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RESEARCH ARTICLE

EVA AND STOCK RETURNS IN EMERGING MARKETS: THE INDIAN EVIDENCE

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ABSTRACT

This study seeks empirical evidence on the causal relations between Economic Value Added (EVA) and stock returns in the Indian context. Based on pooled time series, cross-sectional data on 70 well-performing companies in National Stock Exchange (NSE) over the economic slow-down period 2008-13, the study tests the hypothesis that EVA affects stock returns under linear regression framework, using alternative models. The results suggest that EVA, along with cost of capital, provides statistically significant information content and adds explanatory power in predicting stock returns in India. However, there exists some time lag before adjusting the impact of these measures on stock returns. The findings of this research corroborate the EVA reporting relevance within the context of an emerging capital market like India.

INTRODUCTION

In recent times, creating value for shareholders is a widely accepted corporate objective. Corporate world has been looking for apposite strategies to maximize the shareholders' worth. Developing value-based financial performance measures can be viewed as the strategic move of the corporate to meet this fundamental objective of its finance function. Economic Value Added (EVA) has been introduced in the corporate world as the only integrated financial management system that 'drives stock prices' (Stewart, 1991; 1999; and Stern *et al*., 1995). A significant amount of research in the past estimated the relation between stock return and company fundamentals. Most of these studies have used traditional financial measures such as profits, cash from operations, PE ratios and PB ratios. Basu (1977), Chan *et al*. (1991), Fama and French (1992), Campell (1998) Leledakis and Daidson (2001), Estrada (2005) and Athanassakos (2009) are some of the significant studies of this kind. Similarly, academics have shown interest in models of equity valuation that express value in terms of book value and the expected stream of residual income or abnormal earnings (Ohlson, 1995; and Feltham and Ohlson, 1995). Most of the traditional models use earning measures which often ignore the impact of the cost of capital. Later, the equity research started to use value added measures that consider the cost of capital along with earnings.

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EVA, which compares the firms' operating profit with their cost of capital employed, is proposed as a major improvement over the traditional measures, and its proponents report high level of its correlation with stock returns. It is a measure of total factor productivity (Drucker, 1995). Eva provides a single, unfired, and accurate measure of value as well as performance. Indian corporate world has gained significant growth during the post-liberalization period and the trend had continued till 2008. Like any other economics in the world, the global financial crisis has had its reverberation in the Indian economy also. But the aftershocks of the crisis on the performance of Indian corporate sectors were not same. Similar is the case for the performance of their stocks in the mark*et al*so. Though some companies could somewhat emerge unhurt from it (Saji *et al*., 2013). The corporate performance in the country during the recovery days has also not been same. Since EVA is the right measure for performance evaluation and investor communication, it could be used as the true proxy determining the fundamental strength of a company. An empirical research based on Indian dataset using this value-based measure, covering the recent days of market changes, is expected to bring more robust results evidence on the explanatory power of EVA in capturing the variations in stock returns under a transfigured economic frame. The inclusion of a firm's cost of capital in the calculation of the value-based measures, inter alia, facilitates the evaluation of value creation.

Literature Review

A significant amount of empirical literature investigates the relations between the EVA and stock returns by pursuing

diverse methodologies in different country contexts. Many prior studies on this issue have shown that EVA contributes little information content beyond earnings in explaining individual stock returns. The findings of these researchers do not lend any support to the claim of Stern Stewart & Co. with regard to the superior performance of EVA in explaining stock returns. O'Byrne (1996) shows that EVA outperforms earnings in explaining variations in stock returns. Visaltanchoti *et al*. (2008) made a study which revisited the benefits of EVA by comparing its information content in explaining 90 sector returns with the information content of three traditional accounting based performance measures: Cash Flow Operation (CFO), Earnings Before Interest and Tax(EBIT), and Residual Income(RI). Their findings suggest that the association between traditional accounting performance measures and sector returns is higher than that with EVA. EVA is a poor indicator of the market value of the firm or is insignificant in predicting stock returns (Peterson and Peterson, 1996). The findings of Chen and Dodd (1997) agree with Petersons' observations. Biddle *et al*. (1997) provided evidence for the higher degree of correlation between EVA and market value. But their study strongly asserts that the profits are more important than EVA in predicting stock returns. Some of the later studies shed light on the implications of EVA in predicting stock returns. EVA is more powerful in explaining the stock return as compared to the other traditional measure (Zimmerman, 1997). Similar observation was made by Kyriaz and Anastassis (2007). Recently, Abdoli *et al*. (2012) examined the relation income with the shareholder value in the market. Their study found that both these variables have significant relationship with the created shareholder value. However, residual income is more significant than EVA in impacting stock price. In India, some studies have already established the positive relation between EVA and stock returns. Pattanayak and Mukherjee (1998) and Banerjee *et al*. (1999) agree with the use of EVA in estimating stock returns in India.

Anand *et al*. (1999) also provide evidence for the power of EVA along with REVA and MVA in shareholder value creation and competitive advantages of the firms. But the research findings of Shubita and Fawzi (2010) prove that Net Income (NI) outperforms EVA and residual income (RI) in their association with stock return in India. EVA makes only marginal contribution to information content beyond traditional financial measures in India (Kumar and Sharma, 2011). Patel and Patel (2012), in their study, based on selected private sector banks during the five-year period from 2004 to 2009, prove that EVA is insignificant in explaining the stock prices of financial institutions in India. On reviewing the existing literature, it is quite obvious that the research on EVA and stock returns not much exhaustive in India. In addition to that, the available researches on the issue have produced contradicting results. Methodological issue and data bias might have affected their research outcomes. Only very few research studies in India have tested EVA leading stock return hypothesis during the recent crisis. None of these works could supply empirical evidence for the correct explanatory timing of relationship between stock returns and EVA. The present research intends to fill this gap and this factor makes this study more relevant.

Data and Methodology

DATA

Our sample consists of 70 companies, all traded on National Stock Exchange (NSE) during a five-year study period 2008-2013. In terms of market capitalization, stocks included in the main indices of NSE, that is Nifty and Nifty junior index, lead Indian stock market, and hence it is considered relevant to do EVA analysis. Although both these indices together comprise 100 stocks, only 70 stocks were consistently included in the indices during the study period, forming 350 firm year observations. The variables have chosen to use stem from the available literature. Consequently, we use annual data on reported earnings, total capital employed, total debt, interest cost, earnings per share along with monthly closing share prices. All these variables were found to be the significant factors that one should consider when one examines the relation between stock returns and value-based management. The financial data are taken from Capitaline database and closing share prices form NSE website.

Methodology

EVA: Measurement

Since most of the firms selected for the study are not reporting the value of their EVA measure, the primary task of the researcher is to compute the value of EVA, EVA, in essence, is the residual portion of profit left after making proper charge for the capital employed in business. The value of EVA can be expressed by any of the following, apparently different, but strictly equivalent, mathematical expressions.

EVA= NOPAT-C * Capital Employed …(1)
EVA= Capital Employed (r-c*) …(2)
EVA= PAT-K_e*Net worth …(3)

Where

NOPAT= Net Operating Profit After Tax, C* = Weighted Average Cost of Capital, r= Return on capital invested, PAT= Profit After Tax and ke = cost of Equity.

The computations of K_e are relatively confusing. However, for the purpose of the study, we assume K_e as the rate of return expected by the investors from their stock investments. We use Capital Asset Pricing Model (CAPM) to estimate K_e, CAPM is independently developed by three researchers, Sharpe (1964), Linter (1965) and Mossin (1965), which describes the market risk-return relationship of stocks, used by Stewart (1991) for estimating the Ke.

$$r_{it}= \infty_i + \beta_i(r_{mt}=r_f)+E_{it} \quad \ldots(4)$$

A risk-free rate, the market premium and a beta factor were used in the Capital Asset Pricing Model (CAPM) to calculate the cost of equity. One year T-Bill rate in India is used as the proxy for risk-free rate and the difference between average annual return on Nifty Index and risk-free rate constitutes the

market risk premium. The β that it refers to is derived from expected covariance and variances of returns.

Linking EVA with MVA

With the introduction of another variable Market Value Added (MVA), the relation between the stock price and EVA could be better explained. If the total market value of a company is greater than its capital invested, the company creates value and the opposite state leads to the destruction of shareholder wealth (Stewart, 1990). This difference between the current market value of the firm and its book value is called MVA, which can be expressed as:

MVA=TMV-TBV …(5)

Where, TMV is the total market value of the firm, i.e., the sum of Market Value of Equity (MVE) and Market Value of Debt (MVD). TBV is the total book value of the capital invested, i.e., the sum of the book value of equity (BE) and Book Value of Debt (BVD). Then the equation (5) can be rewritten as:

MVA= (MVE+MVD)-(BCE+BVD) …(6)

Assuming that the market value and the book value of debt are equal, i.e., MVD=BVD, Equation (6) becomes

MVA=MVE-BE, so that

MVE=BVE+MVA …(7)

With this expression, we presume that the market value of a firm's equity is equal to the sum of its book value of equity and the MVA.

Again, Stewart (1991) shows that MVA is simply the present value of all the future of EVA:

$$MVA_i = \sum_{i=0}^{\infty} \frac{EVA}{(1+c^*)i} \quad \ldots(8)$$

Substituting the MVA in Equation (7) a new mathematical expression for the MVE is found

$$MVE = BVE + \sum_{i=0}^{\infty} \frac{EVA}{(1+c^*)i} \quad \ldots(9)$$

Thus, this relationship between EVA and the market value of equity suggest that EVA affects the market value of the stock, hence stock returns. From Equitation (9), it can also be inferred that along with EVA, cost of capital could also be a significant factor in determining equity returns.

Model Specification

Unlike other research in the era, we use a panel of data which is capable of identifying the common variation in the data series overtime. This would not have been possible with pure time-series or pure cross-sectional data alone. The study also seeks to examine how the identified variables, or the relationship between them, change dynamically (overtime). To do this using pure time-series data would often require a long time-series data would often require a long run of data simply to get a plenty of observations to be able to carry out any meaningful hypothesis tests. With a panel set combining cross-sectional and time series data, one can increase the number of degrees of freedom, and thus the power of the test, by employing information on the dynamic behavior of a large number of entities at the same time. Moreover, one can remove the impact of certain forms of omitted variables bias in regression results (Brooks, 2008)

The assumptions with regard to the relationship between EVA and stock returns, which hold in the previous researches on this issue, are not unique. However, many studies of this kind, for example Makelainen (1998) and Medeiros (2002), unanimously suggest that there is time lag in the influence of Eva on the market value of firms. This research, in its ultimate sense, intends to verify the correct explanatory timing of the relationship between Eva and stock returns. Hence, the following two alternative panel regression models are specified for this purpose. These specifications, along with EVA, have included the cost of capital also the relevant explanatory variables.

$$Model1: logr_{it} = \alpha + \beta logEVA_{it} + \beta_{it} logc^*_{it} + E_{it} \quad \ldots(10)$$

$$Model2: logr_{it} = \alpha + \beta logEVA_{i(t-1)+} \beta_{it} logc^*_{i(t-1)} + E_{it} \quad \ldots(11)$$

In the Equations (10) and (11), r is the stock return, subscript i indicates the i^{th} company, subscript t indicates the period of time (year), log is the natural logarithm operator, α and β are parameters to be estimated, and E_{it} is the error term. It is expected that the relationship of stock return with EVA is positive and that of with cost of capital is negative. Equations (10) relate the current stock return with current EVA and also with current cost of capital. Equation (11) relates the current stock return with one year lag EVA and one year lag cost of capital. Equation (11) is intended to test empirical validity of hypothesis with respect to the timing, i.e., the current price change is influenced by the past EVA.

RESULTS AND DISCUSSION

The empirical part of the work was developed using a sample of 70 public listed companies in Indian market. Since, published data on EVA by Indian firms are scarce; we have computed EVA for the five-year period. The value of EVA is expressed as a percentage of capital invested by firms.

Descriptive statistics

Table 1 summarizes the statistical characteristics of the data on three variables used in this research. Mean, Median, Standard Deviation (SD) and Skewness are reported. SD and Skewness are computed for explaining the volatility and normality of the distribution respectively. Generally, value for zero Skewness represents that the observed distribution is normally distributed. The Skewness coefficient in excess of unity is taken to be fairly extreme (Chou, 1969).

Table 1. Descriptive Statistics on EVA, Cost of Capital and Stock Return

Variables	Mean	Median	SD	Skewness
EVA (%)	2.94	-0.084	18.04	0.07
Return (r) (%)	34.34	16.45	84.80	1.70
Cost of Capital (c*) (%)	13.04	11.022	16.09	5.47

We find that EVA has the lowest mean and median values. But its standard deviation is relatively higher than cost of capital. However, Skewness coefficient shows that the firms under study in terms of their EVA performance are almost normally distributed. The stocks of the firms delivered huge returns to investors, but extreme variation is visible. Cost of capital has not only the moderate standard deviation but also the fair mean and median values. Both stock return and cost of capital showed extreme degree of positive Skewness.

Panel Regression Results

To test the information content of EVA and cost of capital in explaining stock return variations in India, two panel regression models are constructed. Current stock return is regressed against the current value of performance measures in first model and current stock return is regressed against one year lagged value of performance measures in second model. The results of these models are reported in Tables 2 and 3. The regression results indicating the causal relation of current year stock return with current value of EVA and cost of capital are weak (Table 2). The t-test on the b estimates of this model fails to reject the null hypothesis of "b parameter is equal to zero". Besides, the degree of variance in stock returns explained together by the performance measures, i.e., value of R^2, is quite low. Therefore, the regression represented by the first model should be disregarded.

Table 2. EVA and Cost of Capital on Stock Returns: Panel Regression Model 1 Results

Variables	β	Std.Error	t-Statistic	*p*-Value
Constant	5.5051	0.6997	7.868	0.0000*
Log c*	-0.0056	0.0144	-0.3982	0.6908
Log EVA_{it}	--0.0291	0.1313	-0.2124	0.8319
Sum Squared Residual		310.4804	SE of regression	1.007361
R-Squared		0.0006	Adjusted R-squared	-0.0051
F-statistic		0.0970	P-value(F)	0.9075
Log-Likelihood		-458.1894	Akaike Criterion	922.3787
Schwarz Criterion		933.7760	Hannan-Quinn	926.9249
Note: *Significant 1% level.				

Table 3. One Year Lagged Values of EVA and Cost of Capital on Stock Returns: Panel Regression Model 2 Results

Variables	B Coefficient	Std. Error	t-Statistic	*p*-Value
Constant	3.98401	0.158595	25.1206	0.00000*
Log c^*_{it}	-0.286944	0.0462051	-6.2102	0.00000*
Log EVA_{it}	0.19218	0.0222513	8.6368	0.00000*
Sum Squared Residual		101.4777	SE of regression	1.007361
R^2		0.578014	Adjusted R^2	0.569574
F-statistic		68.48730	P-value(F)	0.00000*
Log-Likelihood		-145.3838	Akaike Criterion	296.7676
Schwarz Criterion		304.6718	Hannan-Quinn	299.9691
Note: *Significant 1% level.				

Conversely, the results reported in Table 3 show that regression Model 2 is robust. Here the t-test rejects the hypothesis that b is equal to zero at 1% level of significance, which is evident in respect of both measures. As we expected, the b estimate is positive for EVA and is negative for cost of capital. The value of R^2 (i.e., proportion of variance explained) adjusted for degrees of freedom is relatively high, which denotes that almost 58% of the stock return variations in India could be explained by the one year lagged values of EVA measures and cost of capital invested by firms. Moreover, the F-static, which test the null hypothesis that all the coefficient are zero (one year lagged values of EVA and cost of capital are not able to explain the current stock returns), is rejected at 1% level. The result expressed in Model 2 supports the theory that the stock returns are influenced positively by the past behavior of EVA. The influence of cost of capital on stock returns should not be surprising, because it is the prime factor which squeezes the major share of net income of a firm, hence is negatively related to stock returns. But there exists time lag in adjusting stock returns with changes in these performance measures. To be precise, stock returns are significantly influenced by changes in EVA and cost of capital lagged by one year.

Conclusion

Previous researches on the relationship between stock returns and EVA have produced diverse results. Some earlier studies supported the validity of EVA leading stock return hypothesis in different country contexts. But subsequent studies questioned the soundness of this hypothesis. Most of the studies claimed that traditional accounting measures could out-beat EVA in explaining stock return variations. A study based on the data of companies listed on NSE India for the recession affected period of 2008-2013 revealed that on a year-on-year basis, EVA did not make any significant influence on stock return variations in an emerging market context. However, panel regression model using one year time lagged values of exogenous variables successfully captures the correct explanatory timing of the relationship between EVA and stock returns there. More specifically, this research establishes that the change in EVA and cost of capital of firms definitely affects their stock price changes in the market and its impact could be visible only in just subsequent year. This research supplies useful insights to both investors and the corporate in India. The investors evaluate the past behavior of EVA performance of firms while forecasting the price movement in the bourses. The research finding definitely encourages more firms to disclose the value performance measures by revamping their existing financial reporting system; thus they can find more investors who show interest in their growth and expansion.

Limitations: It is acknowledged that only 70 companies were included in the final sample and this imposes a constraint on the conclusions that can be drawn. Moreover, the findings and implications of this study are limited to the recession period of 2008-2013 for an emerging country like India. In addition, only one value performance measure has been used as determinant of stock return for the purpose of this study.

Future Scope: Examining the information content of other value-based performance measure, incorporating data on more companies not only from India, but also from other emerging

economies like Brazil, Russia, China and South Africa, and covering longer sample period might improve further analysis and significance of the study. All are possible and certainly valuable lines of future research.

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