

IS EVA A BETTER PERFORMANCE MEASURE THAN ACCOUNTING MEASURES? EVIDENCE FROM PAKISTANI LISTED COMPANIES

Muhammad Shahbaz Yaqub¹

shahbaz.yaqub@vu.edu.pk

Bilal Mehmood²

dr.philos.bilal@gmail.com

Naveed-ul-Hassan³

naveed.hassan@vu.edu.pk

Muhammad Zohaib⁴

muhammad.zohaib@vu.edu.pk

Syed Muhammad Hassan Bukhari⁵

syed.hassan@vu.edu.pk

^{1,3,4,5}Department of Management Sciences, Virtual University of Pakistan, Lahore, Pakistan

²Department of Economics, GC University, Lahore, Pakistan

ABSTRACT: *Inability of cash-focus accompanied by risk absorbance have put the accounting-based measures under question and call for value based measures. In this regard, economic value added (EVA) has come forward to answer these limitations by reflecting the impact of managerial decisions in the stock returns. The primary objective of this study is to find evidence whether EVA as a new yard stick to measure managerial performance can be fitted in Pakistani corporate world. The hypothesis of this study is to check the significance of EVA among other traditional accounting measures in determining stock returns - translated into market value added (MVA) and the relationship of EVA with MVA. Data of 90 Pakistani non-financial companies listed on the country's biggest stock exchange – Karachi Stock Exchange for a period of 6 years (2006-07 to 2011-12) was used. Regression analysis shows that accounting based measures outperform EVA in explaining MVA. Yet, EVA being a significant measure emerged as a potential variable as a performance measurement tool for Pakistani corporate world.*

Key Words: Economic Value Added (EVA), Accounting based performance measures, Market Value Added (MVA).

1. INTRODUCTION

A key objective of managerial remuneration package is to line-up management's actions in accordance with concentration for the owners' interest. Now, an entity's prime concern is to ensure sustainable hikes in its share prices. In the past, any entity's owners could judge any increase in their wealth using some conventional earning-based accounting parameters like return on assets, return on equity, net profit ratio, earnings per share and the like [1]. As now over a period of years, any entity's financial performance is measured from the standpoint of its owners, so to survive, companies need to create value for their owners [1]. Today, the focus has been shifted towards behavior of the company's share in the stock markets. As a result, a new measure – economic value added (EVA) had been invented to link remuneration deal with owners' wealth maximization – stock price maximization which may be seen as MVA. Precisely, EVA in narrow sense can be defined as the excess free cash flow breed by the management in response to the shareholders' expectations. Stewart [2] was the first to study and observe a sound association between EVA and MVA.

The classical economics had declared the goal of any firm to maximize its shareholders' value [3].¹Economic Profit called

as EVA by Stern Stewart has evolved as a deterministic parameter for determining financial performance of management with regards to value creation for the owners. The application of *economic concepts* on accounting profit to convert it into economic profit motivates managers to think about activities that lead to value-creation [4]. EVA model translates a firm's accounting book value into economic book value – an amount invested in the entity by its owners and lenders. In fact, EVA is also considered as a cultured companion of the residual income - invented by General Motors in 1920 and labeled by General Electric in 1950 [5]. This study aims to empirically investigate the relationship between EVA and stock market performance (here MVA) for selected Pakistani firms to check the superiority of EVA over the traditional accounting-based performance measures in association with MVA. Being new to Pakistani business community, it is hoped that this work will give an understanding of EVA and its association with stock returns available in Pakistani stock markets.

2. LITERATURE REVIEW

Numerous studies have shown the significant association of changes in stock returns more reactive to variation in EVA than it is to changes in earnings [6]. EVA being an internal performance measure is believed to be a determinant of a company's MVA and a fuel to fire up its MVA. The association between EVA and MVA advocates that EVA

¹The history of EVA can be traced back to the early 1960s, when Stern Stewart was the student of Merton Miller (first ever to talk about firm value from economic aspect, i.e. free cash flow rather than accounting aspects in 1961) at the University of Chicago - Graduate School of Business. Later, Stern while working as President of Chase Financial Policy - a financial advisory wing at Chase Manhattan Bank, developed EVA on the basis of this concept of free cash flow, that later led to EVA in 1982 when Stern formed his own

consulting company - Stern Stewart & Company in the city of New York (Steele, 1998). Although Peter Drucker claims to have been talked on EVA in 1964 in his book titled "Managing for Results."

pushes up the market value of shares and hence the stock returns have direct influence of EVA. In recent years, many studies across the globe have been done to observe this theory. These studies - ranged from empirical analysis to exploratory one, applied number of different statistical and mathematical models and other research methods to validate the theory. However, results of the few empirical studies do not validate the theory [7]. Researcher [8] in a study of 7,546 company valuation years for a period of 9 years (1985-1993) observed EVA as a more powerful tool (55%) than earnings (24%) in explaining 5 years changes in stock returns. Even for 10 years changes in EVA accounted for explaining 74% of changes in stock prices, in contrast to 64% described by variation in earnings. That is, with variations in EVA can describe more deviation in share prices than earnings variations. Researchers [9] in a study of a small garment unit in Bangladesh found that owner-managers were happy with EVA rather than earnings as a performance measure. The owners were also surprised to see the favorable impact of debt in their capital structure. They told that EVA was in consistent with their objectives. Researcher [10] worked on UK market and found that net operating profit after tax and net income outstripped EVA and residual income in illuminating share prices. Incremental information content tests of EVA components proved to be substantially associated with the stock returns, but accruals and operating cash flows has more incremental information content than EVA exclusively. He applied panel data regressions on cross-sectional time series data of 2,252 firm-years of UK firms. Researcher [11] through a survey response from 39 of the 288 sample firms' CEOs found EVA users being the larger firms with younger and well-read executives having accounting or finance upbringing. He observed entities using EVA performed well in terms of higher share prices than those not using EVA. Through logit regression analysis, he also found entities having higher stock prices revealed higher likelihood of using EVA. A bank study by Researchers [12] validates these statistical results and confirms that EVA phenomena is an improvement over accrual based ROE and ROA phenomena in predicting the stock returns for the year 2002 – 2005 of 17 banks listed at Jakarta Stock Exchange. Researchers [13] find that EVA is unable to work efficiently with capital budgeting. This is because EVA works over the current period profits rather than future cash flows. In this regard NPV does much better than EVA. EVA is more appealing on short term rather than long term basis. Therefore, EVA rewards managers for current earnings on the cost of future expected losses.

In another study, Sivakumaran & Sarvanakumar [14] examined the association between EVA and other accounting measures - EVA, EPS, ROA and ROF using Pearson's coefficient of correlation over the sample of 39 Indian banks for the period of 2004-05 to 2010-11. They concluded that EVA can be used to measure the banks performance but it cannot be used to predict the share prices of these banks as there was no relationship found between EVA and banks' share prices. Researcher [10] examined the Malaysian post period of economic crisis occurred in 1997 and observed a relationships between stock returns and EVA. Panel data regression technique was used on the data from 314 sample

companies for the period of 1997 to 2002. He found that company performance could be predicted by EVA per share effectively in place of DPS and EPS – conventional accounting measures undertaken in the study.

A recent study in Brazil by Costa [15] has provided an outline to implement EVA in the country's banking sector using a real life example of a Brazilian bank - BancoBradesco. The bank proved to be a value originator with the positive EVA. Researchers [16] in an attempt to rank Indian cement companies on the basis of EVA and MVA found that for 4 out of 10 companies, EVA and MVA were favorable and in line with the owner's returns. In the study, they analyzed a 10-years period. They found both the measures relatively important to determine the performance of the companies. Researcher [17] analyzed 63 KSE listed companies for a period of 7 years (2004-2010). Their results showed that EVA failed to predict stock returns despite of having higher R^2 for operating cash flows being higher explanatory power. They found negative correlation between EVA and stock returns. They found some reasons for this including an attitude that investors value dividend provisions to the stockholders more as compare to the increase in worth of company. According to this, the stock returns increase as a result of higher payout anticipation due to higher operating cash flows. Researchers [1] found that many of the mutual funds' managers use EVA to point out stocks having positive EVA. The mutual funds hold these stocks to add value for their fund owners [18]. In India, investors who base their investment decisions on traditional measures were advised to use EVA as a tool for investment decisions. In a recent study, while using panel data regression analysis, EVA for some of the Indian companies was found having a significant and positive association with MVA. It was observed that EVA can be used as a proxy for MVA. Researchers [19] in an attempt to design an optimal portfolio, found after analyzing 73 companies during the period of 2001-2009 that the portfolio constructed using EVA to market value (EVAM) outperformed those constructed using the price earnings ratios (E/P) and book value to market value (B/M). This article fills the gap of literature by filling in gap by adding to work of [17].

3. DATA AND METHODOLOGY

This study uses six years ranging from 2006-07 to 2010-11. The choice for 6-years period for this work is to cover a complete business cycle [20] as a complete business cycle has considerable impact on EVA [21]. The data used is of the 90 companies listed on Karachi Stock Exchange (KSE) on the basis of data availability. Sample aimed at eliminating the chance of industry bias [22] while embodying sectors like textile, pharmaceuticals, automobile, steel, paper, tea, telecommunication, cement, foods, beverages, chemicals, fertilizers, tobacco, sugar, glass, power, gas & petroleum, health care, and consumer goods.

3.1 Hypothesis

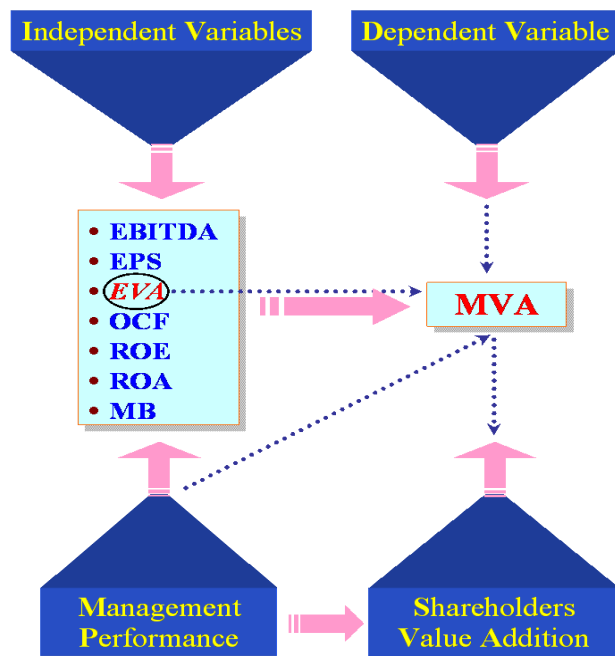
The study aimed to check the validity of these accounting-based variables in explaining the shareholders’ value in terms of MVA. The hypothesis is developed as:

H_A: *There is a significant relationship between MVA and EVA & other conventional accounting based measures.*

Following is the explanation of data and methodology to be used in the empirical analysis.

3.2 Variables for the Study

Borrowing from the works of Researchers [23]; [24] and [26], Marketvalue added (MVA) as dependent variable, and eight independent variables have been selected namely; economic value added (EVA), earning per share (EPS), earnings before interest, tax, depreciation & amortization (EBITDA), operating cash flows (OCF), return on assets (ROA), return on capital employed (ROCE), return on equity (ROE), and market to book value (MB). A theoretical framework explaining the intended relationship among the chosen variables is depicted here below:



3.3 Econometric Model

To investigate the relationship between MVA and its explanatory variables, the following panel data model is developed:

$$MVA_{it} = \alpha + \beta_1(MB_{it}) + \beta_2(EVA_{it}) + \beta_3(EPS_{it}) + \beta_4(EBITDA_{it}) + \beta_5(OCF_{it}) + \beta_6(ROA_{it}) + \beta_7(ROCE_{it}) + \beta_8(ROE_{it}) + \epsilon_{it}$$

All notation have been explained before, α_i captures the unobserved country-specific effects and $\epsilon_{i,t}$ denotes the error term and subscripts i is for firm and t is for period of time.

3.3.1 Estimation Technique

Among the various pooling models, panel effects model (Fixed Effects ‘FE’ model and Random Effects ‘RE’ model) are commonly used in balanced panel studies. This study takes into account 90 firms and a total period of 6 years from 2006-07 to 2011-12 which entails a balanced panel of

(90×6=) 540 observations. For recent application of panel effects model, see Mehmood& Mustafa [25].

4. RESULTS AND DISCUSSION

To validate the hypothesis mentioned earlier, both `descriptive and inferential statistical techniques are applied to the data. This study entails the following outcomes described here along with some pertinent analysis thereof.

4.1 Descriptive Analysis

In these analyses, MVA – the dependent variable was used as a proxy for shareholders value. On the other side, independent variables as EPS, EBITDA, OCF, ROA, ROCE, and ROEI were taken as proxy for managerial performance measures. Aset of descriptive analysis of these variables is here as under²:

Table 4.1: Descriptive Analysis

Variable	Mean	S.D	Min	Max
MVA	14227.70	75713.83	-17663	1083066
MB	2.36	3.82	0.05	41.01
EVA	626496.70	5288090	-20234	84306
EPS	21.19	34.56	-39.05	308.83
EBITDA	0.22	0.18	-0.38	2.31
OCF	1663647	6445433	-10724	67924
ROA	0.11	0.12	-0.80	1.89
ROCE	0.28	0.24	-0.22	4.21
ROE	0.22	0.19	-0.69	1.25

MVA has a mean of Rs. 14,227.70 million for all 90 firms over the 6 years period. Its standard deviation is estimated at Rs. 75,713.83 million over this period. MVA is bearing the minimum value at Rs. -17,663 million in the whole data set in 2011, which is of Nishat Mills Limited. This negative MVA means the loss of net worth of the owners. Whereas, the maximum value of MVA in the entire data set is Rs. 1,083,066 million of Pakistan petroleum Limited in 2008. EVA has a mean of Rs. 626,469.70 million. The minimum value for EVA is at Rs. -20,234 million in the whole data set in 2011, which is of Pakistan State Oil. This negative EVA means that nothing has been added to the owners’ worth during the period - loss of net worth of the owners. Whereas, the maximum value of EVA in the entire data set is Rs. 84,306 million of Oil & Gas Development Company Limited in the 2008. Pakistan State Oil (PSO) seems to be a bad performer in this regards being a negative EVA, negative ROCE, and negative EPS which are the lowest in the sample group. Unilever Pakistan Foods Limited (UPFL) seems to be good performer in terms of highest positive MB and ROE among the sample firms. If we consider Unilever Pakistan Limited (UPL) being its family company with highest EPS among the sample firms, this group comes up with three variables having highest positive values among the sample firm.

4.2 Inferential Analysis

²Data for 90 listed companies (from non-financial sector) working in Pakistan from 2006 to 2011.

Inferential analysis in this study is based on some statistical estimation done on the pre-defined econometric model.

4.3 Comparison of Estimations

This study takes into account three estimation techniques to validate the Null hypothesis. The research was primarily aimed to determine relationship between EVA and MVA. The secondary aim was to rank EVA, MB, EPS, EBITDA, OCF, ROA, ROCE and ROE in determining MVA. Thus,

Table 4.2: Variance Inflation Factor (VIF) for Inquiring Multi-collinearity

Variable	VIF
EVA	1.04
ROE	3.16
MB	1.88
OCF	1.63
EPS	1.41
ROA	1.41
ROCE	1.39
EBITDA	1.12
Mean VIF	1.63

The table 4.4 excludes the possibility of multi-collinearity in the set of variables selected for the estimation. It is so, since the value of variance inflation factor is less than 10. Results of correlation also confirm the lack of mutli-collinearity between the independent variables with the exception of ROE that shows correlation higher than 0.5 with other independent variables.

Table 4.3: Breusch-Pagan Lagrange Multiplier (LM) for Inquiring Panel Effects

H₀: No Panel Effect	This test inquires presence of panel effects. The null hypothesis in the LM test is that variances across entities are zero. Results of Breusch-Pagan Lagrange Multiplier test presented in table affirm the presence of panel effects, justifying the need for Fixed or Random effects model.
$\chi^2(01) =$ 22.93	
p-value = 0.000	

For the choice between panel and fixed effects models, Hausman test can be resorted to. It is as follows:

Table 4.4: Hausman Test: Choice between Fixed and Random Effects

Hausman Test Statistic: p-value = 0.209	Under Hausman test, fixed effects and random effects are compared having the null hypothesis that the individual effects are uncorrelated with the other regressors in the model. If correlated (H ₀ is rejected), a random effect model produces biased estimators, thus giving a choice for the fixed effect model. Decision: Since p-value > 0.01. Random effects is preferred.
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Table 4.5: Wooldridge Test for Serial Correlation

Wooldridge Test	
H₀: no first order autocorrelation	Statistics show that null hypothesis is not rejected (p-value > 0.05) and it can be inferred that there is serial correlation among residuals. Consequently, OLS coefficients are likely to be biased, inconsistent and inefficient. Moreover, R ² estimates a good fit.
F(1, 89) = 4.756	
p-value = 0.0318	

Table 4.6: Modified Wald Test for Group Wise Heteroskedasticity

H₀: sigma(i) ² = sigma ² for all i	Heteroskedasticity can result in wrong estimates of standard errors for coefficients and hence of their t-values. The estimates of OLS might not be biased in this case, standard errors do become wrong. Null hypothesis is rejected (p-val = 0.000 < 0.05) therefore, the estimates of standard errors for coefficients and therefore their t-values are unlikely to be correct.
$\chi^2(90) =$ 7.9 × 10 ⁵	
p-value = 0.000	

MVA was taken as dependent variable. EVA, MB, EPS, EBITDA, OCF, ROA, ROCE and ROE were regressed on MVA.

Pooled OLS estimation shows that except EPS and EBITDA, rest of the variables are significant at 1% level in explaining variation in MVA. Moreover, there is a positive relationship between EVA and MVA for Pakistani firms throughout the study period and this relationship validates at 1% level of significance as envisaged in table 4.7. If we look at the standardized coefficients, it becomes clear that MB and OCF outperform EVA in explaining any variation in MVA. As per the essence of standard coefficient, 1 standard deviation change in EVA, MB, EPS, EBITDA, OCF, ROA, and ROCE will bring positively 0.0917, 0.9601, 0.0367, 0.0451, 0.2373, 0.1083 and 0.1416 standard deviation increase in MVA. Whereas, 1 standard deviation change in ROE will bring 0.4040 standard deviation decrease in MVA. The model's F-statistic value is 53.17 and significant at 1%. R² is used to measures the proportion of variation in dependent variable (MVA) owing to variation in independent variables (EVA, MB, EPS, EBITDA, OCF, ROA, ROCE and ROE). In the model, the value of R² is 44.48% denotes that only 44.48% of the variation in dependent variable can be explained by independent variables. Though lower R², yet there is no problem of autocorrelation as proved by applying Wooldridge Test. As per Pooled OLS estimation, conventional accounting measures outperform EVA in explaining variation in MVA, but EVA being significant at 1% with a coefficient of 0.5771 succeeded in proving its potential to be used as a performance measuring tool. In 2nd technique - panel Data Analysis, while estimating regression through Fixed Effect estimation method, it also shows that except EPS and EBITDA, and ROA, rest of the variables are significant at 1% level in explaining variation in MVA. The relationship between EVA and MVA for Pakistani firms is also positive throughout the study period at 1% level of significance as per table 4.7. While using FE estimation, EVA has slightly improved from 0.0917 to 0.1345 but it is not significant in relation to the remaining variables. Also, MB has dropped significantly from 0.9601 to 0.5869, yet a powerful predictor again in this estimation. OCF has also observed a decline from 0.2373 to 0.1954, however as significant as in the previous estimation. This estimation also proves MB and OCF outperforming EVA in explaining any variation in MVA. As per this estimation, 1 standard deviation change in EVA, MB, EPS, EBITDA, OCF, ROA, and ROCE will bring positively 0.1345, 0.5869, 0.0611, 0.0972, 0.1954, 0.1018, and 0.1305 standard deviation

increase in MVA. Whereas, 1 standard deviation change in ROE will bring 0.5264 standard deviation decline in MVA.

variables (EVA, MB, EPS, EBITDA, OCF, ROA, ROCE and ROE).

The model's F-statistic value is 15.66 and significant at 1%. R² is used to measures the proportion of variation in dependent variable (MVA) owing to variation in independent

Table 4.7: Pooled OLS, Panel Effects & Generalized Least Square Estimates – A Comparison

Dependent Variable (MVA)		C	Independent Variables								
			EVA	MB	EPS	EBITDA	OCF	ROA	ROCE	ROE	
Coefficients	Pooled OLS	-0.337 (0.2142)	0.577*** (0.0394)	0.854*** (0.2071)	0.004 (0.0038)	0.860 (0.6512)	3.613*** (0.6294)	3.179*** (1.1268)	2.011*** (0.5420)	-7.289*** (1.0370)	
	Panel Effects	FE	0.194 (0.3204)	0.846*** (0.2070)	0.522*** (0.0696)	0.006 (0.0061)	1.853 (1.1522)	2.976*** (0.6658)	2.989** (1.2229)	1.854*** (0.6123)	-9.496*** (1.2592)
		RE	-0.223 (0.2524)	0.855*** (0.1993)	0.586*** (0.0443)	0.005 (0.0043)	1.074 (0.7535)	3.429*** (0.6185)	3.092*** (1.1236)	1.964*** (0.5499)	-7.985*** (1.0766)
	GLS	-0.624 (0.0548)	0.170* (0.1021)	0.633*** (0.0235)	0.002* (0.0012)	0.142 (0.1572)	0.947*** (0.2061)	1.703*** (0.6136)	0.712*** (0.2590)	-2.216*** (0.4466)	
Standardized Coefficient	Pooled OLS	---	0.0917	0.9601	0.0367	0.0451	0.2373	0.1083	0.1416	-0.4040	
	Panel Effects	FE	---	0.1345	0.5869	0.0611	0.0972	0.1954	0.1018	0.1305	-0.5264
		RE	---	0.1359	0.6591	0.0489	0.0563	0.2252	0.1053	0.1383	-0.4426
	GLS	---	0.0270	0.7119	0.0214	0.0075	0.0622	0.0580	0.0501	-0.1228	
R ²	Pooled OLS Estimation		Panel Effects Estimation				Generalized Least Square Estimation				
			Fixed Effects		Random Effects						
Adjusted R ²	0.4448		0.4168		0.4435		Not Applicable				
Model Significance	0.4364		0.4080		0.4351		Not Applicable				
Model Significance	F (8, 531) = 53.17 p-value = 0.000		F(8, 442) = 15.66		χ^2 (8) = 302.53		Wald χ^2 = 1120.50				
			p-value = 0.000		p-value > 0.000		p-value > 0.0000				
*** Significant at 1%, ** Significant at 5%, * Significant at 10%.											

In the model, the value of R² is 41.68% denotes that only 41.68% of the variation in dependent variable can be explained by independent variables. While Adjusted R² (40.80%) shows a slight variation with reference to 41.68%. Though lower R², yet there is no problem of autocorrelation as proved by applying Wooldridge Test. As per FE estimation, conventional accounting measures could not control EVA, which being again significant at 1% has materially improved its potential (coefficient - 0.8459). Although account measures are outperforming EVA in explaining variation in MVA, yet EVA exerts its potential implication. In the same technique - panel data analysis, when Hausman test did not confirm the usage of Fixed Effect estimation method, the study had to use Random Effect estimation. This new estimation shows that except EPS and EBITDA, rest of the variables are significant at 1% level in explaining variation in MVA. The relationship between EVA and MVA for Pakistani firms is also positive throughout the study period at 1% level of significance as per table 4.7. While using RE estimation, some of the variables have shown slight improvement over FE estimation results, there improvements include - EVA (0.1359), MB (0.6591), OCF (0.2252), ROA (0.1053), and ROCE (0.1383). Whereas, some variables experienced some decline over FE estimation like EPS (0.0489), EBITDA (0.0563). The results of this

estimation are not much different from those of earlier estimations, as again MB and OCF outperform EVA in explaining any variation in MVA. RE estimation depicts that, 1 standard deviation change in EVA, MB, EPS, EBITDA, OCF, ROA, and ROCE will bring positively 0.1359, 0.6591, 0.0489, 0.0563, 0.2252, 0.1053, and 0.1383 standard deviation increase in MVA. Whereas, 1 standard deviation change in ROE will bring 0.4426 standard deviation decline in MVA. The χ^2 value of the model is 302.53 and significant at 1%. R² is used to measures the proportion of variation in dependent variable (MVA) owing to variation in independent variables (EVA, MB, EPS, EBITDA, OCF, ROA, ROCE and ROE). In the model, the value of R² is 44.35% (in line with the previous estimation results) denotes that only 44.35% of the variation in dependent variable can be explained by independent variables. While Adjusted R² (43.51%) shows a slight variation with reference to 44.35%. Though lower R², yet there is no problem of autocorrelation as proved by applying Wooldridge Test. Like FE, RE estimation also produced healthy results over EVA. EVA although again dominated by accounting measures yet not only managed its potential acceptability, but also showed a slight improvement over FE results (RE: coefficient - 0.8546). Since, there was observed both heteroskedasticity and autocorrelation in the panel results. As a remedial measure, estimation in the name

of Generalized Least Square was used to analyze the results again. This estimation depicted the results significantly different from the previous estimated results. Now, along with EPS and EBITDA, EVA has also been experienced as a dominated variable. Though, the relationship between EVA and MVA for Pakistani firms is also found positive throughout the study period at 1% level of significance. Rests of the variables are significant at 1% level in explaining variation in MVA. Furthermore, GLS estimation has produced the results significantly different than those of the previous results. The standard coefficients are increasing for EVA (0.0270), MB (0.07119), ROA (0.0580), and ROCE (0.0501). Whereas, OCF (0.0622) is in the declining list along with variables like EPS (0.0214) and EBITDA (0.0075). Now, MB has emerged as a sole variable outperforming all the remaining variables including EVA in explaining any variation in MVA. GLS estimation depicts that, 1 standard deviation change in EVA, MB, EPS, EBITDA, OCF, ROA, and ROCE will bring positively 0.0270, 0.7119, 0.0214, 0.0075, 0.0622, 0.0580, and 0.0501 standard deviation increase in MVA. Whereas, 1 standard deviation change in ROE will bring 0.1228 standard deviation decline in MVA. The Wald χ^2 value of the model is 1120.50 and significant at 1%. R^2 is used to measure the proportion of variation in dependent variable (MVA) owing to variation in independent variables (EVA, MB, EPS, EBITDA, OCF, ROA, ROCE and ROE). In the model, the value of R^2 is 44.35% (in line with the previous estimation results) denotes that only 44.35% of the variation in dependent variable can be explained by independent variables. GLS estimation also confirms all the previous estimations that conventional accounting measures outperform EVA in explaining variation in MVA. Here, EVA again succeeded in managing its position at 10% level of significance with the potential acceptability. This study was undertaken to determine significant relationship between MVA (MVA) and market to book value (MB) multiples, EVA (EVA), earning per share (EPS), Earning before interest, Tax, Depreciation and Amortization (EBITDA), operating cash flows (OCF), return on assets (ROA), return on capital employed (ROCE), and return on equity (ROE).

5. CONCLUSION

This study shows a positive and linear relationship between EVA and MVA throughout the period under review. This is in line with many previous studies like Kangarlouei, et. al. [26] for Iranian companies, researcher [27] for US companies, and researcher [7] for Indian companies. Relationship between MB and MVA is also positive and supported by researchers [19] for Iranian companies. EPS is also showing a positive relationship with MVA for whole of the sample period. This relationship is in line with ArabSalehi&Mahmoodi[28] for Iranian companies, Sharma&Kumar[1] for Indian companies, and Maditinos, Šević&Theriou[23] for Greek companies. Though never tested association between EBITDA and MVA in empirical studies found, yet in this study, this relationship has been found as positive. Earlier, in a study the introduction of EBITDA margin has been found as favorable for the EVA adopters Fenn& Liang [29]. OCF is also positively associated

with MVA and this is in line with previous studies like Biddle, Bowen Wallace[30] for US companies, Sharma&Kumar[1] for listed Indian Manufacturing companies, and Fenn& Liang [29] for US companies. ROA is also positively associated with MVA and in support of ArabSalehi&Mahmoodi[28] for Iranian companies, researchers [31] for South African agricultural co-operatives, Researchers [32] for US hospitality industries, and Misra, Anil&Kanwal[7] for Indian companies. The study also reveals positive correlations between ROCE and MVA, which is supporting [7] and Researchers [1] for Indian companies. ROE is enjoying positive relationship with MVA supporting [26] for Iranian companies but not supported by Wet & Toit[33] for South African companies. When we see the power of independent variables in determining MVA, we see that in all the four regression models MB and OCF emerge as significant determinants of MVA. Both are significant at 1% level across the study. EVA, though significant at 1% in the earlier regression, the results (suffering from autocorrelation and heteroskedasticity problems) become insignificant at 5%. In final regression (GLS), EVA is significant at 10%, which is supporting the objective. Although, EVA in GLS estimation not having bigger coefficient, making some other variable a better (bigger) determinant of MVA, yet it emerged as a potential variable of performance measurement. This is in line with the observations of researchers [1], researchers [34] that MVA bears some relationship with EVA in accepting its impact. Somehow, our results with regards to this relationship are not consistent with Tsuji [35], researchers [36] for Iranian companies and researchers [30] that market values are dependent more on accounting earnings than on EVA. EPS have significantly failed to show any determining power in explaining any variation in market value (MVA). This result is as opposite to researcher [37] who observed EPS as a significant over EVA in determining MVA, but consistent with researchers [38] for US banks and [23] for Greek companies. For ROCE, results are inconsistent with researchers [39] for Indian Company.

Thus, our hypothesis about significance of EVA in dominating traditional performance measures in explaining MVA has not proved despite of positive relationship between EVA and MVA. Yet, as a part of our hypothesis, EVA proved as a significant measure (at 10% level of significance). These results reveal that investors in Pakistan prefer traditional accounting measures while making investment decision and in company valuation. Yet, the results are encouraging and EVA has emerged as a potential candidate as a tool for performance measurement. It is hopeful that with a proper mind setting, and focused approach for using and determining EVA, it can better be placed in Pakistani corporate world.

5.1 Policy Recommendations

- Sample companies need a cut on their operational cost to enhance EVA.
- Many sample firms may increase their operating profit while either controlling their costs or increasing the sales to enhance positive EVA.
- Some of the sample firms may phase out their Idle assets to avoid unnecessary fixed costs including depreciation.

- d. Managerial goals should be aligned with the entity's [9] targeted EVA.
- e. Some sample firms may reduce capital to have positive EVA. The free capital must be used for profit earning ventures.

5.2 Recommendations for future EVA studies

This study may be taken as a first puck on the ice at the beginning of a very long game. In this regard, following [11] are some recommendation for future EVA studies:

- a. In future studies, the scholars may use other value based measures such as created shareholders value, cash value added, cash flow return on investment, and refined EVA as independent variables. For dependent variables, market adjusted returns and stock returns may be used.
- b. Being a smaller period of 6 years, which represents a complete business cycle, but, a longer period can better express the empirical results. So, for future studies, intended period may be long enough [40].
- c. As the study is on cross-sectional analysis, thus, a time series study is suggested to understand the relationship between EVA and MVA.
- d. Adjusted stock returns may be used in future studies to [15] overcome the impact of inflation.
- e. A new EVA research may be conducted for determining variables from management accounting like balanced [16] scorecard in order to determine its value relevance from firm's point of view.
- f. A different research can be conducted on testing the relationship between EVA and MVA of financial [17] industry.
- g. Future EVA study is recommended to test EVA implication on sector basis rather than on firm basis.
- h. To calculate cost of equity, other methods like Arbitrage Pricing Theory may be used – though lengthy and never [19] been used in the past.

REFERENCES

- [1] Sharma, A., & Kumar, S., EVA Versus Conventional Performance Measures—Empirical Evidence From India. [20] *In ASBBS Annual Conference*, Las Vegas, CO. 19(1), 804–815, (2012).
- [2] Stewart, G.B. (1994). EVA: Fast and Fantasy. *Journal of Applied Corporate Finance*, 7(2), 71-84.
- [3] Smith, A., An Inquiry into the Nature and Causes of the Wealth of Nations. *Random House, Inc*, (1776).
- [4] Tebogo B., A Critical Analysis of the EVA Method [22] Applied. *Accounting Practitioner eJournal*. DOI:10.2139/ssrn.1803665, (2011).
- [5] Vishwanath, S. R., EVA Financial Management at Godrej Consumer Products Ltd. *Asian Case Research Journal*, 14(01), 31-61, (2010).
- [6] Topkis, M., A New Way to Find Bargains. *Fortune*, [24] 134(11), 265-266, (1996).
- [7] Misra, Anil, & Kanwal., EVA (EVA) as the most significant measure of financial performance - a study [25] of select Indian firms. *Journal of International Business and Economics*, 7(1), (2007).
- [8] O'Byrne, S. F., EVA[®] and Market Value. *Journal of Applied Corporate Finance*, 9(1), 116-125, (1996).
- [9] Hoque, M., Akter, M., & Shil, N. C., Value-based Measure: An Application of EVA in Small Manufacturing Company in Bangladesh. *Journal of Institute of Bankers, Bangladesh*, 51(5), 135-155, (2004).
- [10] Ismail, A., Is EVA more associated with stock return than accounting earnings? The UK evidence. *International Journal of Managerial Finance*, 2(4), 343–353, (2006).
- [11] Athanassakos, G., Value-based management, EVA and Stock Price Performance in Canada. *Management Decision*, 45(9), 1397-1411, (2007).
- [12] Taufik, H., Isnurhadi, H., Widiyanti, M., The Influence of Traditional Accounting and EVA Approaches on Stock Returns of Banks Listed on Jakarta Stock Exchange (JSX). *Proceedings of the MFA Conference, Harper Business*, 185-210, (2008).
- [13] Ross, Westerfield, & Jaffe, Corporate Finance (8e). *The McGraw–Hill Companies*, 368, (2008).
- [14] Sivakumaran, D., & Sarvanakumar, M., A Recent Analysis with Respect to EVA and Share Price Behavior of Indian Banks. *European Journal of Economics, Finance and Administrative Sciences*, (42), 112-120, (2011).
- [15] Costa, O., A Framework for Implementing EVA in Brazilian Banks. *Journal of Money, Investment and Banking*, 23(23), 49–69, (2012).
- [16] Rajesh, M., Reddy, N. R. V. R., Reddy, T. N., An Empirical Study on EVA and MVA Approach. *International Journal of Marketing, Financial Services & Management Research*, 1(3), 87-97, (2012).
- [17] Khan, Shah, Rehman, The Relationship between Stock Return and EVA (EVA): A Review of KSE-100 Index. Available at SSRN 1992209, (2012).
- [18] Jones, Investments – Analysis & Management (10e). *John Wiley & Son*, 372, (2007).
- [19] Rostami, K. H., Margavi, A. K., Asadzadeh, H., Comparing Value EVA with Earnings-Price Ratio and Book-to-Market Ratio in Preparing the Optimal Portfolio: Evidence from Iran. *European Journal of Economics, Finance and Administrative Sciences*, (44), 100–106, (2012).
- [20] Rakshit, D., EVA based Performance Measurement: A Case Study of Dabur India Limited. *Vidyasagar University Journal of Commerce*, 11, 40-59, (2006).
- [21] Abdeen, A. M., & Haight, G. T., A fresh look at EVA: Empirical study of the Fortune five-hundred companies. *The Journal of Applied Business Research*, 18(2), 27-36, (2002).
- [22] Banerjee, A., Linkage between EVA and Market Value: An Analysis. *Vikalpa*, 25(3), 33–36, (2000).
- [23] Maditinos, D., Šević, Ž., & Theriou, G., The Introduction of EVA (EVA) in the Greek Corporate Sector. *The South European Review of Business and Accounting*, 4(2), (2006).
- [24] Heffernan, S. A., Fu, X., Determinants of Financial Performance in Chinese Banking. *Applied Financial Economics*, 20, 1585–1600, (2010).
- [25] Mehmood, B., & Mustafa, H., Empirical Inspection of Broadband-Growth Nexus: A Fixed Effects with Driscoll and Kraay Standard Errors Approach. *Pakistan Journal of Commerce and Social Sciences*. *Pakistan Journal of Commerce and Social Sciences*, 8(1), 01-10, (2014).

- [26] Kangarlouei, S. J., Azizi, A., Farahani, M. S., [34] Dodd, J. L., Chen, S., EVA: A new panacea. *Business and Economic Review*, **42**(4), 26-28, (1996).
- &Motavassel, M., The Search for the Best Financial Performance Measure of Companies Listed in Tehran Stock Exchange (TSE). *World Applied Sciences Journal*, **16**(3), 407-414, (2012).
- [27] Kleiman, R. T., Some New Evidence on EVA Companies. *Journal of Applied Corporate Finance*, **12**(2), 80-91, (1999).
- [28] ArabSalehi, M., &Mahmoodi, I., EVA[®] or traditional accounting measures: Empirical evidence from Iran. *International Research Journal of Finance and Economics*, **65**, 51-58, (2011).
- [29] Fenn, G.W., Liang, N., Corporate Payout Policy and Managerial Stock Incentives. *Journal of Financial Economics*, **60**, 45-72, (2001).
- [30] Biddle, G. C., Bowen, R. M., Wallace, J. S., Does EVA beat Earnings? Evidence on Associations with Stock Returns and Firm Values. *Journal of Accounting and Economics*, **24**, 301-336, (1997).
- [31] Hall, John H. & Geyser, J.M., The Financial Performance Of Farming Co-Operatives: EVA Vs Traditional Measures, Working Papers 18084, *University of Pretoria, Department of Agricultural Economics, Extension and Rural Developmen*, (2004).t
- [32] Lee, S., Kim, W. G., EVA, Refined EVA, MVA, or Traditional Performance Measures for the Hospitality Industry? *International Journal of Hospitality Management*, **28**(3), 439-445, (2009).
- [33] Wet, J. H. H. D., Toit, E., Return on equity: A Popular, but Flawed Measure of Corporate Financial Performance. *South African Journal of Business Management*, **38**(1), 59-69, (2007).
- [35] Tsuji, C., Does EVA beat Earnings and Cash Flow in Japan? *Applied Financial Economics*, **16**(16), 1199-1216, (2006).
- [36] Moghaddam, A. G., Shoghi, H., A Study of Refined EVA Explanatory Power Associated with MVA & EPS in Tehran Stock Exchange. *Interdisciplinary Journal of Contemporary Research in Business*, **3**(9), 403-412, (2012).
- [37] Maditinos, D. I., Ševic, Ž., Theriou, N. G., Modeling Traditional Accounting and Modern Value-Based Performance Measures to explain Stock Market Returns in the Athens Stock Exchange (ASE). *Journal of Modeling in Management*, **4**(3), 182-201, (2009).
- [38] Uyemura, D. G., Kantor, C. C., Pettit, J. M., EVA[®] for Banks: Value Creation, Risk Management, and Profitability Measurement. *Journal of Applied Corporate Finance*, **9**(2), 94-109, (1996).
- [39] Reddy, R., Rajesh, M., & Reddy, T. N., Valuation through EVA and Traditional Measures an Empirical Study. *International Journal of Trade, Economics and Finance*, **2**(1), 19-23, (2011).
- [40] Bismark, R., &Pasaribu, F., Financial Distress Prediction in Indonesia Stock Exchange: Case Study of Trade Industry Public Company. *Journal of Economics, Business, and Accounting*, **11**(2), 153-172, (2008).