Asset Pricing in Indian Securities Market: The Role of Beta and Book-to-Market Equity Ratio

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1. INTRODUCTION

Investment in securities market requires the study of the relationship between risks and returns. Sharpe (1964), Lintner (1965) and Mossin (1968) have independently developed Capital Asset Pricing Model (CAPM). The studies conducted by the Black, Jensen and Scholes (1972), Black (1972), Fama and MacBeth (1973), Terregrossa (2001) have supported the CAPM. After 1970s, CAPM came under attack as striking anomalies were reported by Reinganum (1981), Elton and Gruber (1984), Bark (1991), Harris *et al.,* (2003). Researches show that CAPM's beta (β) is not a good descriptor of the expected return of securities/portfolios. Prominent among the CAPM anomalies are book-to-market equity (BE/ME) effect of {Chan, Hamao and Lakonishok (1991)} and Fama and French (1992, 1993, 1996, 1998, 2002). But studies by Kothari *et al*., (1995), Kothari and Shanken (1995) argue in defense of CAPM's beta (β). Daniel and Titman (1997) argued that it is the characteristics rather than the covariance structure of returns that appear to explain the cross-sectional variation in stock returns.

The empirical evidence against the CAPM has generated a lot of debate and has called for major re-examination of the CAPM. While many studies have been conducted on CAPM and factors model in the western countries, there are a few studies in the Indian context. Studies by Varma (1988), Yalwar (1988) and Srinivasan (1988) have generally supported the CAPM theory. Studies by Gupta and Seghal (1993), Vaidyanathan (1995), Madhusoodanan (1997), Sehgal (1997), Ansari (2000), Rao (2004), Manjunatha *et.al* (2006, 2007) have questioned the validity of CAPM in Indian markets. Studies by Mohanty (2002), Sehgal (2003), Connon and Sehgal (2003) supported the factors model. Ansari (2000) has opined that the studies of CAPM on the Indian markets are scanty and no robust conclusions exist on this model. This view motivates the present study. Therefore an attempt is made to explore if beta and book to market equity {ln(BE/ME)} ratio explain the cross-sectional variation in security/portfolio returns in Indian capital market. The paper is organized in four parts. Part 1 is the introduction; part 2 presents objectives, hypotheses, data and methodology; part 3 analyses the results; part 4 presents the summary and conclusions. References are given after part 4 and the Tables are presented after the references.

2. OBJECTIVES, HYPOTHESES, DATA AND METHODOLOGY

2.1 Objectives: *This study is undertaken with the following objectives:*

- To test the empirical validity of the Standard CAPM model in India.
- To ascertain the relationship between returns of securities/portfolios and book-to-market equity ratio *{ln(BE/ ME)}*.

2.2 Hypotheses: Based on the available evidence on CAPM as discussed above; particularly from Fama and French (1992) model; the following hypotheses are formulated:

2.2.1 The null hypotheses are:

- H_o: The intercept (Alpha) in the CAPM is not significantly different from zero.
- H_o: Market betas are not the determinants of the cross-section of the expected security/portfolio returns.
- H_o: Book-to-market equity (ln(BE/ ME)) ratio does not explain the cross-section of Security/portfolio returns.

The negations of the above null hypotheses are the alternate hypotheses.

2.3 Data and Sample:

The study is based on BSE Sensex companies that were part of the index from base year (1978-79) to 30th June, 2005. Sensex consists of 30 companies. However, other companies that replaced a number of companies and that are/ were part of Sensex during different times in the history of the index have been included in the study. The final list of 66 companies is selected based on two criteria: a) the companies selected should have been constituents of

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BSE Sensex and b) traded for minimum six months in a year during the study period. BSE-100 index is a market proxy and the weighted average yields of GOI securities are used as risk-free rate of returns for the respective years. The daily adjusted closing share prices and index from January 1, 1999 to June 30, 2005 are used for the study. To test the firm specific factor, ln(BE/ME) ratio is constructed based on the daily unadjusted closing prices, book value per share, outstanding number of shares are used. The data were collected from CMIE (Prowess package), BSE, RBI, DCA, SEBI websites. Over the years, researchers have used quarterly, monthly, weekly data to study the empirical relationship in the CAPM. Brown & Warner (1985) suggest that the daily prices are better as quarterly, monthly, weekly data do not provide a very meaningful relationship between risk and return and, hence, daily price data are used in this study. Only capital gains component has been used in estimating returns, as dividend information of companies is not available for all companies for all the years of the study period. Moreover, ignoring dividends would not pose a serious estimation bias in the light of the fact that the Indian companies' exhibit very low dividends yield ratios over the sample period. Further, the BSE-100 index that is used as proxy in the study does not incorporate dividends. Hence, including dividends while estimating security returns would have actually introduced a positive bias in the slope estimates of our time-series regression.

2.4 Methodology: Standard form of CAPM

We have used market model to calculate beta and alpha of the sample companies. This model is used by Black, Jensen and Scholes (1972) and other researchers.

2.4.1 Phase I: Time series regression

We have calculated percentage and log returns of the sample data and then calculated mean returns. Terregrossa (2001) methodology has been used for grouping of sample companies by using three-year period daily returns for the period of study and then computed the intercept (αi) and beta (â) for each of the sample periods and companies. For example, the daily prices of the first three years from January 1, 1999 to December 31, 2001 are used for computing the parameters to test the CAPM for the ex-post returns of the year 2002. For the second set of three years, the first year is deleted and one additional year (2002) is added to test for the year 2003 and so on. The risk measures like beta, alpha are calculated using the following market model.

$$R_i = \alpha_i + \beta_i R_m + e_i \quad , for\ i = 1, \ldots N. \qquad \ldots(1)$$

Where, R_i = Expected return on Security 'i'; α_i = Intercept of a straight line or alpha coefficient of security i; β_i = Slope of a straight-line or beta coefficient of security i; R_m = Expected return on index m; e_i = Error term with mean zero and a standard deviation which is constant. This term captures the variations in security i that are not captured by the market index m.

2.4.2 Phase II: Cross-sectional univariate regression using individual security's beta

In Phase II of the study, to test the CAPM, the realized returns on each security for the period for every year starting from January 1, 2002 to December 31, 2002 to January 1, 2005 to June 30, 2005 (for each year separately) are used. A second pass regression is run for the following:

$$R_i - R_f = \alpha + \beta_1 \beta_i + e_i \qquad \ldots (2)$$

Where R_f = *risk free rate of return;* α *and* β_1 *are estimate for intercept coefficient and slope coefficient for security.*

If the CAPM holds, we can expect α in the above model to be closer to zero and beta (β_1) to be significantly different from zero and it captures the cross-sectional variation in security returns. The summarised results of the Phase II regression are presented in Tables.

2.4.3 Book-to-Market Equity {ln(BE/ME)} ratio

Book-to-Market Equity (ln(BE/ME)) is the natural logarithm of book value of equity to market value of equity. The book value of equity has been computed by multiplying the book value per share with the number of outstanding equity shares and market value of equity has been computed by multiplying the closing market price with the number of outstanding equity shares. We use Fama and French (1992) methodology to test for the impact on the cross-section of security/portfolio returns for the sample stocks of BSE sensex. In this paper beta, ln(BE/ME) ratio variables are considered individually for fitting the univariate regression line and the combination of beta and ln(BE/ME) ratio variables for fitting the multiple regression line.

2.4.4 Cross –section univariate regression using individual security's ln(Book-to-Market Equity} ratio.

Using ln(BE/ME) ratio as independent variable and R_i-R_f as the dependent variable, a regression is run for the following:

$$\left(R_i - R_f\right) = \alpha + \beta_2 R_{\left(\frac{BE}{ME}\right)_{i_{t-1}}} + e_{i_{t-1}} \quad \ldots (3)$$

If the Factors model holds, we expect α to be closer to zero and $\beta_{2,}$, the co-efficient of ln(BE/ME), to be significantly different from zero if it captures the cross-sectional variation in security returns.

2.4.5 Cross –section multiple regression using individual securities b_i and ln(BE/ME) ratio

The variation of security returns may be explained either by one or more independent variables. In Paragraphs 2.4.3 and 2.4.4, the univariate variables have been used to test the extent of these variables' influence on the security returns. The study has been extended further to combinations of independent variables, beta and ln(*BE/ME)*ratio, to test the variation in security returns. We use Fama and French (1992) methodology. Using betas and ln(BE/ME) ratio as independent variables and R_i-R_f as the dependent variable, a multiple regressions is run for the following:

$$\left(R_i - R_f\right) = \alpha + \beta_1\beta_i + \beta_3 R_{\left(\frac{BE}{ME}\right)_{i_{t-1}}} + e_{i_{t-1}} \quad \ldots (4)$$

If the Factors model holds, we expect α to be closer to zero and the combination of two variables, BE/ME and beta to capture the cross-sectional variation in security returns.

2.4.6 Test for Alpha, Beta and ln(BE/ME) of Portfolios based on Cross-Section Regression

The study has further focused on testing CAPM and factor model by forming portfolios. A portfolio of 5 securities is made with equal weights as suggested by Lakonishok, Shliefer and Vishny (1994) considering non-overlapping securities. In this set, portfolio 1 has been formed by choosing the first five securities having highest beta values (securities 1, 2, 3, 4 and 5), Portfolio 2 is formed by choosing the next five securities (6, 7, 8, 9, and 10) and so on. Using this process, 13 portfolios have been formed with equal weightage to each security in the year 2002. Similar process is done for subsequent test periods from 2003 to 2005. Similarly, another set of portfolios has been formed with market value weights as suggested by Fama and French (1992). For the purpose of testing CAPM, the realized returns on each security for the period January1, 2002 to December 31, 2002 is used as a measure for expected portfolio returns. A similar method has been used for the rest of the test period January1, 2003 to December 2004 (for each year separately) and January 1, 2005 to June 30, 2005. We use similar formulae defined in paragraphs 2.4.2, 2.4.3, 2.4.4 and 2.4.5 to study the independent variables' effect on portfolio returns.

2.4.7 Company attributes (Year t and Year t-1 analysis)

To test for the ex-post returns of year t, we make two assumptions. In the first case we assume that investor can use values of book equity (BE) and market equity (ME) (book –to-market equity ratio (BE/ME) of year *t-1* and use this information to make estimation of the returns of year t. In the second case we assume that investors are able to anticipate the values of BE and ME (book –to-market equity ratio (BE/ME) of year *t* and based on these anticipated values, the expected returns are estimated. Based on the above assumption, we first test using year t values and later we test using year t-1 values of independent variables.

2.4.8 Cross sectional analysis: year-wise regression

The CAPM is tested by running regressions on the realized returns of the individual years, viz., 2002, 2003, 2004 and 2005. The security's cross-sectional year- wise regression is done to test the extent of independent variable's influences on the security/ portfolio returns.

3. RESULTS AND ANALYSIS

3.1 Test for Intercept (Alpha), Beta (β), book-to-market equity (ln(BE/ME)) ratio and the F value (Phase II test: on the basis of the cross-section regression):

The determinants of security/portfolio returns can be studied in different ways. The present study has been conducted by choosing two independent variables viz beta and ln(BE/ME) ratio. Univariate and multiple regression models are used independently to find out the extent of influence of these variables on security/portfolio returns. The results of the different securities/ portfolios described in Part 2.4.2, 2.4.3, 2.4.6, 2.4.7, 2.4.8 are presented in Tables (Table Nos.1 to 12). The intercept and slope co-efficient values are tested using the t-test and the overall fit of the regression is tested using the F-test at 5 percent level of significance.

We have a large number of cross-section regressions for each independent variable. Security percentage returns with year-wise regression with year t values will have four regressions for four years tested (i.e 2002 to 2005). The same number of regressions are obtained for percentage returns with equal weights using year t-1 values, log returns with equal weights using year t values, log returns with equal weights using year t-1 values. To take the overall results in all the regressions, we count the total number of intercepts/slope co-efficients by classifying these into two cases. In the first case, we take all the co-efficients whose *p*-values are less than level of significance (0.05) and in the second case we take the co-efficients whose *p*-values are more than 0.05. In both the first and the second cases we compute the percentage of cases whose co-efficients are less/more than 0.05. If the majority of alpha coefficient's *p*-values are more than 0.05, we conclude that alpha is not significantly different from zero and therefore, accept the null hypothesis. If a large percentage of *p*-values of alpha are more than 0.05%, we accept null hypothesis. The similar process is used for beta, ln(BE/ME) variables (univariate regression) and also for the combination of beta and ln(BE/ME). The total numbers of cross sectional regressions for two univariate variables are 96 and that for a multiple regression it is 48.

Note: Number of cross sectional regressions:

When we use security percentage returns, the total numbers of regressions for each univariate variables is 8. This is because, we have 4 regressions for year-wise (individual years, viz., 2002 up to 2005) when we take year t weights; 4 regressions for year-wise when we take the weights of year t-1.

When we use security log returns, the total numbers of regressions for each univariate variables is 8. When we use percentage returns with equal weighted portfolios, the total numbers of regressions for each univariate variables is 8. When we use percentage returns with market value weighted portfolios, the total numbers of regressions for each univariate variables is 8. When we use log returns with equally weighted portfolios, the total numbers of regressions for each univariate variables is 8. When we use log returns with market value weighted portfolios, the total numbers of regressions for each univariate variables is 8. So the total numbers of cross sectional regressions for two univariate variables are 96. Similar calculation has been done for multiple regressions.

3.2Cross-sectional univariate regression results of percentage returns: Case of individual securities

Table1 shows that in 81% of the cases, the α values are significantly different from zero. Therefore, we reject the null hypothesis that alpha is equal to zero. The *p*-values of security beta ($\hat{a}_i$) are more than 0.05 and the F-test indicates that regression is not a good fit in 100% of the cases. Therefore, we accept the null hypothesis that beta does not significantly explain the variation in security returns. The *p*-values of security ln(BE/ME) are less than 0.05 and the F-test indicates that regression is a good fit in 62% of the cases. Therefore, we accept the alternate hypothesis that book-to-market equity ratio significantly explains the variation in security returns.

3.3 Cross-sectional multiple regression results of percentage returns: Case of individual securities

Table 2 shows that in 75% of the cases, the α value is significantly different from zero. Therefore, reject the null hypothesis that alpha is not significantly different from zero. While the *p*-values of ln(BE/ME) slope, co-efficient are less than 0.05 in 62% of the cases, the *p*-values of β_i slope co-efficients are more than 0.05 in 100% of the cases. This indicates that ln(BE/ME) ratio explains the variation in security returns whereas and β_i does not significantly explain the variation in security returns. The F-test indicates that the regression is a good fit in majority (62%) of the years. Therefore, we may conclude that the combination of ln(BE/ME) and *beta* explains the variation in security returns but individually only ln(BE/ME) explains the security returns.

3.4 Cross-sectional univariate regression results of log returns: Case of individual securities

Table 3 shows that in 56% of the cases, the α value is significantly different from zero. Therefore, we accept the alternate hypothesis that alpha is not equal to zero. The *p*-values of security beta ($\hat{a}_i$) and $\ln(BE/ME_i)$ are more than 0.05 and the F-test indicates that regression is not a good fit in majority of the cases. Therefore, we accept the null hypothesis that neither security beta, nor security book-to-market equity ratio explain the variation in security returns.

3.5 Cross-sectional multiple regression results of log returns: case of individual securities

Table 4 shows that in 75% of the cases, the α value is not significantly different from zero. Therefore, we accept the null hypothesis that alpha is equal to zero. The test for $ln(BE/ME_i)$ and $\hat{a}_i$ slope co-efficients shows that in majority of the years, slope co-efficients are equal to zero. Further, the F-test also indicates that the regression is not a good fit in majority (62%) of the years. This reveals that the variables both individually as well as in combination do not capture the variation in security returns.

3.6 Cross-sectional univariate regression results of percentage returns with equally weighted portfolios

Table 5 shows that in 75% of the cases, the α value is significantly different from zero. Therefore, we accept the alternate hypothesis that alpha is not equal to zero. The p-values of âp and ln(BE/ME) slope co-efficients are more than the level of significance and the F-test indicates that regression is not a good fit in majority of the cases. Therefore, we accept the null hypothesis that none of these independent variables significantly explain the variation in portfolio returns.

3.7 Cross-sectional multiple regression results of percentage returns with equally weighted portfolios

Table 6 shows that in 62% of the cases, the α value is not significantly different from zero. Therefore, we accept the null hypothesis that alpha is equal to zero. The test for *ln(BE/ME)* and $\hat{a}_p$ slope co-efficients shows that in majority of the years, slope co-efficients are equal to zero and the F-test also indicates that the regression is not a good fit in 100% of the cases. This reveals that the variables, both individually and in combination do not capture the variation in portfolio returns.

3.8 Cross-sectional univariate regression results of percentage returns with market value weighted portfolios

Table 7 shows that in 75% of the cases, the α value is not significantly different from zero. Therefore, we accept the null hypothesis that alpha is equal to zero. The *p*-values of $\hat{a}_p$ and ln(BE/ME) slope co-efficients are more than the level of significance and the F-test indicates that regression is not a good fit in majority of the cases. Therefore, we accept the null hypothesis that none of these independent variables significantly explain the variation in portfolio returns.

3.9 Cross-sectional multiple regression results of percentage returns with market value weighted portfolios

Table 8 shows that in 62% of the cases, the α value is not significantly different from zero. Therefore, we accept the null hypothesis that alpha is equal to zero. The test for *ln(BE/ME)* and $\hat{a}_p$ slope co-efficients shows that in majority of the years, slope co-efficients are equal to zero and the F-test also indicates that the regression is not a good fit in majority of the cases. This reveals that the variables both individually as well as in combination do not capture the variation in portfolio returns.

3.10 Cross-sectional univariate regression results of log returns with equally weighted portfolios

Table 9 shows that in 56% of the cases, the α value is not significantly different from zero. Therefore, we accept the null hypothesis that alpha is equal to zero. The *p*-values of $\hat{a}_p$ and ln(BE/ME) slope co-efficients are more than the level of significance and the F-test indicates that regression is not a good fit in majority of the cases. Therefore, we accept the null hypothesis that none of these independent variables significantly explain the variation in portfolio returns.

3.11 Cross-sectional multiple regression results of log returns with equally weighted portfolios

Table 10 shows that in 62% of the cases, the α value is not significantly different from zero. Therefore, we accept the null hypothesis that alpha is equal to zero. The test for *ln(BE/ME)* and $\hat{a}_p$ slope co-efficients shows that in majority of the years, slope co-efficients are equal to zero and the F-test also indicates that the regression is not a good fit in majority of the cases. This reveals that these variables do not capture the variation in portfolio returns.

3.12 Cross-sectional univariate regression results of log returns with market value weighted portfolios

Table 11 shows that in 69% of the cases, the α value is not significantly different from zero. Therefore, we accept the null hypothesis that alpha is equal to zero. The *p*-values of $\hat{a}_p$ and ln(BE/ME) slope co-efficients are more than the level of significance and the F-test indicates that regression is not a good fit in majority of the cases. Therefore, we accept the null hypothesis that none of these independent variables significantly explain the variation in portfolio returns.

3.13 Cross-sectional multiple regression results of log returns with market value weighted portfolios

Table 12 shows that in 62% of the cases, the α value is not significantly different from zero. Therefore, we accept the null hypothesis that alpha is equal to zero. The test for *ln(BE/ME)* and $\hat{a}_p$ slope co-efficients shows that in

Table 1 : Cross-sectional univariate regression results of security percentage returns

	Alpha		Beta (β_i)		SigF		Ln(BE/ME$_i$)		SigF	
1	19		100			100	38			38
2		81						62	62	

Note1. First row, following the header row, indicates percentage of acceptance of H_o (the co-efficients are more than the chosen level of significance) and in the case of SigF it indicates that the regression is not a good fit. Second row, following the header row, indicates percentage of rejection of H_o (the co-efficients are less than the chosen level of significance) and the SigF indicates that the regression is a good fit. For example in the above Table, Alpha is not significantly different from zero in 19% of the cases, the co-efficient of beta not significantly different from zero in 100% of the cases, the co-efficients of ln(BE/ME) not significantly different from zero in 38% of the cases and; F ratio of regression, taking beta as the independent variable, is not significantly different from zero in 100% of the cases, and F ratio of the regression, taking ln(BE/ME) as an independent variable, not significantly different from zero in 38% of the cases. Similar explanation holds for the second row in the above Table and all the Tables given below.

Note 2. The reported results of the alpha and slope co-efficients are the results of the each individual regression (i.e two regressions for each of the independent variable and combination of Beta and ln(BE/ME) variable as explained in the methodology and results section of the paper. See paras 2.4.7 to 2.4.8 and 3.1. Since reporting of the individual values of the co-efficients would require a large number of tables, only the final results are reported here. The detailed values are available with the author. This explanation holds for all the Tables given below.

Table 2 Cross-Sectional Multiple Regression Results Of Security Percentage Returns

	Alpha		ln(BE/ME$_i$)		Beta (β_i)		SigF	
1	25		38					38
2		75		62	100		62	

Table 3 Cross-Sectional Univariate Regression Results Of Security Log Returns

	Alpha		Beta (β_i)		SigF		Ln(BE/ME$_i$)		SigF	
	A	R	A	R	F	NF	A	R	F	NF
1	44		100			100	62			62
2		56						38	38	

Table 4 Cross-Sectional Multiple Regression Results Of Security Log Returns

	Alpha		ln(BE/ME$_i$)		Beta (β_i)		SigF	
1	75		62					62
2		25		38	100		38	

Table 5 Cross-Sectional Univariate Regression Results Of Percentage Returns With Equally Weighted Portfolios

	Alpha		Beta (β)		SigF		Ln(BE/ME)		SigF	
	A	R	A	R	F	NF	A	R	F	NF
1	25		100			100	88			88
2		75						12	12	

Table 6 Cross-Sectional Multiple Regression Results Of Percentage Returns With Equally Weighted Portfolios

	Alpha		ln(BE/ME)		Beta (β)		SigF	
1	62		88					100
2		38		12	100			

Table 7 Cross-Sectional Univariate Regression Results Of Percentage Returns With Market Value Weighted Portfolios

	Alpha		Beta (β)		SigF		Ln(BE/ME)		SigF	
1	75		75			75	100			100
2		25		25	25					

Table 8 Cross-Sectional Multiple Regression Results of Percentage Returns with Market Value Weighted Portfolios

	Alpha		ln(BE/ME)		Beta (β)		SigF	
1	62		100		38			62
2		38				62	38	

Table 9 Cross-Sectional Univariate Regression Results Of Log Returns With Equal Value Weighted Portfolios

	Alpha		Beta (β)		SigF		Ln(BE/ME)		SigF	
1	56		100			100	62			62
2		44						38	38	

Table 10 Cross-Sectional Multiple Regression Results of Log Returns with Equal Value Weighted Portfolios

	Alpha		ln(BE/ME)		Beta (β)		SigF	
1	62		88					88
2		38		12	100		12	

Table 11 Cross-Sectional Univariate Regression Results of Log Returns with Market Value Weighted Portfolios

	Alpha		Beta (β)		SigF		Ln(BE/ME)		SigF	
1	69		62			62	88			88
2		31		38	38			12	12	

Table 12 Cross-Sectional Multiple Regression Results of Log Returns with Market Value Weighted Portfolios

	Alpha		ln(BE/ME)		Beta (β)		SigF	
1	62		88		62			88
2		38		12		38	12	

majority of the years, slope co-efficients are equal to zero and the F-test also indicates that the regression is not a good fit in majority of the cases. This reveals that these variables do not capture the variation in portfolio returns.

4. SUMMARY AND CONCLUSIONS

Investments are made in stock markets in expectation of returns in excess of the risk-free rate. This paper has attempted to test the validity of market beta and ln(BE/ME) ratio (univariate regression) and combination of beta and ln(BE/ME) ratio in explaining the security/portfolio returns in the Indian capital market. The overall conclusions of this study are summarized as follows:

1. The result of the present study shows that intercept (alpha) is equal to the risk-free rate of returns. But beta does not explain the variation in security/portfolio returns. Therefore, we can conclude that while the intercept test of CAPM proves the theory, the beta test goes against the standard form of CAPM theory. Our study relating to beta confirm with studies undertaken by Reinganum (1981), Bark (1991), Harris *et al.,* (2003), Gupta and Seghal (1993), Madhusoodanan (1997), Sehgal (1997), Ansari (2000), Manjunatha *et al*(2006,2007).

2. Fama and French (1992) conjecture that ln(BE/ME) ratio turns out to be the most significant variable in the US market in explaining the cross section of the security returns. We have tested whether ln(BE/ME) ratio is significant in India to explain the security/portfolio returns. In our study, in univariate regression, ln(BE/ME) ratio does not explain the variation in security log returns, the portfolio returns under both percentage and log returns series when portfolios are formed with equal weights as well as market value weights. However, ln(BE/ME) ratio explains the variation in security returns when returns are computed using percentage changes. In multiple regressions, the combination of beta and ln(BE/ME) do not explain the variation in security log returns and the portfolio returns under both percentage and log returns series when portfolios are formed with equal weights as well as market value weights. However, the combination of beta and ln(BE/ME) ratio explain the variation in security returns when percentage returns are considered. While the results of the present study confirm with studies undertaken by Mohanty (2002), the results are inconsistent with studies undertaken by Fama and French (1992).

The conclusions are that the Intercept (alpha) is equal to the risk-free rate of returns, but neither beta nor ln(BE/ME) ratio significantly explain the variation in individual security/portfolio returns. It is also observed in multiple regressions the combination of beta and ln(BE/ME) ratio do not explain the variation in security/ portfolio returns in majority of the cases in Indian capital market . Further works like parsimonious model as suggested by Fama and French (1992, 1993, 1995, 1996), Sehgal (2003), Connon and Sehgal (2003) are needed in the Indian context by taking combination of market factors, firms specific factors and macroeconomic factors. The empirical findings of this paper would be useful to investors and financial analysts as the results prove that beta and BE/ME ratios are not enough in explaining the asset pricing in Indian capital markets.

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correlation between size and long-term performance of issues was concerned, there was positive correlation. However degree was statistically insignificant. So it could be said that **in case of Fixed Price issues, hypothesis 6 was accepted whereas, in case of Book Building issues, hypothesis 6 was rejected.**

6. RECOMMENDATIONS

- Large size of issue should not be treated as indication of success of the issue.
- Short-term investors may invest in Book Building issues as they attracted high opening price. But long-term investors may rely on issues raised through Fixed Price method, as they were more promising in long term.
- **Whole amount for shares applied should be received in advance from QIB's** just like retail investor so that they can quote real worth of the company in terms of money that they are ready to pay for it.
- **Book –Building method should be improved in the term of transparency**. To make it more transparent and investor friendly, companies should disclose the basis for fixing price band / floor price and the reason that why are they preferring a particular tool for pricing to another.
- **Every Company should be required to use Green shoe Option every time** while offering the shares.

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