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A Validity Test of Capital Asset Pricing Model for Dhaka Stock Exchange

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Abstract: Capital Asset Pricing Model (CAPM) was a revolution in financial theory. CAPM postulates an equilibrium linear association between expected return and risk of an asset. This study investigates a risk-return relationship within the CAPM framework in Dhaka Stock Exchange (DSE) using monthly stock returns from 80 non-financial companies for the period of January 2005 to December 2009. From the CAPM empirical analysis, it is observed that intercept term is significantly different from zero and insignificant but there exists a positive relationship between beta and share return. The results of the study refute the CAPM hypothesis and offer evidence against the CAPM in DSE market. However, there exists linearity in the securities market line. The unique risk and the interaction are insignificant during the period.

Key words: Capital asset pricing model, dhaka stock exchange, beta, unique risk, portfolio returns

INTRODUCTION

One of the most important developments in modern capital theory is the Capital Asset Pricing Model (CAPM). Simply, CAPM is a model that describes the relationship between risk and expected return. A review of studies conducted for various markets in the world supports the validity of CAPM. Early twenty-first century observed an alternative methodology for testing CAPM in the Philippine Equity Markets in Ocampo (2003) and helped to provide the evidence for the role of beta in explaining returns in the Philippines market. Rhaiem *et al*. (2007a) investigated the estimation process of CAPM at different time scales for French's stock market and finally he predicted that the CAPM are more relevant at a medium-term horizon in a multi-scale framework. In a further research of Rhaiem *et al*. (2007b), proposed a new approach based on wavelets analysis for investigating the risk-return relationship in the CAPM framework at different time scales for French's stock market. He established the predictions that CAPM are more relevant at short and long-term horizon in a multi-scale framework as compared to other time horizons. A test in Turkey in Gursoy and Rejepova (2007) found no meaningful relationship between beta coefficients and ex-post risk premiums under the Fama and MacBeth (1973) but found strong beta-risk premium relationships with the Pettengill *et al*. (1995) methodology. Recently, some researchers used different models such as Generalized Autoregressive Conditional Hetrosecedasticity (GARCH) model to investigate the stock market. Chigozie (2010) investigated whether the Nigerian stock market follows a random walk by employing GARCH model and he concluded that Nigerian stock market follows random walk and exhibits weak form efficiency. Angabini and Wasiuzzaman (2011) examined the change in volatility of the Malaysian stock market with respect to the international economic crisis using both symmetric and asymmetric GARCH models and found that there was a significant increase in volatility in Kuala Lumpur Stock Exchange (KLSE) due to the financial crisis.

All over the world lots of researches goes on the stock markets (for example, for Spanish stock market, (Ferruz *et al*., 2007) for Istanbul stock exchange (Senol and Ozturan, 2008) for Vietnam stock market (My and Truong, 2011) for Taiwan stock market (Lin and Liang, 2011) and for Indian stock market (Gunasekaran and Ramaswami, 2011) but in Bangladesh studies related to stock market were few. Dhaka Stock Exchange (DSE), the frontline organization for the securities market development of Bangladesh, was incorporated on the 28th April, 1954. While many studies had been conducted on CAPM in the Western countries, there are only a few studies in the Bangladesh context related to CAPM. Mobarek and Mollah (2005) suggested that there are some factors (beta, size, the ratio of price-to-book value, volume of shares traded, earnings yield, cash flow yield, dividend yield and leverage) that influence

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share returns on the DSE. Rahman *et al.* (2006a) examined the risk-return relationship within the CAPM framework and concluded that beta is not only the factor to determine the stock return but also the other variables such as book to market value, market capitalization and sales are significantly important in this context DSE market. In the another study of Rahman *et al.* (2006b) examined whether the Fama and French (1992) CAPM model is applicable in Bangladesh stock market with the consideration of four factors such as beta, book to market value, market capitalization and sales. The results of that study strongly supported the relationship among the variables to determine the stock return. Uddin and Alam (2007) examined the linear relationship between share price and interest rate on DSE through Ordinary Least Square (OLS) regression and commented that if the interest rate is considerably controlled in Bangladesh than it will be the great benefit of DSE.

Moreover, the applicability of the western theories to Bangladesh capital market is suspicious owing to several differences between the developed capital markets and the developing ones (Rahman *et al.*, 2006a). In order to check the applicability of the western theories to Bangladesh capital market, the test of CAPM is important for DSE. The purpose of this study was to examine thoroughly the validity of the CAPM in Dhaka Stock Exchange. This study explored whether the CAPM is a suitable description of asset pricing in Bangladesh context.

MATERIALS AND METHODS

Data description and selected companies: The data collected from Dhaka Stock Exchange (DSE) market consists of 80 non-financial companies for the period of 1st January 2005 to 31st December 2009 by excluding the financial sector companies and considers only the non-financial companies because the reporting system of financial sector companies is quite different from non-financial sector companies (Mollah, 2009). This study uses monthly data and yearly data for all variables; because the daily data, though better for estimating risk-return relationship, is very noisy Basu and Chawla (2010). The all Share Price Index (DSI) is used as a proxy for the market portfolio. This index is a market value weighted index which is comprised of all listed companies of the exchange and reflects general trends of the Bangladesh stock market. Furthermore, Bangladesh government Treasury-bill rate is used as the proxy for the risk-free asset. Finally, in order to examine the risk-return trade off in a sample of individual companies and portfolios, the returns for each company are taken as the dependent variable and the company's beta, squared beta, unique risk and interaction term of beta and unique risk are taken as independent variables (Sources: DSE website: www. dsebd. org and SEC website: www.secbd.org).

Details of statistical analysis: The details of statistical analysis were provided under separate heading given below: 0

Estimating the risk-return trade-off using the CAPM for individual companies: According to the CAPM and followed by Basu and Chawla (2010), returns can be explained as:

$$R_{it} = R_{ft} + \beta_i \left(R_{mt} - R_{ft} \right) \quad (1)$$

where, R_{it} is the rate of return on company i at time t, R_{ft} is the rate of return on a risk free asset at time t, R_{mt} is the rate of return on the market index at time t and β_i is the beta of company i, to be estimated. β_i can also be express by Cov (R_i, R_m)/Var (R_m) where R_i is the rate of return on company i and R_m is the rate of return on the market index. The CAPM can be estimated using the two stages regression (Omran, 2007). In the first stage regression, time series data is used to estimate systematic and unique risk. The following regression is used:

$$R_{it} - R_{ft} = \alpha_i + \beta_i \left(R_{mt} - R_{ft} \right) + e_{it} \quad (2)$$

$$UR = \sigma_i^2 - \beta_i^2 \sigma_m^2 \quad (3)$$

where, e_{it} is the random disturbance term in the regression equation at time t and UR refers to the unique risk (the variance of the regression residuals, e_{it}), σ_i^2 refers to the variance of the returns for the company, σ_m^2 refers to the variance of the returns for index, the proxy for the market portfolio.

Equation 2 can be estimated using Ordinary Least Squares (OLS). For each company in the sample, R_{it} is regressed on R_{mt} to estimate beta, β_i. Eq. 3 measures Unique Risk (UR) which is the difference between the total variance of the returns on the company and the company's market risk.

By taking $R_{it} - R_{ft} = r_{it}$, the excess return of company i and $R_{mt} - R_{ft} = r_{mt}$, the average risk premium, the Eq. 2 can be rewritten as:

$$r_{it} = \alpha_i + \beta_i r_{mt} + e_{it} \quad (4)$$

The second stage regression is cross sectional and the following regression is used:

$$\bar{r}_i = \alpha_0 + \alpha_1\beta_i + \alpha_2\beta_i^2 + \alpha_3 UR + \alpha_4 IT + e_i \quad (5)$$

where, r_i refers to the average excess returns for company i over the whole sample, β_i is the estimate of the systematic risk contained in company i and is obtained from the first stage regression in equation (2), β_i^2 is the square of β_i, UR refers to unique risk estimate obtained from Eq. 3, IT is the estimate of the interaction between systematic risk and unique risk and e_i is the regression residual. α_0, α_1, α_2, α_3, and α_4 are the parameter estimates.

Portfolios construction and estimation using the CAPM framework: The next step is to construct portfolios. For this construction, the total number of companies are arranged in descending order of beta and grouped into 10 portfolios of 8 stocks each. This is done to achieve diversification and thus reduce any errors that might occur due to the presence of unique risk as done in Amanulla and Kamaiah (1998).

According to Michailidis *et al.* (2006) we define average portfolio excess returns of companies (r_{pt}) as:

$$r_{pt} = \frac{\sum_{i=1}^{k} r_{it}}{k} \quad (6)$$

where, k is the number of companies included in each portfolio (k = 1…8), p is the number of portfolios (p = 1…10) and r_{it} is the excess return on companies. The following equation is used to estimate the portfolio betas:

$$r_{pt} = \alpha_p + \beta_p r_{mt} + e_{pt} \quad (7)$$

where, β_p is the beta of portfolio p, r_{mt} is the average risk premium and e_{pt} is the random disturbance term in the regression equation,

Now, following the cross sectional regression (5):

$$\bar{r}_p = \gamma_0 + \gamma_1\beta_p + \gamma_2\beta_p^2 + \gamma_3 UR_p + \gamma_4 IT_p + e_p \quad (8)$$

where, $\bar{r}_p$ is the average excess return on portfolio p, β_p is an estimate of beta of portfolio p and is obtained from the regression in equation (7), β_p^2 is the square of β_p, UR_p refers to unique risk of portfolio returns that is $UR_p = \sigma^2(e_{pt})$, IT_p is the estimate of the interaction between systematic risk and unique risk on the portfolio and e_p is the random disturbance term in the regression equation. γ_0, γ_1, γ_2, γ_3 and γ_4 are the parameter estimates.

Research hypotheses: The estimated parameters will allow testing a series of hypotheses regarding the CAPM. For CAPM to hold0 true, the following hypotheses should be satisfied (Elton and Gruber, 1995):

- $\gamma_0 = 0$, that is γ_0 should not be significantly different from zero
- $\gamma_1 > 0$, that is there should be a positive price of risk in the capital markets
- $\gamma_2 = 0$ or the Security Market Line (SML) should represent a linear relationship
- $\gamma_3 = 0$ or the unique risk which can be diversified should not affect return

RESULTS AND DISCUSSION

Results of the OLS regression for individual companies: The results from Table 1 showed the estimation of betas for individual companies in the DSE market of Bangladesh. In the estimation of Security Market Line (SML), the CAPM's prediction for β_0 was that it should be equal to zero. But from Table 1, it was observed that the calculated value of the intercept was -0.028 and it was significantly different from zero. It was also noticed from Table 1 that the estimated SML slope was 0.180. The excess return on the market portfolio (R_m-R_f) was -0.0393 (different from the estimated SML slope), where R_m is the rate of return on the market index and R_f is the rate of return on a risk free asset. These findings were coincided to the findings of Omran (2007) where he examined 42 companies, over 18-weeks period from 2nd March, 2001 to 26th October, 2001 in order to analysis the CAPM in the Egyptian stock market. In his study, Omran found that the estimated SML intercept and slope are significantly different from zero at 5% level of significance. Hence, based on the intercept and slope criterion the CAPM hypothesis can clearly be rejected for the individual companies under study.

The coefficient of the square beta was -0.587 and the third hypothesis of CAPM was accepted, that is the expected return-beta relationship is linear. Unique risk and the interaction term (a risk term that reflects any interaction between the systematic risk and unique risk) did not affect the returns generating process since the estimates of β_3 and β_4 are far away from being significant. It is therefore concluded that unique risk and interaction term had no affect on the expected return of a security. In the study of Omran (2007) it was also found that the unique risk does not affect the returns generating process of Egyptian stock market which was as same as this study that unique risk did not affect the returns generating process of Bangladesh stock market.

Stock beta coefficient estimates for individual companies: From Table 2, it was found that the range of the estimated stock betas was between 0.0028 and 0.5928. Among the

Table 1: OLS estimates of individual companies

Variables	Parameters	Coefficients	S.E	t-value
Constant	β_0	-0.028*	0.004	-6.278
Beta	β_1	0.180^{ns}	0.042	0.309
Beta square	β_2	-0.587^{ns}	0.064	-1.220
Unique risk	β_3	-0.133^{ns}	0.091	-0.887
Interaction	β_4	0.194^{ns}	0.770	0.966
Excess return on the market portfolio	(R_m-R_f)	0.0107-0.0500 = -0.0393		

*: Significant level at 1%, NS: Not significant, SE: Standard error

Table 2: Stock beta coefficient estimates of individual companies

Company	Beta	t-value	Company	Beta	t-value
Square textile	0.5928*	5.60	Rahima Food	0.1694^{ns}	1.31
Heidelberg cement	0.5592*	5.13	Anwar Galvanizing	0.1639^{ns}	1.26
Lafarge surma cement	0.5507*	5.02	Bangas	0.1625^{ns}	1.25
Singer bangladesh	0.5486*	4.90	BDCOM Online Ltd.	0.1624^{ns}	1.25
Bangladesh lamps	0.5176*	4.60	Renwick Jajneswar	0.1520^{ns}	1.17
BOC bangladesh	0.4938*	4.32	Pharma Aids	0.1512^{ns}	1.16
Confidence cement	0.4599*	3.94	Atlas Bangladesh	0.1442^{ns}	1.11
Apex foods	0.4452*	3.78	Rangpur Foundry	0.1440^{ns}	1.10
Apex adelchy Ft.	0.4174*	3.49	Saiham Textile	0.1427^{ns}	1.09
Eastern cables	0.4123*	3.40	Libra Infusions Ltd.	0.1419^{ns}	1.09
Beximco pharma	0.3959*	3.28	Meghna Condensed	0.1191^{ns}	0.91
Niloy cement	0.3913*	3.23	Kay and Que	0.1104^{ns}	0.85
Reckitt benckiser	0.3891*	3.21	Agni Systems Ltd.	0.1091^{ns}	0.84
BATBC	0.3780*	3.10	Dulamia Cotton	0.1040^{ns}	0.80
The Ibn sina	0.3761*	3.09	Legacy Footwear	0.0972^{ns}	0.74
Meghna cement	0.3660*	2.99	Fu-Wang Ceramic	0.0968^{ns}	0.74
Bextex limited	0.3632*	2.97	Sonargaon Textiles	0.0914^{ns}	0.70
Olympic industries	0.3514*	2.85	Stylecraft	0.0898^{ns}	0.69
Renata Ltd.	0.3479*	2.82	Padma Cement	0.0754^{ns}	0.58
Apex tannery	0.3470*	2.81	Beach Hatchery Ltd.	0.0736^{ns}	0.56
Bata shoe	0.3382*	2.73	Aftab Automobiles	0.0726^{ns}	0.55
ACI limited.	0.3330*	2.69	National Polymer	0.0717^{ns}	0.55
AMCL (Pran)	0.3306*	2.66	Orion Infusion	0.0679^{ns}	0.52
Square pharma	0.3229*	2.59	Monno Jutex	0.0661^{ns}	0.50
Aramit cement	0.2959*	2.36	BD.Autocars	0.0660^{ns}	0.50
Padma oil co.	0.2761**	2.19	Alltex Ind. Ltd.	0.0655^{ns}	0.50
Beximco	0.2732**	2.16	Samata Leather	0.0651^{ns}	0.49
Quasem drycells	0.2691**	2.12	Bd.Welding Elec.	0.0634^{ns}	0.48
Aziz pipes	0.2641**	2.09	Shaympur Sugar	0.0501^{ns}	0.38
Delta spinners	0.2635**	2.08	Metro Spinning	0.0479^{ns}	0.37
Information services	0.2503**	1.97	Desh Garmants	0.0349^{ns}	0.27
Glaxo smithkline	0.2433***	1.91	Tallu Spinning	0.0321^{ns}	0.24
Apex spinning.	0.2202***	1.72	Alpha Tobacco	0.0299^{ns}	0.23
Therapeutics	0.2116***	1.65	Zeal Bangla Sugar	0.0283^{ns}	0.22
Beximco synthetics	0.1943^{ns}	1.51	Monno Ceramic	0.0192^{ns}	0.15
Prime textile	0.1926^{ns}	1.49	Bangladesh Plan.	0.0175^{ns}	0.13
National tea	0.1820^{ns}	1.40	In Tech Online Ltd.	0.0166^{ns}	0.13
H.R.textile	0.1773^{ns}	1.37	Samorita Hospital	0.0123^{ns}	0.09
National tubes	0.1772^{ns}	1.37	Meghna Pet Ind.	0.0091^{ns}	0.06
Ambee pharma	0.1753^{ns}	1.36	Monno Stafflers	0.0028^{ns}	0.02

*, **, ***: Significant level at 1, 5 and 10%, NS: Not significant, SE: Standard error

80 non-financial companies, the highest beta attainable company was Square Textile ($\beta = 0.5928$) and the lowest beta attainable company was Monno Stafflers ($\beta = 0.0028$). The beta coefficients for 25 individual stocks were found statistically significant at 1% level of significance, 6 individual stocks were recorded statistically significant at 5% level of significance and 3 individual stocks were statistically significant at 10% level of significance. The remaining 46 companies were statistically insignificant. These findings were contradicted to the findings of Michailidis *et al*. (2006) where he examined 100 companies listed on the Athens stock exchange and found most of the beta coefficients for individual companies are statistically significant at 5% level of significance and all estimated beta coefficients are statistically significant at 10% level of significant whereas in this study, the beta coefficients for 34 companies are statistically significant out of 80 individual companies.

One of the important hypotheses of CAPM is higher beta is associated with higher risk. The results of the study did not support the hypothesis of the CAPM theory because the result showed that higher risk is not

associated with a higher level of return. The highest beta attainable company Square Textile was not the highest return observed whereas the lowest beta attainable company Monno Stafflers got higher return (Return = -0.0351) than Square Textile (Return = -0.0536). The highest return yielding company was Meghna Condensed Milk (Return = -0.0029) with $\beta = 0.1191$ and the lowest return yielding company was National Tubes (Return = -0.0557) with $\beta = 0.1772$.

Stock beta coefficient estimates for constructed portfolios: From Table 3, it was found that the range of the estimated stock portfolio betas was recorded between 0.0274 and 0.7383. The beta coefficients for the first four portfolios were statistically significant at 1% level of significance, the fifth and sixth portfolios were statistically significant at 5% level of significance and the rest four portfolios were statistically insignificant. Among the 10 portfolios, the highest beta attainable portfolio was Portfolio 1 ($\beta = 0.7383$) and the lowest beta attainable portfolio was Portfolio 10 ($\beta = 0.0274$). In this study, the coefficients of beta were found to be statistically insignificant in 4 portfolios (Portfolio 7, 8, 9 and 10) out of 10 portfolios. The findings in terms of beta coefficients were dissimilar to the findings of Basu and Chawla (2010) because in his study, the beta coefficients were found insignificant in 7 of the 10 portfolios.

The results of the constructed portfolio also did not support the CAPM hypothesis that higher risk (beta) is associated with a higher level of return. Portfolio 1 for example, the highest beta portfolio, yielded lowest portfolio return (Return = -0.0379). In contrast, Portfolio 10, the lowest beta portfolio produced higher return (Return = -0.0313) than Portfolio 1. The highest return (Return = -0.0249) yielding portfolio was Portfolio 6 whose $\beta = 0.2580$. These results were similar to the results obtained from the stock beta coefficient estimates for individual companies (Table 2) in this study that contradict CAPM theory's basic hypothesis.

Results of the OLS regression for the constructed portfolios: The results of Table 4 indicated that the portfolio intercept, which was the most significant numerical value, significantly different from zero at 1% level of significance. The estimated portfolio slope was not equal to the excess return on the market portfolio and was insignificant. These findings were supported to the findings of Basu and Chawla (2010) where he examined 10 portfolios, covering 50 stocks, over a 5-year period from 1st January 2003 to 1st February 2008 in order to check the validity CAPM in the Indian stock market context. In his study, Basu showed that the intercept term is significantly different from zero for all the 10 portfolios and the estimated portfolio slope is not equal to the excess return on the market portfolio in 9 out of 10 portfolios. According to CAPM, intercept term should be equal to zero and the slope should be equal to the excess return on the market portfolio. Hence, based on the intercept and slope criterion the CAPM hypothesis can clearly be rejected for the constructed portfolio also.

The coefficients of square beta, unique risk and interaction term were insignificant which indicated that the expected return-beta relationship was linear in portfolios and residual risk and interaction term had no affect on the expected return of the constructed 10 portfolios.

Year-wise results of the OLS regression for individual companies: Since the analysis on the entire five-year period for individual companies and constructed

Table 3: Stock beta coefficient estimates of constructed portfolios

Portfolio	Average portfolio returns	Portfolio beta	t-value
Portfolio_1	-0.0379	0.7383*	8.33
Portfolio_2	-0.0309	0.6563*	6.62
Portfolio_3	-0.0315	0.4932*	4.31
Portfolio_4	-0.0279	0.4487*	3.82
Portfolio_5	-0.0323	0.2913**	2.31
Portfolio_6	-0.0249	0.2580**	2.03
Portfolio_7	-0.0274	0.1710^{ns}	1.32
Portfolio_8	-0.0254	0.1048^{ns}	0.803
Portfolio_9	-0.0280	0.0895^{ns}	0.684
Portfolio_10	-0.0313	0.0274^{ns}	0.209

*, **: Significant level at 1 and 5, NS: Not significant, SE: Standard error

Table 4: OLS regression estimates of constructed portfolios

Variables	Parameters	Coefficients	SE	t-value
Constant	β_0	-0.037*	0.009	-4.157
Beta	β_1	5.299^{ns}	0.068	1.220
Beta square	β_2	-5.084^{ns}	0.076	-1.352
Unique risk	β_3	0.641^{ns}	0.832	0.834
Interaction	β_4	-1.143^{ns}	4.576	-1.012

*: Significant level at 1, NS: Not significant, SE: Standard error

Table 5: Year-wise OLS regression estimates of individual companies

Year	Variables	Parameters	Coefficients	SE	t-value
2005	Constant	β_0	-0.078*	0.010	-7.824
	Beta	β_1	0.420^{ns}	0.095	0.688
	Beta square	β_2	-0.309^{ns}	0.143	-0.613
	Unique risk	β_3	-0.093^{ns}	0.203	-0.594
	Interaction	β_4	-0.027^{ns}	1.723	-0.127
2006	Constant	β_0	-0.055*	0.013	-4.319
	Beta	β_1	0.649^{ns}	0.122	1.055
	Beta square	β_2	-0.543^{ns}	0.184	-1.068
	Unique risk	β_3	0.133^{ns}	0.261	0.840
	Interaction	β_4	-0.187^{ns}	2.215	-0.879
2007	Constant	β_0	-0.010^{ns}	0.013	-0.775
	Beta	β_1	-0.093^{ns}	0.124	-0.153
	Beta square	β_2	0.237^{ns}	0.188	0.472
	Unique risk	β_3	0.077^{ns}	0.266	0.490
	Interaction	β_4	-0.234^{ns}	2.262	-1.117
2008	Constant	β_0	-0.037*	0.012	-3.021
	Beta	β_1	0.907^{ns}	0.115	1.505
	Beta square	β_2	-0.911***	0.174	-1.830
	Unique risk	β_3	0.077^{ns}	0.247	0.494
	Interaction	β_4	-0.056^{ns}	2.097	-0.272
2009	Constant	β_0	0.028^{ns}	0.018	1.535
	Beta	β_1	-0.783^{ns}	0.172	-1.290
	Beta square	β_2	0.529^{ns}	0.261	1.054
	Unique risk	β_3	-0.032^{ns}	0.370	-0.201
	Interaction	β_4	0.160^{ns}	3.142	0.764

*, ***: Significant level at 1 and 10%, NS: Not significant, SE: Standard error

portfolios yield strong evidence against the CAPM, this analysis examined whether a similar approach on yearly data for individual companies would provide any different evidence. The CAPM was tested separately for each of the five-year period and the results in Table 5 did not support the CAPM hypothesis. These findings were supported to the findings of Michailidis *et al.* (2006), where he examined the validity CAPM for the Greek stock market using weekly stock returns from 100 companies listed on the Athens stock exchange for the period of January, 1998 to December, 2002. In that study, the author tested CAPM separately for each of the five year period and the results were statistically better for some years but finally did not support the CAPM hypothesis.

The intercept term in the year 2007 and 2009 showed insignificance which was different than the other three years and the expected return-beta relationship was not linear in the year 2008 whereas in other four years the relationship showed linearity.

CONCLUSION

The study examines the validity of the CAPM and investigates a risk-return relationship within the CAPM framework using DSE data. The findings of the study are not supportive of the CAPM theory's basic hypothesis in both cases-individual companies and portfolios. The results also contradict the CAPM's another hypotheses that the intercept term should equal zero and the slope should equal the excess returns on the market portfolio. Thus, it can be concluded that CAPM is not a suitable indicator of asset prices in Bangladesh over the chosen sample period. To test the nonlinearity between return and beta, the square of the beta coefficient is introduced in the model. The findings indicate that the CAPM linear relationship is sufficient to describe the returns generating process. Additionally, the test conducts to investigate whether the CAPM adequately captures all important aspects of reality by including the unique risk and the interaction term of systematic risk and unique risk of stocks. The result shows that the investors are rewarded for market risk (systematic risk) but not for unique risk.

While this study is successful in invalidating the CAPM, further research could be attempted to test the validity of other asset pricing models in Bangladesh Stock Market. A comparative study of asset pricing models could also be attempted for a more thorough analysis. This study can be used as a source of reference and a guide for future research.

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