three main stock option indices of the market in 2004: Domini 400 Social Index, Dow Jones Sustainability World Index, FTSE4Good Index. The indexes were selected because they are the most famous and recognizable indices at an international level. Implementing methodology used by Poddi et al. and Barnea [10,101], the CSR sample consists of 317 firms.
2. In order to build the control sample, we chose 100 non-CSR firms from the Dow Jones Global Index. Sector stratification was implemented to make the Non-CSR sample homogeneous with the CSR sample. For each sector, firms were randomly selected.
3. The final sample consist of 417 firms. In order to generate the time series, we started with the last year of our sample, and maintaining the total number of firms we worked backward until first one, changing the non-CSR/CSR ratio. Dummy variable for each year were created starting from the last year (1 if that firm was certified as a CSR firm in that year and zero otherwise). The finale sample results from the intersection (for a couple of sets) of the three indices. (We were not able to work further back than 1999 because the CSR firms available in our database were not sufficient)

We downloaded the balance sheets of all 417 firms. We use Perfect Analysis software because contains the panel data of the stock prices, the level of dividends, and also other financial information about firms' balance, exchange rates and market indices. Moreover, it contains the main OECD economic indicators.

5. Data

We collected the following performance variables about 417 enterprises for five years by using the Perfect Analysis database and referring our previous paragraphs: **ROE** and **ROCE** (We adopt ROCE as a variant of the more common ROA, due to the greater compatibility of data.); **MKTCAP** (From Perfect Analysis, in the budget reports of each company—"Fundamentals" sheet; voice "Market Cap".), **MVA** (We follow the following methodology and use Perfect Analysis database to build this performance indicator: the company's market share value was estimated referring to July 2004 and multiplied by the number of shares at the closing share price on 31 December of each year (from 1999 to 2003). The Yahoo Finance website was the source for historical stock prices. The "stockholder's equity" is then subtracted from the equity market value in the social balance sheet of each company. We can therefore compare the economic value of stakeholders' equity (MV) and its book value, and then the market (and therefore stakeholders) can evaluate the business in place or in the future.).

Each company differs from another one in implementing CSR. These differences depend on many factors such as, for example, the corporate culture, stakeholders' demand, the particular sector in which it operates, the enterprise's size and historically how progressive the company is in achieving CSR.

Some companies specialize in a single area, where they have the greatest impact or vulnerability (i.e., environment or human rights) or which they consider the most important; while other companies would like to integrate CSR into all aspects of their operations.

Other variables are as follows: (a) **AGE** (Data source: Perfect Analysis—"Property, Plant and Equipment—Total (Gross)" and "Property, Plant and Equipment—Total (Net)". The expectation against the use of this variable is defined as: "The latest companies behave more responsibly" [96]) is the ratio between the net value and gross assets in property, buildings and equipment. The more this ratio tends to a value of one, the newer the company is; (b) **INTA** (Source: Perfect Analysis—"Intangible Assets—Total".) (Intangible Asset) annual expenditure on intangible heritage, namely copyrights, patents, intellectual property and know-how. Intangible spending drives performance and can easily be used as an instrumental variable (See [7,102] (among others) about endogeneity problems.), which is also strongly correlated to CSR; (c) **STLT** (Data source: Perfect Analysis—"Common Size "ST Debt

(% of Assets)” and “LT Debt (% of Assets).”) (Short Term Debt/Long Term Debt) is the ratio between short-term/long-term debt; (d) **INTE** In the Perfect Analysis database—“profits and losses”,—data were collected on the number of employees under the heading “Employees Units”. For total assets: balance sheet “total assets”. (intensity of work): number of employees and total assets ratio; (e) **Size**. Calculated by using the total sales, as Stanwick [51], Cowen et al. [85] and Fombrun et al. [103]; (f) **Risk**. On the relation between belonging to a CSR group and risk points out how it can be quantified through the Beta index for each of the 417 companies of the sample, compared to 2004 for cross section analysis. One important caveat about our future analysis is about the link between the possible company risk and economic management. Socially responsible behaviour aims at reducing environmental organizational and operational risk. Nothing is said about financial risk, even if it adopts the Beta index. This discrepancy creates different results and comments on risk assessment; (g) **Reputation**. We use a reputation quotient published by the Reputation Institute (Reputation Institute—www.reputationinstitute.com—www.harrisinteractive.com), based on a survey on the more visible American multinationals. In detail, each company was assessed by over eighteen random factors selected by the company’s policy. The respondents associated a score based on 20 attributes relating to six key dimensions: (a) Vision and leadership; (b) Work environment; (c) Financial performance (d) Products and services; (e) CSR; (f) Emotional appeal. The index is explained for a sample of firms from five years; (g) **Critical Demand, D** (Taken from a research carried out by MORI (Market and Opinion Research International). MORI (Market and Opinion Research International)—www.mori.com). The literature justifies a sales increase from a differentiation on the market supply. The critical consumers satisfy their needs with particular goods characterized by improvement or environmental respect of labour conditions; (h) **Social Capital** (Source: the IVIE (Instituto Valenciano de Investigaciones Económicas) database. Instituto Valenciano de Investigaciones Economicas—www.ivie.es). Data on Social capital indicators can be useful to understand the change in the individual’s choice (and therefore total demand) due to critical behaviour. In literature, the social capital concept has evolved from initially purely sociological definitions ([104,105]) to broader meanings including civic sense [106], cooperation between individuals and compliance with the law ([107–109]). So, social capital could be considered a proxy of individual behaviour and, therefore, could be considered a useful variable; (i) **GDP**: data from the World Bank database.

6. Empirical Analysis

6.1. Correlations among Variables

In Table A1 in Appendix A we show some correlations among variables. Our main results show that the following couple of variables are positively correlated: expenses in intangibles and size; MVA and CSR; MVA and size; CSR and size; CSR and intangibles; intangibles and the age of the firms. Therefore bigger firms correspond to higher values and given that more business meant better performance for investors, and given the link size-sales, then also SIZE-MVA relationship is confirmed. Finally, the expenses in intangibles of the most recent firms are higher, due to the start-up procedure that includes innovation technology costs, copyright, and R&D.

6.2. The Regression Model

To study the relationship between profit or the economic performance and CSR we use the following linear regression model:

$$\Pi_{ict} = \alpha + \beta_1 CSR_{ict} + \beta_2 SIZE_{ict} + \beta_3 INTE_{ict} + \beta_4 STLT_{ict} + \beta_5 D_{ct} + X'_{ct}\gamma + \eta_c + \nu_t + \varepsilon_{ict} \quad (1)$$

where Π is the dependent variables and represents the economic performance (using MVA, or the ROE/ROCE variables) for each firm (i), in country (c) and year (t). While our regressors are the following independent variables: (a) **CSR**; (b) **SIZE**: a categorical variable in which we calculated firm size by using the amount of sales. In details, 1 means small enterprises, 2 for medium enterprises and 3

for the biggest one; (c) **INTE**: corresponds to the intensity of work and is the number of employees and the total asset ratio; (d) **STLT**: long and short-term debt ratio; (e) **D**: the critical demand (This variable uses MORI work about UK demand and readjusts for each country.), (f) **X'**: the gross domestic product per capita for year t (x_t) and lagged value (x_{t-1}). Finally, the regressions take also into account fixed effects of: time (v_t) and geography (η_c).

As in our previous paper (see [11]) even if we performed the regressions over all the variables, we show only the most significant results. In the next parts we will show results about peculiar regressions carried out for some variables but we focus our analysis on the MVA, because Table A1 in Appendix A and our regressions confirmed that it is the only significant performance variable.

Our goal is to test the sign and the magnitude of regression Equation (1) over a 5-year period but before running it, we have investigated the some possible endogeneity problems. In details, endogeneity may depend on the higher resources of the best performing firms useful to enter the social index. Vice versa, a CSR firm with a high reputation could improve its market evaluation. We test the endogeneity problem by using Granger and Hausman test. Both Granger and Hausman do not show endogeneity problem (See [11,12] for details. In details, Hausman results confirm 4 out of 5 cases with no endogeneity.). To be sure of avoiding this problem, we run our regression with **INTA** and **AGE** as instrumental variables for **CSR**.

7. Results

The main results of the panel analysis are exposed in Table 1.

Table 1. Regression Models.

Model	1		2a		2b		3a		3b		4	
	β	z-	β	z-	β	z-	β	z-	β	z-	β	z-
Int. (a)	−1.3 (**)	−2.1	−1.6 (**)	−2.3	−1.4 (**)	−2.4	−0.42	−1.4	−0.04 (*)	−1.8	−0.9 (*)	−1.8
CSR(a)	−0.3 (**)	−2.5	−0.3 (**)	−2.6	−0.3 (***)	−2.7	−0.35 (**)	−2.6	−0.35 (***)	−2.6	−0.32 (**)	−2.2
SIZE(a)	0.03	1.6	0.05 (**)	2.0	0.04 (**)	2.0	0.04 (*)	1.9	0.04 (*)	1.9	0.03	1.4
x_t	47.6 (**)	2.2	54.5 (**)	2.3	49.0 (**)	2.4	15.8	1.5				
x_{t-1}											33.7 (*)	1.9
INTE			327.2	0.44								
STLT			0.0004 (*)	1.8	0.0004 (*)	1.79	0.0004 (*)	1.7	0.0004 (*)	1.7	0.0004 (*)	1.7
D(a)							24.4 (**)	2.0	31.2 (**)	2.3	15.3 (*)	1.7
\bar{R}^2	0.78		0.717		0.72		0.725		0.725		0.858	

MVA dependent variable, where \bar{R}^2 is the adjusted R^2 ; β is the coefficient value; “z-” is the z stat with significance: (*) 90% Significant; (**) 95% significant; (***) 99% significant; (a) all the data are divided by one million.

Following regression 1 we detect that that MVA decreases when CSR increases. To explain this first result we refer to the follow steps. Firstly, model 1 analyse the magnitude of MVA average changes when a firm starts to belong to the CSR group. Secondly, looking at our previous papers [11], we know that a CSR firm has a higher MVA and our expectation is a positive relationship between MVA and CSR behaviour. Thirdly, the interpolation analysis evaluates the average level of MVA and does not

distinguish between the CSR and non-CSR groups, even if the MVA is higher for CSR firms. Finally, MVA decreases over time but the number of CSR firms increases. This causal chain, explains why the sign between the two variables is negative. The coefficient shows how much MVA changes depending on the variation of CSR percentage in the sample: more CSR means that some firms have moved from one group to another one. These companies left the no-CSR group characterized by a low MVA level and gone to the CSR group with high MVA. On the consequence, the average MVA has decreased.

Model 1 find out a second important result that is an increase in MVA with the rise in GDP per capita. This is not surprising because when GDP increases there are more resources for further investment and the result confirm previous literature that highlight a relationship between CSR and GDP.

The variable SIZE is not significant. In addition, it seems to show contradictory evidences also because it is not so obvious that a higher amount of sales implies better market evaluation, especially during negative situations.

The regression model 2a introduces the INTENSITY and STLT variables: the last one is significant. Concerning the signs of CSR and GDPPRO, the explanations is the same given for model 1. Variable INTENSITY is not significant. This result suggest that firms' structure does not affect the CSR index. Indeed, we cannot predict that a firm with low intensity has a lower II. Looking at STLT, a positive sign means that the short and long-term debt ratio tends towards a higher percentage of short-term debt. This result suggest us that investors could prefer to buy shares because they expect an increase in the profitability in the long term.

Looking at model 2b and model 3a, our first comment stresses that MVA is both a premium of a firm's strategies and represent a predictor of the firm's profitability, in the case of perfect asset evaluation. At a first stage, increased GDP per capita means higher consumption and therefore higher sales, but not necessarily higher wealth mean more spending on ethical products.

In order to understand how product differentiation of CSR firms affects II we include in model 3 variable "critical demand". Our results suggests that this variable is closely related to GDP per capita: as we have stressed by referring to economic literature, CSR firms are concentrated in the most developed countries. To confirm that critical demand tends to rise in OECD countries, we introduced a causality test, showing that GDP per capita implies DEMAND. After our digression, model 3 clearly shows non-significant GDP per capita: its effect is caught by DEMAND. R^2 value and the significance of DEMAND seem to support our model, even if the constant is not significant. Starting from this conclusion, we obtain the following model 3b in which the R^2 value and the significance of all coefficients show that the model is our best one. Nevertheless, a high GDP pro capita implies a development of a critical demand and therefore lagged GDP per capita could affect MVA, as shown in model 4 in which SIZE is not significant. Anyway, in all cases SIZE does not show clear and univocal results.

8. Close Examinations

8.1. CSR and Beta

The purpose of this paragraph is to provide an in-depth analysis of business risk. We have tried to understand if there is a link between RSI and risk. To do this, we divided the entire sample (417 companies) into quartiles, using the beta of 2004. The first quartile contains 25% of the observations belonging to the range $[-0.02; 0.68]$, which corresponds to less risky enterprises characterized by a lower beta level than the benchmark case (market level 1) and low volatility. On the contrary, the last quarter includes the most risky enterprises (The Beta index is a market share index that considers speculative risk. It could be assumed as an index of working risk under the assumption of perfect markets.).

The Table 2 shows the number of CSR and non-CSR enterprises belonging to the first and fourth quartile, i.e., the least (Nrisk) and the most risky (Risk), for the years between 1999 and 2004 (It is

worth noting that nothing can be said about the dynamic impact of the certification on risk: indeed we have only the Beta index of the year 2004.).

Table 2. Number of CSR and non-CSR enterprises, belonging to the first and fourth quartile.

CSR	1999	2000	2001	2002	2003	2004	TOT
Nrisk	34	37	46	59	65	71	112
Risk	42	48	62	71	78	82	102
NCSR	1999	2000	2001	2002	2003	2004	TOT
Nrisk	78	75	66	53	47	41	112
Risk	60	54	40	31	24	20	102

The results we now illustrate are related to the static analysis of variables, focusing on the number of companies in different groups (Our implicit assumption is that we keep the intervals fixed.).

The comparison shows that the total number of Nrisk companies is higher than the risky one, while the number of CSR enterprises is higher in the case of Risk (and also has a higher percentage). The emerging outcome is unexpected, in fact there is a high share of risky CSR companies. Indeed, [18,78,110] found that “*risky firms use CSR to reduce their risk*” and therefore, in line with this result, a lower number of CSR firms in the risky group was our expectation. About this:

- (1) A high volatility of the shares may be due to an economic shock and may involve a beta value greater than 1.
- (2) In a perfect market environment, investors can perfectly predict the value and risk of the investment. Given the importance of this index, it is important and correct to evaluate in depth the total distribution of companies compared to the Beta index (Figure 1):
 - (i) we have a higher number of non-risky enterprises, due to a positive (right) asymmetry of distribution;
 - (ii) the average Beta is higher than 1 and this implies that in our sample there are some risky firms certified as CSR (i.e., outlier cases). This beta value is sufficiently high to move the distribution to the right.

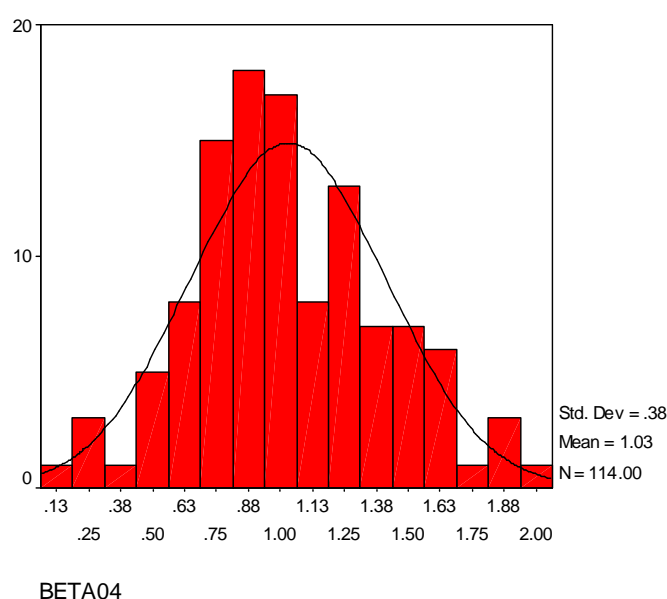


Figure 1. Total distribution of enterprises with respect to the Beta index.

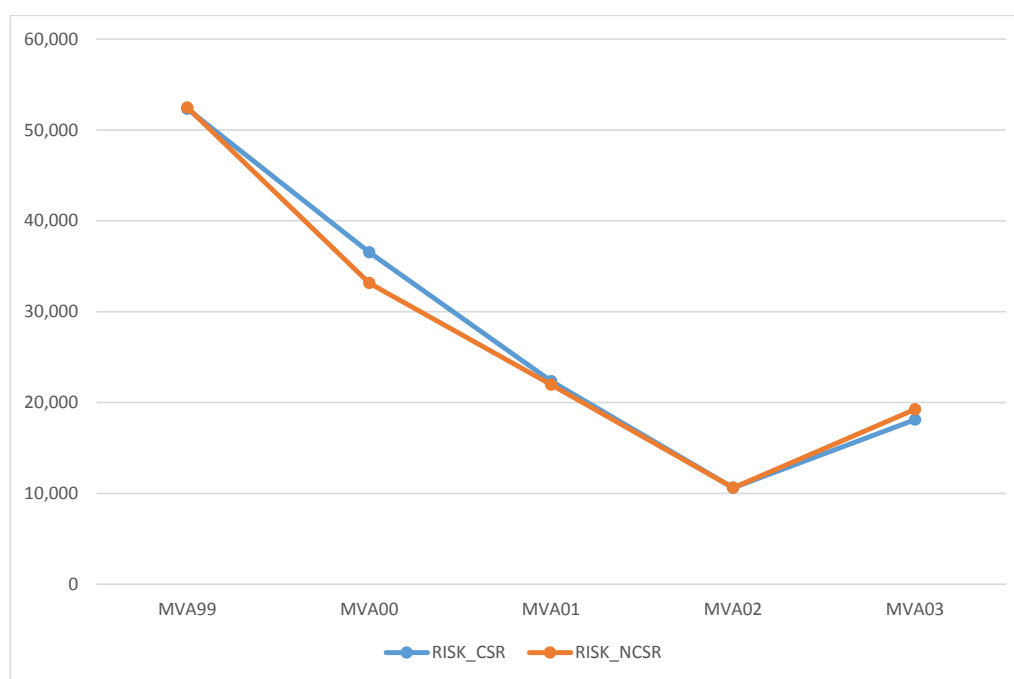
In this context, the strategic choice of management might be to obtain certification in order to reduce the risk (as in [111,112]). In this case, however, the effect should be medium-long, so we should wait to see the results and effects. The fundamental discovery should cover the year considered and the period when virtuous behavior began. Therefore our results are aligned with the economic horizon and underline how the search should focus on investment timing and business heterogeneity in order to understand the relationship between CSR and risk. To conclude, from the fourth quartile it might emerge that risky companies are likely to become more responsible. Therefore, we believe that the effects of responsible social behavior will be verifiable in the medium to long term.

8.2. A Comparison between MVA, Beta and CSR

In Table 3 and Figure 2 we compare the average MVA level among risky and non-risky firms, finding that a firm with highly volatile shares always has a higher profitability, regardless of whether it is CSR or not.

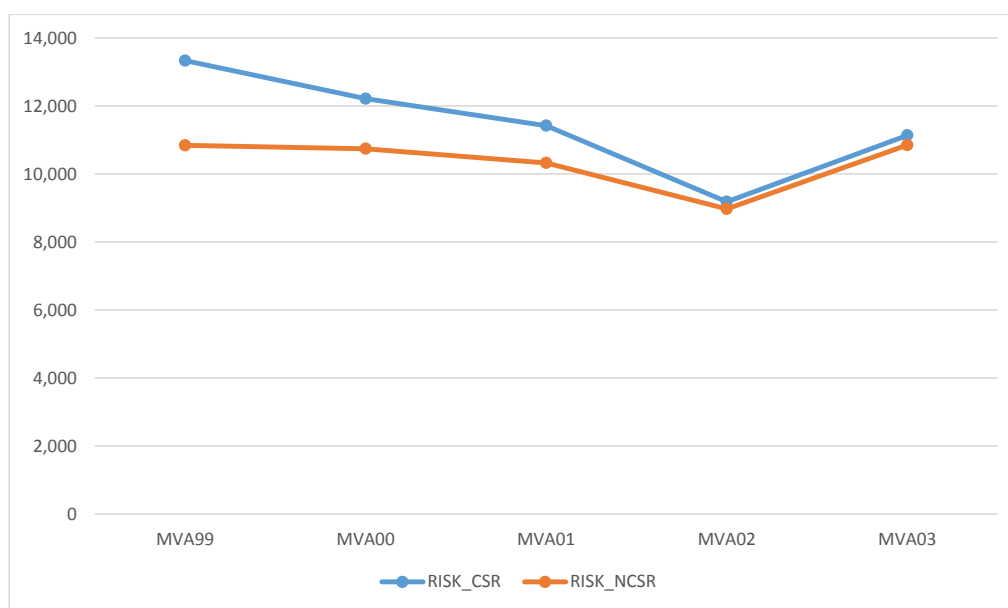
Table 3. MVA comparison level among risky and non-risky firms.

	MVA99	MVA00	MVA01	MVA02	MVA03
RISK_CSR	52,318	36,532	22,343	10,618	18,110
RISK_NCSR	52,460	33,152	21,956	10,624	19,248
NRISK_CSR	13,332	12,214	11,419	9182	11,134
NRISK_NCSR	10,840	10,740	10,323	8972	10,849



(a)

Figure 2. Cont.



(b)

Figure 2. MVA comparison level among risky and non-risky firms. (a) MVA comparison level among risky firms; (b) MVA comparison level among non-risky firms.

We know that MVA is not CSR is lower than MVA_CSR, but from Figure 2 we can see that in the last quartile there are fairly similar values. How can we show that the value of non-CSR MVA is equal to CSR? Looking at the results shown in Table 3, we notice in the distribution center the highest difference in MVA values. Let's try to understand the reason. A first motivation may depend on a short-term effect of the CSR investment. If, as we have noted, adopting virtuous behavior is a management choice to reduce long-term risk, the fourth quartile could include newly certified CSR companies. In this case there are no differences between CSR and CSR companies. The only difference is a formal certification that takes time to act.

Additionally, if the quartile consisted of a normal Gaussian distribution of new and old CSR enterprises (then distribution according to the age of RSI enterprises), then we will have virtuous and non-virtuous effects that could counterbalance each other. In addition, short-term certification costs could reduce the MVA level. At the same time, adopting virtuous behaviors, with the ability to improve performance and reduce risk, could increase MVA (Belonging to the fourth quartile could be due to a specific risk or short adoption timing.).

The two effects combine, and so non-CSR values equal the CSR ones. About the central quartiles, we notice that a higher MVA level for CSR may depend on the age of the firms. In this case a higher MVA and a lower volatility could depend on the investors' premium that has been "metabolized".

Finally, addition of the Beta variable entails a change in stock perception: for non-risky firms, it is better to be CSR while if the firm is risky, it makes no difference.

8.3. Industrial Sectors

A further important element to analyse CSR companies is the role-related industries. In order to obtain CSR certification, a company has to adopt "virtuous" and costly behaviours in the organisational structure of the company, both for ethical and negative environmental externalities and also to reduce detrimental action of ethical principles. Therefore we can assume that it is more easy to certify as CSR companies which by their nature are less involved in potentially harmful activities, such as banks. At the same time, some companies have some problems in this as their activities are by definition

less sustainable than others and must bear higher costs that reduce the company's profitability, e.g., oil companies.

We can therefore compare sectors in our sample, in order to discern the sector impact of CSR. However, it is difficult to see significant peculiarities in the two groups, as the control sample was specifically homogeneous for the industrial sector, in other words there is an implicit difference between the two groups, for sector composition. Therefore, results derive from our descriptive analysis (see [113]).

8.4. Reputation

In economic literature, the concept of reputation seems to be fundamental for the effects of CSR. The basic idea consists in defining reputation as synthesis and a consequence of a strategic business choice ([1,21,50,85,114–117]). Consumers and investors could perceive the choice to become CSR as a sign of possible future performance. Corporate reputation is identified as one of the keys to competitive success and is defined as the firm's image, built over time by the different interest groups ([118–120]). As it is a source of possible long-term competitive advantages, CSR could be one of the firms' resources to reach a better corporate reputation [121]. The empirical papers of [3,44,103,121–125] stand out for having verified the benefits associated with a good reputation. We have also observed that investors do not reward this choice with a higher average MVA. Therefore, we tried to implement this variable into our model given its importance.

We used data from the Reputation Institute, as shown previously. At least theoretically, as we have explained in this paragraph, given that the CSR variable is one of its fundamental elements, we expect a strong relationship between CSR and the Reputation Index. However according to empirical evidence, the reputation index is not significant, highlighting either a combination of internal weights or errors of its empirical model (We must stress that financial performance could be another key variable in building the reputation quotient. Therefore In order to find why it is not significant, in our previous discussion paper [11], we projected data relating to financial data and reputation. We have shown that the Reputation Index is almost completely weighted on financial variables.).

8.5. Social Capital

In order to introduce possible future research focused on critical demand, we introduced a possible proxy of sustainable behaviour: social capital in a country as explanatory variable. This is an index that summarizes other measures, as the number of associations and donations within a community and should provide the altruism level in a given geographic area. The most interesting result is that by entering DEMAND, GDPGRO, SIZE and Social Capital (SC) as regressor delayed by one year, we get a positive and significant coefficient for capital. This seems to indicate that the company expects a development period to see how consumers react against social exclusion. Based on this trend, the company creates a product, which generates demand for critical consumption.

9. Conclusions

Our work has verified whether certain business performance measures are influenced by the company's responsible corporate behavior and certifications. Our paper introduces two major novelties in economic literature. The first is the introduction of a sample that intersects two of three international indices (FTSE4Good Index, World Domain Dow Jones Sustainability Index, Domini 400 Social Index) by building only one CSR. We first showed some simple descriptive statistics then we used econometric approaches with panel data and cross sections. To eliminate endogenous problems we used the method of instrumental variables.

First, we have shown and interpreted the correlation between the collected variables. Another novelty of our work was to focus on the Market Value Added as a measure of business performance. This indicator has been compared with accounting and market-based measures.

The main result is that MVA increases when CSR is reduced. Although this result seems to contradict some previous studies showing higher value of MVA for CSR companies, if we analyse better and more in depth the dynamics, we can observe how over time the number of CSR enterprises has increased, thus reducing the number of non-CSR companies. This migration moves non-CSR companies with low MVA in the CSR group. Therefore, the average value of the MVA of the CSR group is reduced as evidenced by the negative sign of the regression.

Further results from the panel analysis point out that if we use MVA as a business performance measure, the focal point is the evaluation of the enterprises by the investors. An increase in MVA implies that they are “betting” on a certain company.

In this regard, an interesting reflection is about the market structure and whether it is perfect: If it were, or at least from the point of view of CSR, then investors should be able to fully assess the value of a business. This implies that an increase in the value of MVA causes an instant improvement of the company’s performance. If the market is not perfect, then investors will bet on the future of businesses. In this second case, the temporal horizon would move from short to medium to long term.

Later, we looked into more detail in the industrial sectors. In addition, we have verified whether some PCP measures, such as the risk level of a share, corporate reputation, and share capital in the country of reference, are linked to CSR.

Subsequently, we pointed out that no econometric analysis can be performed to find an effect of the industrial sectors, as the control sample was defined ad hoc to maintain the sectoral composition of the control sample and the CSR enterprise group homogeneous. However, it appears from the descriptive analysis that the financial sector (bank, insurance, etc.) is the one with the highest CSR percentage, probably because the costs to be incurred in obtaining certification are rather low compared to other sectors.

With regard to the risk factor, our findings seem to be in line with the literature, and point out how it is necessary to focus on timing and heterogeneity of a company to understand the link between risk and CSR. In fact, we cannot support and clearly demonstrate the idea that the strategic choice of getting social certification can reduce the risk. It would also be necessary to carry out medium and long-term analyzes in order to properly verify the effect of certification on the market.

Finally, an interesting development of the analysis could be to compare MVA with a Tobin study, using a real option approach that would seem to be in line with our own results.

Author Contributions: This article is a joint work of the four authors. Cristian Carini contributed to the accounting literature and the theoretical part and to write the paper. Sergio Vergalli participated in the analysis of the results and the theoretical and statistical foundations and contributed to write the paper. Laura Poddi was involved in the conception and design of the paper, the theoretical foundations, data collection and statistical analysis and contributed to write the paper. Nicola Comincioli helped to draft and review the manuscript. All authors participated in the literature review and gave thought to the conclusions.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

In Table A1 the correlations (It has been computed on 2001 data, which is the most representative year. For other correlations, see [12]) between all variables considered are shown.

Table A1. Correlations (First of all, the correlation coefficient (r of Pearson) is low in all cases. Therefore, even if it exists, it is weak. This means that it does not totally explain our phenomenon and therefore we need a more formal model in regression. This could solve the multi-collinearity problem among variables in the model we will look at.)

Corr.	CSR	MVA	ROE	Size	Age	Inta	Inte	STLT	GDP
CSR	1								
MVA	0.169 (***)	1							
ROE	0.002	0.0712	1						
Size	0.137 (***)	0.4034 (***)	−0.058	1					
Age	0.033	0.0692	0.007	0.0473	1				
Inta	0.119 (**)	0.0028	−0.071	0.2522 (***)	0.169 (***)	1			
Inte	−0.019	−0.0718	0.234 (***)	−0.097 (*)	−0.066	−0.086 (*)	1		
STLT	0.032	0.0593	−0.006	−0.034	−0.049	−0.043	0.017	1	
GDP	0.040	0.0734	−0.011	0.039	−0.121	−0.029	0.013	−0.011	1

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Market value added and traditional accounting criteria: Which measure is a best predictor of stock return in Malaysian companies

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Abstract

This study tests the hypothesis that market value added (MVA) is more highly associated with stock return (SR) than traditional performance measures. The purpose of this study is to provide empirical evidence on the relative and incremental information content of MVA and traditional performance measures, namely, net income (NI), net operational profit after tax (NOPAT), and earning per shares (EPS). The sample involved 395 non-financial companies listed in the main market of Bursa Malaysia over the period 2002–2011. To analyze the hypotheses panel data regression methods were employed. The results indicated that accounting measures (NI, NOPAT and EPS) have higher relative information content with stock return compared to MVA. Thus, the results do not support the hypothesis that MVA is superior to traditional accounting measures in association with stock return. Moreover, the findings showed that MVA has incremental information content with stock return compared to accounting measures. Consequently, MVA is a useful measure in describing the firm's stock return in Bursa Malaysia. Therefore, Malaysian companies can use MVA with traditional measures (NI, NOPAT, and EPS) in evaluating companies' performance.

Keywords

Earning per shares, Market value added, Net income, Relative and incremental information content, Stock return.

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Introduction

Maximization of shareholder value is the main purpose of each company. In this regard, evaluating companies' performance is vital in ensuring and achieving optimal allocation of limited resources. Large numbers of accounting performance measures have been developed. These criteria are often criticized for two reasons namely, not including the companies' capital cost and they are based on accounting information, which could be distorted by Generally Accepted Accounting Principle (GAAP). For this reason, the value based measures are presented to resolve the limitation of accounting measures (Nakhaei *et al.*, 2013). According to, Erasmus (2008b, p.66), "Value-based (VB) financial performance measures are often advanced as improvements over measures facilitates the evaluation of value creation. Furthermore, they attempt to remove some accounting distortions resulting from the limitations of conventional accounting information."

Incremental comparisons ask whether one accounting measure provides information content beyond that provided by another, and apply when one measure is viewed as given and an assessment is desired regarding the incremental contribution of another (e.g., a supplemental disclosure). Relative comparisons ask which measure has greater information content, and apply when making mutually exclusive choices among alternatives, or when rankings by information content are desired (e.g., when comparing alternative disclosures). Questions of both incremental and relative information content arise frequently in accounting. However, few previous studies have examined questions of relative information content. Possible explanations include unfamiliarity with the relative versus incremental distinction, and the additional statistical complexity involved in testing for relative information content (Biddle *et al.*, 1995).

MVA is an option to approximate the stockholder value creation. MVA is a contrast between market value of company and capital supplied by the investors over a period of time. MVA is connected to EVA because it is the present value of future EVA value (Baum *et al.*,

2004). Hence, EVA is a measure of performance in a given year, while MVA is the increasing calculate of future years (Kramer & Peters, 2001). Moreover, EVA is an internal performance measure and MVA is an external performance measure (Rahnamay-Roodposhti *et al.*, 2006).

Internationally, there are many studies directed to recognize the relationship between accounting and value based financial performance measures with stock return, but most of these studies have been managed in developed countries and very little research has been conducted on EVA in Asian countries specially in Malaysia (Sharma & Kumar, 2010). In addition, more research is needed on performance measures tools, especially on value based criteria (Al Mamun & Abu Mansor, 2012; Ismail, 2006).

Subsequently, there have been very little research conducted on MVA in Asian countries, including Malaysia (Al Mamun & Abu Mansor, 2012; Sharma & Kumar, 2010). The study aimed to examine the relative and incremental information content between MVA as proxy of value based measures and accounting measures (NI, NOPAT, & EPS) with stock return on non-financial firms listed in Bursa Malaysia over the period 2002 to 2011. In other words, this study seeks to investigate whether MVA is a superior measure in prediction of stock return compared to NI, NOPAT and EPS.

The remainder of the paper is organized as follows; literature review, hypothesis, research variables, methodology, empirical findings, conclusion, limitations, and recommendations for future research.

Literature review

Finding a superior measure to evaluate a company's performance is one of the important subjects of recent financial researches. MVA is an option to approximate the stockholder value creation. MVA is a contrast between market value of company and capital supplied by the investors over a period of time. MVA is connected to economic value added (EVA) because it is the present value of future EVA value (Baum *et al.*, 2004). Moreover, EVA is a measure of performance in a

given year, while MVA is a market generated number that we calculate by subtracting the capital invested in a firm from sum of the total market value of the firm's equity and the book value of its debt (Kramer & Peters 2001).

MVA is explained as the difference between the firm's market value (including equity and debt) and the total capital invested in the company (Young & O'Byrne, 2001). It is an external performance measure, which is considered to be the best index of creation shareholder value. MVA has presented a new shareholder value measure by Stewart (1991) which describes the value market adds over the book value of invested capital (Khan *et al.*, 2012). Karpik and Belkaoui (1990) used market model and found that value added variables process incremental information content beyond accrual earnings and cash flows in the context of explaining market risk. Likewise, Peixoto (2002) examined the relative information content of EVA against operational profit (OP) and net profit (NP). The results illustrated that net profit (NP) have provided more explanatory power beyond operational profit (OP) and EVA in relevant of total stock return (dependent variable).

De Wet (2005) investigated the relationship between EVA and traditional accounting measures (OCF, ROA, EPS, and DPS) with MVA. The study rooted on the data of firms listed on the JSE South Africa from 1994-2004. The findings discovered that year-on-year basis; EVA did not reveal the strongest association with MVA. The results also demonstrated the strongest association between MVA and operational cash flow (OCF). Furthermore, the study also found very little relationship between EPS and DPS with MVA.

Furthermore, Wong (2005) examined the impact of EVA and traditional performance measures (ROA, ROE, and EPS) on stock returns in the public companies listed in the main market of Bursa Malaysia for the year 1990-2000. The findings revealed that ROA, ROE, and EPS have significant influence on stock returns. Nonetheless, EVA was found to be the worst performer in predicting stock returns. Beside, Yaghoob-nejad and Akaf (2007) studied the relationship between EVA, residual income (RI), return on sales

(ROS), return on investment (ROI), and MVA on companies listed in Tehran stock exchange (TSE). Their results revealed there is meaningful relationship between EVA, RI, ROS, and ROI with MVA. Ismail (2011) also used EVA as a predictor for predicting company performance after 1997 economic crisis. His results showed that EVA had a better relationship with stock return than traditional tools (EPS, DPS, and NOPAT) for the period of 1997-2002, for the main board company listed in Bursa Malaysia.

Talebnia and Shoja (2011) investigated the relation between market Value Added (MVA) to earnings ratio and economic value added (EVA) To earnings ratio in companies listed on Tehran Stock Exchange over the period 2003 to 2007. The findings exhibited that there is a weak positive relationship between MVA to earnings ratio and EVA to earnings ratio. Thus, EVA to earnings ratio as an internal performance measure cannot predict the market value of firms.

Ramana (2005) used regression analysis to examine the correlation between EVA and MVA in Indian companies, and compared it with common measures of accounting (net operational earnings after tax, earnings before interest and tax, etc.). The results of the study suggest EVA does not outperform common accounting criteria. Likewise, Ghanbari and More (2007) empirically tested the relationship between EVA and MVA in Indian automobile industry over the period 2001-2005. Their findings indicated that there are strong evidences to support Stern-Stewart's claim that EVA is greater to the traditional performance appraising, and it is the best internal evolution of firm success in adding value to shareholders' investments.

Accordingly, Yahaya and Mahmood (2011) measured the property firms' performance under EVA criterion. Their sample involved 27 Malaysian property firms over the period of 1997-2006. Their results revealed that most Malaysian property firms failed to generate enough revenue for covering their capital cost. Therefore, these companies are failure in creating company wealth. Pourali and Roze (2013) also studied the relationship between EVA, REVA, and accounting criteria with MVA in firms listed in TSE over the period 2006-2010. The findings showed there is positive and significant relationship between

MVA as dependent variable and all independent variables (EVA, REVA, ROA, ROE, and EPS).

Additionally, Nakhaei *et al.* (2014) examined the relationship between EVA, return on assets (ROA), return on equity (ROE), net income (NI), and earning per share (EPS) with share market value (MV). The sample involves 87 non-financial companies listed in Tehran Stock Exchange (TSE) over the period 2004–2008. The results indicated there are meaningful relationship between EVA, ROE, NI, and EPS with MV, but there is not meaningful association between ROA and MV.

Research hypotheses

Evaluation of companies is always a main concern participators in capital markets, especially those interested in how the financial performance related to stock returns (Huang & Wang, 2008). This research was carried out to study the relative and incremental information content between MVA and accounting performance measures (NI, NOPAT and EPS) with stock return in Bursa Malaysia.

Creating highest capital wealth (owner and lenders) and increasing the firm value is the important goal of financial management. The question appears is, which criteria appraise value of companies correctly. In response to this question, it can be supposed different accounting measures such as EPS, NI, NOPAT and dividend per share (DPS) have been applied to evaluate the company performance. Likewise, proponents of the value based financial performance measures demonstrate these criteria as a main development over the accounting measures and statement high levels of association among these criteria and stock returns. The numbers of studies including inconsistent results have been printed. Based on these conflicting results, it is not clear whether the value based financial performance measures are able to outperform accounting performance measures in explanation stock returns. Furthermore, it is not clear which measure (or measures) has highest (or higher) relative information content with stock return. For this reason, the main goal of this study is to investigate the relative and incremental information content of MVA

with stock return compared to NI, NOPAT and EPS. Accordingly, the related hypotheses are as follow:

H1: MVA has higher relative information content with stock return compared to accounting measures.

H2: MVA has higher incremental information content with stock return compared to accounting measures.

Research variables

Market value added (MVA), net income (NI), net operational profit after tax (NOPAT), and earnings per share (EPS) are independent variables and stock return (SR) is dependent variable.

This study deflates all numeric independent variables (MVA, NI and NOPAT) by the market value of equity (MVE_{t-1}) at the beginning of the firm's financial year. For reducing the heteroscedasticity and improving the data normality (Biddle *et al.*, 1997; Chen & Dodd, 2001; Erasmus, 2008a; Jabbarzadeh-Kangarlouei *et al.*, 2012; Nakhaei *et al.*, 2014; Parvaei & Farhadi, 2013). Furthermore, this study does not deflate EPS and SR since they are already divided by the total common stock and sale per share at the beginning of the firm's financial year (P_0), respectively. By dividing the values of the measures by the market value of the equity, the independent variables are adjusted for the size of the firms.

Market value added (MVA)

MVA is difference between the company's market value and book value of shares. According to Stern Stewart, if the total market value of a company is more than the amount of capital invested in it, the company has managed to create shareholder value. If the market value is less than the capital invested, the company has destroyed shareholder value (Khan *et al.*, 2012).

$$MVA = MV - IC \quad (1)$$

$$SMVA = MVA / MVE_{t-1} \quad (2)$$

where MVA is market value added, MV is company's total market value, IC is invested capital, SMVA is standard market value added,

and MVE_{t-1} is market value of equity (MVE_{t-1}) at the beginning of the firm's financial year.

If \longrightarrow $MVA > 0$ \longrightarrow Wealth is created
 If \longrightarrow $MVA < 0$ \longrightarrow Wealth is destroyed

MVA is a cumulative measure of the value created by management in excess of the capital invested by shareholders. Although the calculation of MVA uses the book value of capital, which is subject to inflationary distortions, it provides an excellent measure of a company's ability to create wealth (Kramer & Peters 2001). Stern *et al.* (1995) saying, "... there is one measure, Market Value Added (MVA), that captures all the dynamics of corporate performance."

Net income (NI) or Net profit (NP)

Net income (NI) is calculated by subtracting the total expenses of company from total revenues. It shows what the firm has earned (or lost) in a given period of time (usually one year). Furthermore, it is called net profit (NP) or net income (NI). In other words, net income represents the amount of money remaining after all operating expenses, interest, taxes and preferred stock dividends (but not common stock dividends) have been deducted from a company's total revenue (Nakhaei *et al.*, 2012).

$$SNI = NI / MVE_{t-1} \quad (3)$$

where SNI is standard NI; MVE_{t-1} is market value of equity at the beginning of the period t.

Net operational profit after tax (NOPAT)

Brigham and Ehrhardt, (2005) stated net profit is definitely important, but it does not reveal the true firm operating performance or the operating managers effectiveness. A better criterion to evaluate performance is NOPAT. It is the profit amount a firm would make if it did not have debt and did not hold financial assets. Earnings before interest and taxes (EBIT) or operating profit equals sales revenue minus cost of goods sold and all expenses except for interest and taxes. This is the surplus generated by operations. It is also known as operating profit before interest and taxes (OPBIT) or simply profit

before interest and taxes (PBIT). NOPAT is after tax profit of company for all investors, involving stockholders and creditors. It is defined as follows (Brigham & Ehrhardt, 2005):

$$\text{NOPAT} = \text{operating profit} \times (1 - \text{tax rate}) \quad (4)$$

$$\begin{aligned} \text{NOPAT} &= \text{Net Profit after Tax} + \text{after tax Interest Expense} \\ &\quad - \text{after tax Interest Income} \end{aligned} \quad (5)$$

$$\text{SNOPAT} = \text{NOPAT} / \text{MVE}_{t-1} \quad (6)$$

where SNOPAT is standard NOPAT; MVE_{t-1} is market value of equity at the beginning of the period t .

Earnings per share (EPS)

EPS is the portion of a company's profit allocated to each outstanding share of common stock. It is usually considered to be the single most significant variable in determining a stock's price. Furthermore, it is a main component used to calculate the price-earnings ratio (P/E ratio). According to Irala (2005), measuring the performance of firm's per share is EPS. It equal, the net profit divided by the number of outstanding stocks. In compared to profit, EPS is a relative criterion because it considers the capital size. It does not consider the capital cost same profit (Irala, 2005). EPS can calculate by the following equation:

$$\begin{aligned} \text{EPS} &= (\text{Net profit} - \text{Dividends on preferred stock}) / \\ &\quad (\text{Average outstanding shares}) \end{aligned} \quad (7)$$

Stock returns (SR)

In this study, stock return (SR) is a dependent variable. Stock return is the total earning derived from investment in a given period divided by investments made in the period (Nakhaei *et al.*, 2013). According to Davvani (2004), stock return is the change in the value of the shares in the end of given period, compared to begging of the same period, which this change in value is due to the changes in the price plus any dividends paid. For calculating of stock return, we can use the following equation:

$$\text{SR} = \frac{(D_t + P_t - P_{t-1})}{P_{t-1}}$$

where,

D_t = dividend per share at the end of period t .

P_t = stock price at the end of period t .

P_{t-1} = stock price at the beginning of the period t , (or initial share price).

Relative and incremental information content

The information content test is managed in two types: incremental information content (IIC) and relative information content (RIC). Incremental information content comparisons assess whether one accounting measure (or set of measures) provides information content beyond that provided by another. On other words, Incremental comparisons apply when one or more accounting measures are viewed as given and an assessment is desired regarding the incremental contribution of another, for examples IIC of cash flows beyond earnings and IIC of supplemental financial disclosures. Furthermore, Relative information content comparisons ask a subtly different question, which is whether one measure provides greater information content than another (Biddle *et al.*, 1995).

Methodology

The sample data of this study was restricted to non-financial companies listed in Bursa Malaysia with available annual trading data over the period 2002-2011. The financial companies such as holdings and investments are excluded from the sample data in order to have consistent interpretation on certain company characteristics such as earnings and size. Furthermore, this financial sector in Malaysia is governed by specific rules and regulations known on the Banking and Financial Institutions Act 1989 (BAFIA). The final sample size became 3950 firm-year observations (involving 395 companies and 10 years period) after accounting for the missing data items and calculating variables.

In this study, panel regression method is used for testing the hypotheses by using E-Views 7 software. Baltagi (2008) claimed that panel data has some benefits such as giving a richer source of

variation which allows for more efficient estimation of the parameters. With additional informative data, one can get more reliable estimates and test more sophisticated behavioral models with less restrictive assumptions. In addition, another advantage is their ability to control for individual heterogeneity, whereby, No controlling for these unobserved individual specific effects leads to bias in the resulting estimates. Panel data sets are also better able to identify and estimate effects that are simply not detectable in pure cross-sections or pure time-series data. In particular, panel data sets are better able to study complex issues of dynamic behavior (Baltagi, 2008, p.305). Furthermore, for choosing the best model (fixed effect or random effect model), Hausman test is employed. According to the results, fixed effect model is more appropriate for all regression models in this study.

This study employed one variable regression for each measure to determine which measure has greatest relative information content (RIC). Then, the results are compared for R-square (R^2). Whichever that has greater R-Square (R^2), has also greater relative information content too. Many investigators applied this approach in their research, e.g. (Asadi *et al.*, 2013; Biddle *et al.*, 1997; Darabi & Esfandiyari, 2009; De Wet, 2012; Holiana & Reza, 2011; Ismail, 2011; Noravesh & Mashayekhi, 2004; Noravesh *et al.*, 2004; Parvaei & Farhadi, 2013).

For determining which measure or measures have the highest incremental information content (IIC), this study compared two multiple regression models together. Then, R-square of multiple regression No.2 is deducted from R-square of multiple regression No.1 ($R^2_2 - R^2_1$); whereby, the difference indicates the incremental information content. Moreover, for comparing the two R-Squares the Z Wong test is used. Asadi, *et al.* (2013), Worthington and West, (2004), Parvaei and Farhadi, (2013), Noravesh and Mashayekhi (2004), and Arabmazar-yazdi, (1995) applied this approach in their researches.

Empirical Findings

Descriptive statistics

In Table 1 provided the descriptive statistics for these variables. It is observed that EPS has the largest mean and MVA has the lowest mean. Moreover, this table shows MVA has the largest and NI has the lowest standard deviation. Furthermore, the pair-wise correlations between any two variables (dependent or independent) are presented in this table. Looking at the correlations among these measures, generally all independent variables are positively significant correlated with one another, except there is negative correlation between MVA with NI and NOPAT. There is not significant correlation between MVA and stock return. It is interesting to note that value based measure (MVA) under-performed standard accounting profit measures (NI, NOPAT, and EPS), which refutes of MVA proponents that it is highly associated with stock return (Biddle *et al.*, 1997).

Table 1. Descriptive Statistics and correlation

Descriptive Statistics					
	DV	Independent Variables			
	SR	NI	NOPAT	EPS	MVA
Mean	0.137855	0.103652	0.134151	0.155209	-0.040482
Median	0.122660	0.078764	0.105751	0.121955	-0.024727
Maximum	1.337840	0.680244	1.069134	1.082270	2.011375
Minimum	-0.936830	-0.301599	-0.835374	-0.717450	-2.835573
Std. Dev.	0.287917	0.126080	0.187518	0.204168	0.615488
Skewness	0.364930	1.110544	0.376457	0.624041	-0.323074
Kurtosis	4.915227	5.733441	7.826219	6.113049	2.938914
Correlations					
	DV	Independent Variables			
	SR	NI	NOPAT	EPS	MVA
SR	1.000000				
NI	0.383867***	1.000000			
NOPAT	0.380785***	0.899385***	1.000000		
EPS	0.185117***	0.470596***	0.464990***	1.000000	
MVA	0.003815	-0.339658***	-0.307620***	0.046656***	1.000000

N= 3950 (number of observation); DV=Dependent variable;

SR= stock return; NI= Standard net income; NOPAT= standard net operational profit after tax;

EPS= earnings per shares; MVA= standard market value added. *** Correlation is significant at

0.01 Level; ** Correlation is significant at 0.05 Level; * Correlation is significant at 0.10 levels.

Relative information content test

The results of Hausman test is indicated in Table 2. These findings showed the fixed effect model is appropriate for all regression models, except regression model No. 4, since the P-value of Chi-Sq. is less than 5%. Considering, some researchers have used fixed effect model for all regression models (Asadi *et al.*, 2013; Ismail, 2011; Parvaei and Farhadi, 2013). Based on Table 3 and Table 5, the value of Durbin-Watson test for all regression models is between 1.5 and 2.5. This result presented that there is no auto-correlation problems in these single and multiple regression models (Narimani, 2011).

Table 2. Redundant and Hausman test

N	Regression Model	Redundant test; Statistic and (P-Value)	Hausman test; Statistic and (P-Value)	Suitable Model
1	$SR_{it} = b_0 + b_1 MVA_{it} / MVE_{i,t-1} + \varepsilon_{it}$	862.058841 (0.0000)***	206.000687 (0.0000)***	Fixed effect
2	$SR_{it} = b_0 + b_1 NI_{it} / MVE_{i,t-1} + \varepsilon_{it}$	428.826154 (0.0495)**	9.165270 0.0025***	Fixed effect
3	$SR_{it} = b_0 + b_1 NOPAT_{it} / MVE_{i,t-1} + \varepsilon_{it}$	509.968729 (0.0027)***	9.084344 (0.0088)***	Fixed effect
4	$SR_{it} = b_0 + b_1 EPS_{it} + \varepsilon_{it}$	615.943027 (0.0000)***	0.846671 (0.3575)	Random effect
5	$SR_{it} = b_0 + b_1 NI_{it} / MVE_{i,t-1} + b_2 NOPAT_{it} / MVE_{i,t-1} + b_3 EPS_{it} + \varepsilon_{it}$	423.229384 (0.1491)	13.332636 (0.0040)***	Fixed effect
6	$SR_{it} = b_0 + b_1 NI_{it} / MVE_{i,t-1} + b_2 NOPAT_{it} / MVE_{i,t-1} + b_3 EPS_{it} + b_4 MVA_{it} / MVE_{i,t-1} + \varepsilon_{it}$	574.708727 (0.0000)***	144.732463 (0.0000)***	Fixed effect

Table 3: Cross-section fixed effect panel single regression results on RIC of MVA and accounting measures with SR (H1)

Variable	Coefficient	T statistic (P-value)	R-square (R ²)	Adj. R-square	F statistic (P-value)	Durbin-Watson (DW)
Model 1; $SR_{it} = b_0 + b_1MVA_{it} / MVE_{t-1} + \varepsilon_{it}$						
C	0.146549	33.48997 (0.0000)***	0.196081	0.106732	2.194546 (0.0000)***	2.165616
MVA	0.214756	13.71107 (0.0000)***				
Model 2; $SR_{it} = b_0 + b_1NI_{it} / MVE_{t-1} + \varepsilon_{it}$						
C	0.034870	5.150231 (0.0000)***	0.235072	0.150056	2.765038 (0.0000)***	2.211698
NI	0.993566	19.46110 (0.0000)***				
Model 3; $SR_{it} = b_0 + b_1NOPAT_{it} / MVE_{t-1} + \varepsilon_{it}$						
C	0.054724	8.905422 (0.0000)***	0.229287	0.143629	2.676751 (0.0000)***	2.215263
NOPAT	0.619680	18.68732 (0.0000)***				
Model 4; $SR_{it} = b_0 + b_1EPS_{it} + \varepsilon_{it}$						
C	0.093883	14.55964 (0.0000)***	0.173706	0.081869	1.891470 (0.0000)***	2.238063
EPS	0.283306	9.309200 (0.0000)***				

Based on Table 3, the single panel regression with the common coefficients analysis for the period of 2002 to 2011 (period of 10 years), shows that for all independent variables F-statistics (P-value) are strongly significant at 1% level. The table also illustrated the T-statistic (P-value) of NI, NOPAT, EPS and MVA, are 19.46110 (0.0000), 18.68732 (0.0000), 18.68732 (0.0000), 9.309200 (0.0000), 13.71107 (0.0000), respectively. These results showed that coefficient of these independent variables are significant at the 1% level. It is also noted that there are positive coefficients of MVA (0.2148), NI (0.9936), NOPAT (0.6197), and EPS (0.2833) with stock return. Therefore, it can be concluded that there is a high positive significant relationship between MVA and accounting measures (NI, NOPAT, and EPS) with stock return.

Furthermore, Table 3 exhibited that NI had a strongest relationship with stock return and highest R² of 23.51% when compared to NOPAT, MVA, and EPS, R² of 22.93%, 19.61%, and 17.37%,

respectively. The findings of single regression models exhibited NI and NOPAT have higher RIC with SR compared to MVA. Meanwhile, EPS has not higher RIC with SR compared to MVA. In other words, the results do not support the MVA proponent's idea that MVA is superior to accounting measures. Consequently, the first hypothesis is rejected.

Incremental information content test

Tables 4 shows, variance inflation factor (VIF) value is less than 10 and tolerance value is more than 0.10. Therefore, there is no evidence of multi collinearity problem in these regression models. Furthermore, based on Table 5, the value of Durbin-Watson is between 1.5 and 2.5 for both models. This result presented that there is no auto-correlation problems in these multiple regression models.

Table 4. VIF and tolerance related to model 5 and 6

Variables	Model 5		Model 6	
	Tolerance	VIF	Tolerance	VIF
NI	0.188	5.330	0.181	5.527
NOPAT	0.189	5.295	0.189	5.301
EPS	0.769	1.300	0.721	1.387
MVA			0.829	1.206

Based on Table 5, the multiple panel regression with the common coefficients analysis for the period of 2002 to 2011 (period of 10 years), showed that for all independent variables jointly, F- statistics (P-Value) is significant at 1% level. It exhibited that there are positive significant relationship between all independent variables jointly (MVA, NI, and NOPAT) with stock return except EPS that has negative association with stock return. Moreover, this table indicates there is a high significant relationship between all accounting measures jointly ($F = 2.824445$, $P\text{-value} < 0.000$) and all accounting measures and MVA ($F = 3.603297$, $P\text{-value} < 0.000$) with stock return. Furthermore, Table 5 illustrates the R-square (R^2) for accounting measures jointly and all accounting and MVA jointly are 0.239938 and 0.287679, respectively. The R^2 of 0.239938 and R^2 of 0.287679; indicates that the variables in the model 5 and in the model 6 explain only 23.99% and 28.68% of the variation in SR, respectively.

Additionally, it revealed after adding MVA in the model, the R-square has increased 4.77%; ($0.287679 - 0.239938 = 0.047741$).

Furthermore, the results of Z Wong test are shown in Table 6. It revealed that in 95% confidence level, MVA has incremental information content. In conclusion, MVA has incremental information content with stock return compared to accounting measures jointly. Therefore, it can reasonably be concluded that second hypothesis (H2) is failed to reject.

Table 5. Cross-section fixed effect panel multiple regression results on IIC of MVA with SR compared to accounting measures (H2)

Variable	Coefficient	T statistic (P-value)	R-square (R ²)	Adj. R-square	F statistic (P-value)	Durbin- Watson (DW)
Model 5; $SR_{it} = b_0 + b_1NI_{it} / MVE_{i,t-1} + b_2NOPAT_{it} / MVE_{i,t-1} + b_3EPS_{it} + \varepsilon_{it}$						
C	0.036504	5.155137 (0.0000)***	0.239938	0.154988	2.824445 (0.0000)***	2.207498
NI	0.658395	7.019832 (0.0000)***				
NOPAT	0.283085	4.756144 (0.0000)***				
EPS	-0.031368	-0.915936 (0.3598)				
Model 6; $SR_{it} = b_0 + b_1NI_{it} / MVE_{i,t-1} + b_2NOPAT_{it} / MVE_{i,t-1} + b_3EPS_{it} + b_4MVA_{it} / MVE_{i,t-1} + \varepsilon_{it}$						
C	0.047379	6.874348 (0.0000)***	0.287679	0.207841	3.603297 (0.0000)***	2.135974
NI	0.700200	7.707153 (0.0000)***				
NOPAT	0.309821	5.373769 (0.0000)***				
EPS	-0.092660	-2.774585 (0.0056)***				
MVA	0.229292	15.42702 (0.0000)***				

Table 6. Z wong test

Model	R-Square (R ²)	Z Wong (P-Value)
5	0.2399	2.728
6	0.2877	0.0146

Conclusion

The study aimed to investigate the relative and incremental information content of MVA with stock return compared to

accounting measures, namely NI, NOPAT, and EPS in non-financial companies listed in the main market of Bursa Malaysia from 2002 to 2011. The RIC test showed that there is positive significant association between MVA, NI, NOPAT and EPS with stock return. Moreover, the findings revealed accounting measures have higher RIC with stock return compared to MVA as proxy of value based measures. Therefore, these results do not support the MVA proponent's idea that MVA is superior to accounting measures. The results of IIC test illustrate that MVA has higher IIC with stock return compared to accounting measures. Moreover, the findings acquired in this study consistent with the findings of researchers such as Uyemura *et al.* (1996), and Shahriari (2002), who conducted that MVA has greater incremental information content with stock return compared to accounting measures. In contrast, the results are inconsistent with the findings of researchers such as Moeinadin *et al.* (2011), Hajiabbasi *et al.* (2012), El Mir and Seboui (2008).

Additionally, the findings showed MVA as proxy of value based measures can be an effective measure in describing the firm's stock return in Bursa Malaysia. Malaysian companies can use MVA with traditional measures (NI, NOPAT, and EPS) in evaluating companies' performance. This measure can help managers/ owners to consider all the cost of capital (debt and equity) and capital returns for improving the company's performance and increasing the wealth of shareholders. Therefore, it is recommended that management of Bursa Malaysia requests and requires all listed companies to prepare the MVA along with accounting measures in an attempt to provide investors or potential investors with more accurate information on the firms' stock return.

Limitations of the Study

Similar to any research, researcher was faced with several limitations in doing this research. first, in line with the study objectives, the sample of this study belong to non-financial public companies listed in main market of Bursa Malaysia, while financial institutions were not included in the sampling frame of this study due to the differences in

cash flow and accrual patterns (Edvinsson & Malone, 1997; Goh, 2005; Kamath, 2007).

Second, the lack of data on some variables identified in the research, noted that it was prevented from entering these variables into the model.

Third, this research has focused on the analysis of Malaysian companies' performance determinants and patterns, and has not sought to explain comparative differences between this data and that collected and analyses in different national and institutional contexts, even though we know there are significant differences between Malaysian and Western companies in their performance.

Recommendations for Future Research

Based on the results obtained in this study, the following recommendations are offered for future research:

- This study was undertaken in general and non-separation of various industries. Therefore, it is recommended that future research should be done to differentiate the industry and different years.
- In this study, among various value based measures, just MVA measure has been used. Thus, it is recommended that in future research should be used from other value based measures such as; EVA, refined economic value added (REVA), cash value added (CVA), Tobin's Q, free cash flow (FCF), cash flow return on investment (CFROI).
- In this study was used from accrual accounting and value based metrics. Since accrual accounting is the accounting basis of the companies listed in Bursa Malaysia. So, it is recommended that future research should use the accrual accounting and value based metrics and cash accounting and value based metrics and compare the results.

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IMPACT OF FINANCIAL LEVERAGE ON MARKET VALUE ADDED: EMPIRICAL EVIDENCE FROM INDIA

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Abstracts

The paper aims at analyzing the impact of financial leverage on market value added in the context of companies listed on Bombay Stock Exchange and provide empirical evidence. The study covers 197 companies classified as A group companies listed on the Bombay Stock Exchange. The study period ranges from 2010 to 2014. Univariate linear regression and multiple regression analysis are used to test the relationship between measures of financial leverage and market value added. The results show that interest cover is the most significant predictor of market value added by companies listed on Bombay Stock Exchange. Univariately, debt equity ratio and debt ratios are found to be statistically significant in explaining variation in market value added of the sample companies. But when taken together, they are not significantly related to market value added of sample companies. The research was restricted to only those companies which are classified as A group companies on Bombay Stock Exchange. The study relied on Market Value Added as a measure of value creation. Other measures like, Economic Value Added, Created Shareholder Value, Total Shareholder Return could also be used to gauge the impact of financial leverage on the shareholder value creation. The study identifies interest cover as the most significant predictor of change in Market Value Added. Financial managers will thus be motivated to maintain higher interest cover to ensure higher value creation for their shareholders.

Research paper

Keywords: Leverage, Normal debt equity ratio, Normal debt ratio, Normal interest cover, Normal market value added

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Introduction

Financial leverage refers to the sensitivity of company's earnings per share to changes in its operating income as a result of change in its capital structure. Alternatively, it is also referred as the extent of debt financing used by the company to increase its earnings per share. Financial leverage thus, measures the degree of financial risk the company is exposed to given its usage of debt funds. Modigliani and Miller (1958) presented the idea that, in the existence of perfect capital markets and in the absence of taxes, the value of a levered firm is same as that of an unlevered firm if both firms are identical in nature in terms of similar investment opportunities they offer. They argued that the investment policy of the firm is mainly influenced by the factors that contribute to firm's profitability, cash flow or value. Hence financial leverage does not affect the investment decisions of the firm. Ross (1977) claimed that issue of debt signals as increase in value implying managers inform market that they are ready to pay out cash to their creditors.

Jensen (1986) in his free cash flow hypothesis propounded that debt decreases the amount of cash available to managers, hence reducing their possibilities for wasting corporate resources. Equity on the other hand, does not offer this benefit because shareholders' claims on profits of the company are residual, not obligatory. It thus gives enough freedom to managers to delay the payment of dividends for next year or longer while they have to pay interest and principal on time. In this manner, leverage serves as a commitment and incentive mechanism. Eventually, issuing debt instead of equity lowers agency costs and therefore increases firm value.

McConnell and Servaes (1995) examined the relationship between, value, leverage and direct managerial ownership for US firms. They provided the evidence that firm leverage was positively correlated with the firm value when a firm's growth opportunities are scarce. Lang, Ofek and Stulz (1995) found a negative correlation between leverage and future growth at the firm level and for a diversified firm at the segment level.

This paper proposes to empirically analyze the impact of financial leverage on market value added of 197 companies classified as A group companies that are listed on Bombay Stock Exchange. The remainder of the paper is structured as follows: First section discusses the literature review; second section highlights the research methodology, third section represents results and discussion; fourth section discusses the key findings and implications and fifth section offers a conclusion.

Literature review

Financial leverage refers to the degree to which the firm relies on debt (Hillier et al, 2010:326). Agrawal and Knoeber (1996) examined the relationship between leverage and value taking a sample of 383 US companies over a period of 1981-87. While using ordinary least squares regression they found negative effect of debt on value. But when used simultaneous equation model taking into account all the rest mechanisms, the role of debt as a disciplining device disappeared.

Wet and Hall (2003) showed that the effect of high financial leverage was offset by the lower cost of capital called EVA leverage. Tian and Zeitun (2007) found that leverage has a negative significant effect on the firm's performance using accounting and market measures of performance.

Pachori and Totala (2012) examined the impact of financial leverage on shareholders' return and market capitalization of automotive cluster companies of Pithampur, India. The study revealed that there was no significant influence of financial leverage on shareholders' return and market capitalization.

Hasan and Gupta (2013) taking a sample of 28 companies of Bangladesh, analyzed the relationship between debt ratio and EPS as proxy measures of leverage and shareholders' return respectively. The study revealed that leverage had statistically significant effect on shareholder's wealth. Al-Shamaileh and Khanfar (2014) examined the relationship between debt ratio, taken as a proxy of financial leverage, and profitability in the context of tourism companies of Jordan. They concluded that financial leverage had statistically significant effect on profitability of tourism companies listed in the Amman Exchange. Acheampong et al. (2014) found a negative relationship between leverage and stock return.

Nourish and Alfred (2014) analyzed the relationship between EVA (Economic Value Added) and MVA (Market Value Added) and leverage and MVA in the context of select private banks of Sri Lanka. They found that EVA and leverage did not have a significant impact on MVA. Cheng and Tzeng (2014) found that leverage was positively related to the firm value until a firm had issued sufficient debt to attain its optimal capital structure. Vijayalakshmi and Manoharan (2015) examined the impact of corporate leverage on EVA and MVA using a sample of seven companies listed on both National Stock Exchange (NSE) and Bombay Stock Exchange (BSE). They found that leverage had significant impact on EVA and MVA of the select companies.

Badi and Minoei (2015) investigated the relationship between “market value and leverage” and return on stock and economic value added”. They concluded that effect of market value and leverage on stock returns was significant. They implied that as the leverage increases consistent with the market value, the stock returns also increased by 43.09%. Ramadan (2015) analyzed the impact of leverage on firm value in the case of listed firms on Amman Stock Exchange. The results showed that the firms’ leverage level affects the firms’ values for the listed companies included in the sample.

Research Methodology

Research used method sued for the study was empirical. All 197 “A” group companies listed on the Bombay Stock Exchange (BSE) comprised the sample of the study. These companies are considered to be most liquid stocks among the whole lot of stocks listed in BSE. All 30 stocks comprising BSE Sensex, a flagship stock market index of BSE, belong to A group companies. The sample will thus comprehensively represent the listed companies on Bombay Stock exchange and will shed light on the relationship between leverage and wealth created by companies. Data relating to all 197 “A” group companies were culled from Centre for Monitoring Indian Economy’s *Prowess* database which is considered to be the most authentic database for collecting financial information in the context of Indian Economy. The study covers financial data from the period 2010 to 2014. The original data were positively skewed signaling higher skewness. Following Templeton (2011), the data were normalized using a two step approach. First, they were ranked and in the second step they were normalized as per

the defined methodology of Templeton (2011). Following Ramadan (2015), ordinary least square regression was used to analyze the relationship between set of independent variables and a dependent variable.

Variables of the study

Independent variables

Following three measures were used to gauge the extent of financial leverage.

Debt equity ratio

Debt to equity ratio (D/E ratio) indicates the quantity of funds raised relative to the equity capital. Usually a higher debt equity ratio indicates higher financial leverage and thus represents a higher financial risk.

Interest cover

Interest cover (INTC) measures the ability to meet the contractual debt obligation in terms of sufficiency of operating income to meet interest expenses. It is calculated as operating income divided by interest charges. The higher the interest cover, higher will be the ability of the firm to comfortably pay out its debt obligations.

Debt ratio

The debt ratio (D/A ratio) indicates the amount of debt funds raised as against the amount of total assets invested in the business. This ratio is slightly different from debt equity ratio, as it considers the debt amount relative to summation of total equity and total debt. Again, higher debt ratio in-

dicates that debt funds are relatively forming a significant chunk of total assets.

Dependent variable

Market Value Added (MVA)

Stewart (1991) states that MVA is a cumulative measure of corporate performance and that it represent the stock market's assessment from a particular time onwards of the net present value of all company's past and projects capital projects.

MVA is generally calculated as below

MVA = Market value of total assets- Book value of assets

Alternatively assuming the market value of debt just equals its book value the MVA can be calculated as below

MVA= Market value of equity capital- Book value of equity capital

In this paper, MVA has been calculated as the difference between market value of equity and book value of equity.

Hypotheses

In order to empirically analyze the relationship between measures of financial leverage and MVA, following null hypotheses were tested at the significance level of 5%.

H₁: There is no significant relationship between Debt equity ratio and MVA of listed companies on Bombay Stock Exchange.

H₂: There is no significant relationship between interest coverage and MVA of listed companies on Bombay Stock Exchange.

H₃: There is no significant relationship between Debt ratio and MVA of listed companies on Bombay Stock Exchange.

H₄: There is no significant relationship between measures of financial leverage and MVA of listed companies on Bombay Stock Exchange.

Model Specification

To empirically test the above mentioned null hypotheses, following regression model were tested statistically.

$$\text{Model 1: } MVA_{it} = \beta_0 + \beta_1 \text{ Normal D/E ratio}_{it}$$

$$\text{Model 2: } MVA_{it} = \beta_0 + \beta_2 \text{ Normal INTC}_{it}$$

$$\text{Model 3: } MVA_{it} = \beta_0 + \beta_3 \text{ Normal D/A ratio}_{it}$$

$$\text{Model 4: } MVA_{it} = \beta_0 + \beta_1 \text{ Normal D/E ratio}_{it} + \beta_2 \text{ Normal INTC}_{it} + \beta_3 \text{ Normal D/A ratio}_{it}$$

In the above models, MVA_{it} stands for market value added of i^{th} company in t time period

D/E ratio_{it} stands for normal debt equity ratio of i^{th} company in t time period

INTC_{it} stands for normal interest cover of i^{th} company in t time period

D/A ratio_{it} stands for normal debt ratio of i^{th} company in t time period

In the above models, the word normal represents the normal form of data converted from non normal form.

Results and Discussions

Descriptive Statistics

Table 1 depicts the results of descriptive statistics of the independent and dependent variables. It is quite evident from the table that normalized debt ratio and debt equity ratio have lower variability with the SD= 0.2018 and 2.103 respectively. Whereas, normalized market value added and interest cover have significant variations with SD= Rs. 364924.01 million and 3814.30 times, respectively.

Table 1. Descriptive Statistics

	Mean	Std. Deviation	N
Normal_market_value_added(Rs. Mil- lion)	167054.1603	364924.00685	869
Normal_debt_equity	1.2491	2.03010	869
Normal_interest_cover	472.6925	3814.30238	869
Normal_debt_ratio	.2249	.20183	869

Relationship between Normal Debt Equity Ratio and Normal Market Value Added

Univariate simple linear regression was run to test the relationship between normal debt equity ratio and normal market value added for the whole sample of 197 firms.

Table 2. Model Summary^b

Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate	Durbin-Watson
1	.261a	.068	.067		352009.53156	.655

a. Predictors: (Constant), Normal_debt_equity

b. Dependent Variable: Normal_market_value_added

Table 2 represents the model summary of the first regression model in which first hypothesis is tested. The results imply that only 6.8% variation in normal market value added was explained by normal debt equity ratio (R square = 0.068). D-W test indicates that there is a positive autocorrelation in the residuals (DW= 0.065).

Table 4. ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	8193602608296.1	1	8193602608296.1	66.125	.000b
Residual	112387014251913	907	123910710310.819		
Total	120580616860209	908			

a. Dependent Variable: Normal_market_value_added

b. Predictors: (Constant), Normal_debt_equity

Table 4 shows the results of ANOVA for the first regression model. The results indicate that the regression model is statistically significant and best fit (F= 66.125, $p < 0.01$).

Table 5. Coefficient

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	222386.104	13243.620		16.792	.000
Normal_debt_equity	-45378.172	5580.383	-.261	-8.132	.000

The results of Coefficient are presented in table 5. It is quite evident from the results that normal debt equity ratio is statistically significantly related to normal market value added ($t = -8.132$, $p < 0.01$). The results thus imply rejection of first null hypothesis and are consistent with Ramadan (2015).

Relationship between Normal Interest Cover and Normal Market Value Added

The results of the univariate regression model run between normal interest cover and normal market value added is presented in table 6.

Table 6. Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.427a	.183	.182	329762.53154	.685

a. Predictors: (Constant), Normal_interest_cover

b. Dependent Variable: Normal_market_value_added

The results show that 18.3% change in normal market value added is explained by interest cover (R square = 0.183). DW test indicates that there is a positive autocorrelation in the residuals (DW= 0.685). As shown in table 7, the regression model is found to be statistically significant and well fitted (F= 194.131, p<0.01).

Table 7. ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	21110457338674.3	1	21110457338674.300	194.131	.000b
Residual	94497951342432.9	869	108743327206.482		
Total	115608408681107	870			

a. Dependent Variable: Normal_market_value_added

b. Predictors: (Constant), Normal_interest_cover

The results of regression coefficients are presented in table 8. The results indicate that normal interest cover is statistically significantly related to normal market value added (t=13.933, p>0.01). The results lead to the rejection

tion of second null hypothesis and conclude that impact of interest cover is influencing market value added by listed Indian firms.

Table 8. Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	148286.477	11254.832		13.175	.000
Normal_interest_cover	40.792	2.928	.427	13.933	.000

a. Dependent Variable: Normal_market_value_added

Relationship between Normal Debt Ratio and Normal Market Value Added

Table 9 depicts the results of the third regression model. Using OLS regression analysis, the third hypothesis was tested. It is evident from the table that only 3.45 variation in normal market value added is explained by normal debt ratio. (R square = 0.034)

Table 9. Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.184a	.034	.033	358412.16437	.637

a. Predictors: (Constant), Normal_debt_ratio

b. Dependent Variable: Normal_market_value_added

The results of the ANOVA are shown in table 10. The results suggest that regression model is statistically significant and well fitted (F= 31.706, p<0.01).

Table 10. ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	4072966445501.21	1	4072966445501.21	31.706	.000b
Residual	116512566568772	907	128459279568.658		
Total	120585533014274	908			

a. Dependent Variable: Normal_market_value_added

Table 11 depicts the results of regression coefficients for the third model. It is quite evident from the result that normal debt ratio is statistically significantly related to normal market value added ($t = 14.187$, $p < 0.01$) resulting into rejection of third null hypothesis.

Table 11. Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	238925.933	16841.359		14.187	.000
Nor- mal_debt_ratio	-319006.101	56653.444	-.184	-5.631	.000

a. Dependent Variable: Normal_market_value_added

The relationship between all measures of financial leverage (jointly) with Market value added

Table 12 shows the results of correlation between individual independent variable and dependent variables. Results indicate that two independent variables viz. normal debt equity ratio and normal debt ratio have statistically significant negative correlations with normal market value added ($r = -0.260$, $p < 0.01$ and $r = -0.176$, $p < 0.01$ respectively). On the other hand, normal interest cover is found to be statistically significantly positively correlated with normal market value added ($r = 0.429$, $p < 0.01$).

Table 12. Correlations

		Normal_market_value_added	Normal_debt_equity	Normal_interest_cover	Normal_debt_ratio
Pearson Correlation	Normal_market_value_added	1.000	-.260	.429	-.176
	Normal_debt_equity	-.260	1.000	-.675	.813
	Normal_interest_cover	.429	-.675	1.000	-.541
	Normal_debt_ratio	-.176	.813	-.541	1.000
Sig. (1-tailed)	Normal_market_value_added		.000	.000	.000
	Normal_debt_equity	.000		.000	.000
	Normal_interest_cover	.000	.000		.000
	Normal_debt_ratio	.000	.000	.000	
N	Normal_market_value_added	869	869	869	869
	Normal_debt_equity	869	869	869	869
	Normal_interest_cover	869	869	869	869
	Normal_debt_ratio	869	869	869	869

Note: Correlation is significant at 0.01 level.

Table 13 reports the results of the multiple regression run between the set of independent variables and a dependent variable. The results of multiple regression suggest that there was a significant correlation between measures of financial leverage and market value added ($R = 0.434$). The results are inconsistent with Agrwal and Knoeber (1996), which showed that there is a negative relationship between leverage and value. Measures of financial leverage jointly explained 18.8% variation in the market value added by the sample companies ($R^2 = 0.188$). The results show positive autocorrelation in the residuals ($DW = 0.695$). Table 14 depicts the results of ANOVA. It is evident from the results that the multiple regression model was found to be well fitted and statistically significant ($F = 66.960$, $p < 0.01$).

The regression coefficients are shown in table 15. Normal debt equity ratio was not statistically significant in explaining variation in normal market value added ($t = -0.366$, $p < 0.05$). Normal debt ratio was also found to be not significant ($t = 1.779$, $p > 0.05$). On the contrary, normal interest cover was statistically significantly related to normal market value added ($t = 11.188$, $p < 0.01$). The results thus imply that when taken together, debt equity ratio and debt ratio do not affect market value added by listed Indian firms. The results imply rejection of the fourth hypothesis, indicating that financial leverage measures jointly influence market value added by Indian listed firms. Figure 1 shows the histogram demonstrating that the changes in normal market value added are normally distributed as explained by the set of independent variables.

Findings and Conclusion

This study empirically analyzed the impact of three financial leverage measures on market value added taking a sample of 197 “A” group companies listed on Bombay Stock Exchange. The study covered the period ranging from 2010 to 2014. Following the ordinary least squares method, univariate and multiple linear regression were used to analyze the relationship between independent variables and a dependent variable. It was found that when analyzed univariately, all three measures of financial leverage namely; debt equity ratio, interest cover and debt ratio were significantly related to market value added. On the contrary, when used jointly in a multiple regression, only interest cover was found to be statistically significant. Interest cover was found to be the most significant predictor of market value added by listed companies with R square of 18.3%. The results are thus in-

consistent with Nourish and Alfred (2014), who showed that leverage, did not have a significant impact on market value added. The results are also inconsistent with Pachori and Totala (2002) who reported that financial leverage had no significant influence on shareholders' return and market capitalization. On the contrary, the results are found to be consistent with Vijayalakshmi and Manoharan (2015) who demonstrated that leverage had significant impact on MVA. Results also confirm the findings of Hasan and Gupta (2013) which revealed that leverage had statistically significant effect on shareholders' wealth.

Table 13. Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.434 ^a	.188	.186	329312.33567	.695

a. Predictors: (Constant), Normal_debt_ratio, Normal_interest_cover, Normal_debt_equity

b. Dependent Variable: Normal_market_value_added

Table 14. ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21784831237573.000	3	7261610412524.350	66.960	.000 ^b
	Residual	93806321478324.700	865	108446614425.809		
	Total	115591152715898.000	868			

a. Dependent Variable: Normal_market_value_added

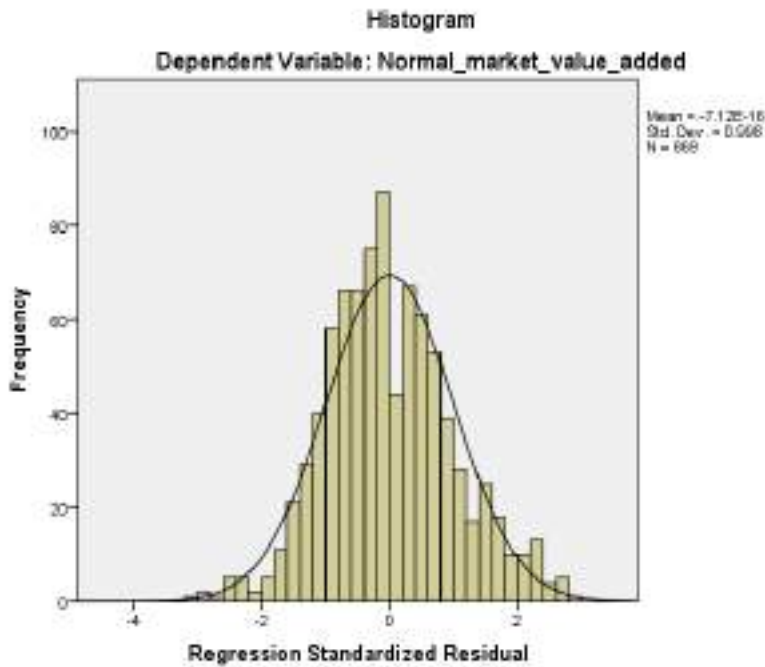
b. Predictors: (Constant), Normal_debt_ratio, Normal_interest_cover, Normal_debt_equity

Table 15. Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	112927.239	19352.375		5.835	.000
Normal_debt_equity	-3945.550	10772.763	-.022	-.366	.714
Normal_interest_cover	44.448	3.973	.465	11.188	.000
Normal_debt_ratio	169131.170	95065.422	.094	1.779	.076

a. Dependent Variable: Normal_market_value_added

Figure 1. Histogram of Normal Market Value Added



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ANALYSIS OF THE RELATIONSHIP BETWEEN ECONOMIC VALUE ADDED AND MARKET VALUE ADDED

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Abstract

Economic Value Added (EVA) is one of the most important modern performance measures. The main difference between EVA and traditional measures is that EVA incorporates both financing costs of debt and equity capital. In addition, EVA includes adjustments that minimize some accounting distortions. EVA and Market Value Added (MVA) provide a more accurate evaluation of the firm's financial performance. This paper involves a case study that analysis the use of EVA in selected Slovak companies. It examines the incremental information of a set of performance measures in the time period of 2010 - 2015, using regression models. Furthermore, we analyse the MVA performance and the relationship between EVA and MVA.

Keywords: *Economic Value Added, Market Value Added, financial performance, traditional measures, modern measures*

1. Introduction

Copeland *et al.* define Value Based Management (VBM) as the process of continuously maximising the value of a firm. According to them shareholder value creation is the main objective when applying VBM techniques. VBM is based on discounted cash flow (DCF) concepts. The value of the firm is determined by the present value of its future cash flows. Investing in projects where the return exceeds the cost of capital results in value creation, while investing in projects with returns below the cost of capital destroys value.

Developing performance measures that could be applied to evaluate financial performance and shareholder value creation is of great importance.

Traditional financial performance measures are often criticised for excluding a firm's cost of capital, and are therefore considered inappropriate to be used when evaluating value creation. Furthermore, these measures are based almost exclusively on information obtained from financial statements, and so are exposed to accounting distortions. Despite these limitations analysts and investors still widely apply the traditional measures. On the other hand, as a result of the perceived limitations of traditional measures, value based financial performance measures were developed. The major difference between the traditional and value based measures is that the value based measures include a firm's cost of capital in their calculation. They also attempt to remove some of the accounting distortions.

Proponents of the value based measures present these measures as a major improvement over the traditional financial performance measures and report high levels of correlation between the measures and share returns. In those cases where these measures yield positive values, economic profits are generated, and

consequently shareholder value is expected to increase. Negative values indicate the destruction of shareholder value.

A number of different value based financial performance measures have been developed. These include, amongst others, Economic Value Added (EVA), Cash Value Added (CVA), and Cash Flow Return on Investment (CFROI) and other. While proponents of these measures report high correlations between the measures and the creation of shareholder value, a large number of studies have yielded far weaker relationships.

In the first part of the paper two value based measures are identified and discussed. The focus is placed on their theoretical foundations, calculation and interpretation. An overview of existing studies reporting on the relationship between these measures and shareholder value creation is also provided.

The second part of the paper involves the empirical analysis of the measures. It is devoted to the application of the O'Byrne model in order to identify, compare and evaluate the relationship between selected performance measures (earnings, earnings per share and economic value added) and market value added of a company. The analysis was carried out on a sample of selected Slovak companies.

2. EVA and MVA

According to Stewart EVA is an estimate of the economic profit generated by a firm. The difference between an economic and an accounting profit is a capital charge that is levied on the capital provided to the firm. In the case of an accounting profit only the cost of debt capital is included. EVA, however, considers the costs of all its forms of capital (debt, as well as equity) and compensates all its capital providers accordingly.

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EVA is determined by calculating the difference between the cost of a firm's capital and the return earned on capital invested, and multiplying it with the amount of capital invested in the firm.

$$EVA_t = (r - WACC) * IC_{t-1}$$

where:

r = the return on the capital invested

$WACC$ = the firm's after-tax cost of capital

IC_{t-1} = the invested capital at the beginning of period t

EVA quantifies the surplus return earned by the firm. In those cases where a firm is able to earn a return that is higher than its cost of capital a positive value for EVA is calculated. A negative EVA value is calculated when the cost of capital exceeds the return on the invested capital.

Alternatively, the measure can be calculated by comparing the net operating profit after tax with the total cost of capital invested.

$$EVA_t = NOPAT_t - \text{Total cost of IC} = \\ = NOPAT_t - (WACC * IC_{t-1})$$

where:

$NOPAT_t$ = Net operating profit after taxes

If a firm is able to earn NOPAT values in excess of its total cost of capital invested it generates a positive EVA figure. However, should NOPAT be insufficient to cover the firm's total cost of capital, a negative value for EVA is calculated.

A company's total market value (MV) is equal to the sum of the market value of its equity and the market value of its debt. In theory, this amount is what can be "taken out" of the company (i.e. when all shares are sold and debt is repaid) at any given time. The MVA is the difference between the total market value of the company and the economic capital. The economic capital, also called invested capital (IC), is the amount that is "put into" the company and is basically the fixed assets plus the net working capital.

$$MVA = MV \text{ of company} - IC$$

From an investor's point of view, MVA is the best final measure of a company's performance.

MVA is calculated at a given moment, but in order to assess performance over time, the difference or change in MVA from one date to the next can be determined to see whether value has been created or destroyed. EVA is an internal measure of performance that drives MVA.

The return on IC minus the WACC is also called the "return spread". If the return spread is positive, it means that the company is generating surplus returns above its cost of capital, and this translates into higher MVA.

The link between MVA and EVA is that theoretically, MVA is equal to the present value of all future EVA to be generated by the company.

$$EVA \text{ MVA} = \\ \text{present value of all future EVA}$$

3. Empirical Analysis and Conclusions

Before presenting our own research, the results of the most relevant previous studies are going to be presented.

The relevance of accounting information has already been tested in multiple studies; two studies for the German stock market are *Booth et al.* and *Harris et al.* In the USA the question of the valuation relevance of accounting based performance measures has established itself as a major field of research. In the last years EVA has been researched in depths, because EVA supposedly is an innovative approach with a broad following in the business community. Currently the general opinion on the pros and cons of EVA is not unanimous.

Easton, P. Harris, T. and Ohlson, J. observed that EVA is an increasingly popular corporate performance measure one that is often used by companies not only for evaluating performance, but also as a basis for determining incentive pay. Like other performance measures, EVA attempts to cope with the basic tension that exists between the need to come up with a performance measure that is highly correlated with shareholders wealth, but at the same time somewhat less subject to the random fluctuations in stock prices. This is a difficult tension to resolve and it explains the relatively low correlation of all accounting based performance measures with stock returns at least on a year to year basis.

Stewart (III), and Bennett, G. observed that "EVA is a powerful new management tool that has gained growing international acceptance as the standard of corporate governance. It serves as the centerpiece of a completely integrated frame-work of financial management and incentive compensation." In essence, EVA is a way both to legitimize and to institutionalize the running of a business in accordance with basic microeconomics and corporate finance principles. The experience of a long list of adopting companies throughout the world strongly supports the notion that an EVA system, by providing such an integrated decision making framework, can refocus energies and redirect resources to create sustainable value for companies customers, employees, shareholders and for management.

Thenmozhi, M. carried out a study in order to have an understanding of how the traditional performance measures are comparable to EVA, data of three financial years between 1996 and 1999 were chosen from 28 companies. Only 6 out of the 28 companies have positive EVA while the others have negative. The EVA as a percentage of Capital Employed (EVA/CE) has been found to indicate the true return on capital employed. Comparing EVA with other traditional performance measures the study indicates that all the companies depict a rosy picture in terms of EPS, RONA and ROCE for all the three years. The study shows that the traditional measures do not reflect the real value of shareholders and EVA has to be measured to have an idea about the shareholders value.

Ray, Russ observed that the missing link between EVA and improved financials is actually productivity. EVA can be a powerful tool. When properly applied, it allows a firm to ascertain where it's creating value and where it's not. More specifically it allows a firm to identify where the return on its capital is outstripping the cost of that capital. For those areas of the firm where the former is indeed greater than the latter EVA analysis then allows the firm to concentrate on the firm's productivity in order to maximize the value created of the firm. Finally, as investors buy more shares in the firm in order to have more claims on its increased value, they automatically bid up and eventually maximize the firm's share price. And as any good capitalist knows, maximizing share price is the name of the game in a free market economy. Thereafter marginal increases in value added can be attained by either decreasing the firm's cost of capital or by increasing its productivity.

Harris *et al.* investigate the relation between market values, stock returns and accounting measures for both Germany and the US. They come to the following results: Increasing the time from one year to three or more years increases the relevancy of earnings. EVA is superior in explaining both absolute market values and market value changes.

Biddle *et al.* investigate a sample of 773 US companies. They look at the information content of four accounting measures: Net Income, Operating Cash Flow, Residual Income and EVA for both the absolute levels of market values as well as the change of market values over time. Furthermore, they try to assess which part of the EVA calculations has a major impact on the value relevance. According to their results EVA has always a lower explanatory power than Net Income, EVA offers little additional information, as the biggest adjustment, the capital charge is comparatively stable over time.

Authors Bao, B.H., Bao, D.H., Riahi-Belkaoui, A., Fekrat, M.A., and Picur, R.D. are, based on their research findings, of the opinion that the superiority of EVA in relation to traditional financial performance measures is justified.

On the other hand, other studies bring evidence that EVA is not a better indicator of the financial performance of the company than the traditional measures based on accounting profit (eg. Biddle, G.C., Bowen, G.S., Wallace, J.S., Chen, S., Dodd, J.L.).

Concluding, the major result of all above studies is that it remains unclear which performance metric offers superior information, measured by its relevance for explaining stock returns.

The studies carried out by the above mentioned authors examined mostly the relationship of financial performance measures to share price respectively return on share. By contrast, in the next section of this paper, we focus on the MVA and apply the selected model approach to assess the linkage of selected performance measures to MVA.

In order to perform our study, data of 50 selected Slovak companies had to be selected from the following sources: published company accounts, capital market data, and data on ownership structure. The time horizon of this study includes the six years starting from 2010 and ending in 2015.

We applied the O'Byrne model in order to examine the relationship between selected performance measures on the one hand and market value resp. MVA of the sample of companies on the other hand. The selected performance measures were earnings, earnings per share and EVA.

O'Byrne differentiates between positive and negative values of EVA, includes a dummy variable for industries, and includes a correction factor for firm size (logarithm of capital employed). The reasoning is that the capital market values positive and negative results of performance measures differently by and that there are empirically significant firm size effects, which can lead to distortions.

$$MV_{i,t}/C_{i,t-1} = a_0 + a_1*(X_{i,t}/C_{i,t-1}) + a_2*(X_{i,t}/C_{i,t-1}) + a_3*(\ln(C_{i,t-1})) + a_j I_j + e$$

with

$MV_{i,t}$ market value of company i in year t

$C_{i,t-1}$ capital employed by company i at the beginning of year t

$X_{i,t}$ performance measure per share in year t

$C_{i,t-1}$ cost of capital for company i in year t

I_j dummy variable for industry

The results are presented in table 1:

		Earnings	EPS	EVA
a_0	Intercept	1,08 0,02	0,71 0,11	1,90 0,00
a_1	Performance measure +	18,71 0,00	20,44 0,00	17,87 0,00
a_2	Performance measure -	-2,71 0,05	-3,88 0,00	-0,75 0,50
a_3	ln (C)	0,00 0,08	0,00 0,01	0,00 0,42
a_4	Automobile	-1,01 0,00	-1,00 0,00	-1,15 0,00
a_5	Construction	-1,00 0,00	-1,04 0,00	-1,04 0,00
a_6	Chemical and pharmaceutical	-1,18 0,00	-1,18 0,00	-1,00 0,00
a_7	Consumer goods	-1,06 0,00	-1,14 0,00	-1,42 0,00
a_8	Steel and electro.	-0,95 0,00	-0,97 0,00	-1,0 0,00
R^2	Adjusted R^2	0,357	0,406	0,359
	F stat.	54,01 0,00	66,11 0,00	54,28 0,00
	Significance F	0,00	0,00	0,00

In the case of Slovak companies the traditional measure EPS has the biggest explanatory power with R^2 of 40.6%, while the modern measure EVA explained only 35.9% of market value changes of the companies.

Now, we modify the above applied model in the sense that instead of market value, we will examine the relationship of MVA and the financial performance

measures, in order to evaluate the value orientation of monitored indicators of financial performance. MVA, in fact, measures the difference between the market value of the company and the value of invested capital (debt and equity). The higher the value of this ratio, the better, because high levels of MVA suggest that the company creates real value for shareholders. Negative MVA value means that the company does lower the shareholder value. It should be stressed that the aim is to maximize MVA and not the market value of the company, because it can be also done by increasing the amount of invested capital. The increase in the value of MVA will only happen, if the capital invested is more profitable than the cost of capital.

$$MVA_{i,t}/C_{i,t-1} = a_0 + a_1*(X^+_{i,t}/C_{i,t})/C_{i,t-1} + a_2*(X^-_{i,t}/C_{i,t})/C_{i,t-1} + a_3*(\ln(C_{i,t-1}) + a_j \sum(I_j) + e$$

MVA_{i,t} market Value Added of company i in year t

The results are presented in table 2:

		Earnings	EPS	EVA
a ₀	Intercept	2,08 0,01	1,01 0,01	0,75 0,00
a ₁	Performance measure +	10,31 0,00	8,24 0,00	19,19 0,00
a ₂	Performance measure -	-4,01 0,05	-3,18 0,30	0,39 0,48
a ₃	ln (C)	0,00 0,08	0,20 0,01	0,00 0,49
a ₄	Automobile	-1,41 0,00	-1,03 0,00	-0,63 0,00
a ₅	Construction	0,09 0,00	-1,00 0,00	-0,24 0,01
a ₆	Chemical and pharmaceutical	-2,07 0,00	-0,38 0,00	-0,59 0,00
a ₇	Consumer goods	1,06 0,00	0,94 0,00	-0,41 0,00
a ₈	Steel and electro.	0,05 0,00	-0,77 0,00	-0,44 0,00
R ²	Adjusted R ²	0,328	0,249	0,402
	F stat.	52,15	43,97	56,71
	Significance F	0,00	0,00	0,00

When we replaced the market value with MVA, EVA's explanatory power has increased (from 35.6% to 40.2%) and thus in this model came first in explaining changes in MVA. Earnings' and EPS' results have also changed. In the case of EPS it decreased from 40.6% to 24.9%, the decrease in the earnings is less (from 35.7% to 32.8%).

According to the results of the models we came to the conclusion, that in case of selected companies in the analysed time period we can confirm the dominance of a modern performance measure EVA above the two other traditional performance measures in explaining the changes in MVA.

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