

American Journal of Applied Sciences, 10 (2): 139-146, 2013

ISSN: 1546-9239

©2013 Science Publication

doi:10.3844/ajassp.2013.139.146 Published Online 10 (2) 2013 (<http://www.thescipub.com/ajas.toc>)

## ANALYZING AND ESTIMATING PORTFOLIO PERFORMANCE OF BANGLADESH STOCK MARKET

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Received 2012-08-17, Revised 2012-12-19; Accepted 2013-03-18

### ABSTRACT

Capital Asset Pricing Model (CAPM) is one of the most important developments in the finance literature. Simply, CAPM is a model that describes the relationship between risk and expected return. The theoretical validity of CAPM is well tested and accepted but the practical validity of CAPM is in questioned. This study is designed to analyze and estimate the portfolio performance of Bangladesh stock market in a CAPM framework. For this study, monthly stock returns from 80 companies for the period of January 2005 to December 2009 are chosen. In order to examine whether the CAPM is satisfied in the portfolio or not, the 80 stocks are arranged in descending order of beta and 10 portfolios are being made of eight stocks in each. The All Share Price Index (DSI) is used as a proxy for the market portfolio and Bangladesh government 3-Month T-bill rate is used as the proxy for the risk-free asset. The results of this analysis show that the intercept terms are not significantly different from zero, linearity in the securities market line and insignificant unique risk for the 10 portfolios during the period. But, the results in term of slope contradict the CAPM hypothesis and indicate evidence against the CAPM in the portfolios. This analysis will obviously be used as a basis of reference for future investigates and the researchers and they will get proper instruction from this study.

**Keywords:** Stock Returns, Portfolio Returns, Asset Pricing Models, Bangladesh Stock Market, Non-Financial Companies, Standard Deviation, Systematic Risk, Unique Risk

### 1. INTRODUCTION

The stock markets (either developed or emerging) play very crucial roles for the economy of a country. The emerging stock markets are contributing towards the economy by the way of Gross Domestic Product (GDP) growth, investment attraction and expansion and developing a market place for potential investors. The practice of well tested pricing model like Capital Asset Pricing Model (CAPM) in the emerging stock market is very rare. It is due to the absence of proper validity test of this model. A sound and well tested and accepted pricing model can contribute more to emerging markets

for their sound operation. The investors, management, policy makers, investment companies, consultants, regulators of the emerging markets can be guided by a sound pricing model.

Markowitz (1952) and Tobin (1958) were the researchers for the development of asset pricing models. Early theories suggested that the risk of an individual security is the standard deviation of its returns. Sharpe (1964); Lintner (1965) and Mossin (1968) had independently developed a computationally efficient and standard method called CAPM which predicts that the expected return on an asset is linearly related to systematic risk. In the early stage, some financial

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researchers (Jensen *et al.*, 1972; Black, 1972; Fama and MacBeth, 1973) gave their supports to the standard form of CAPM. After 1980s, CAPM came under attack as the scientists (Reiganum, 1981; Elton *et al.*, 1984; Bark, 1991) showed their strong evidence against the standard form of CAPM. In 2006, one study (Michailidis *et al.*, 2006) in the Greek stock market provided evidence against the CAPM. Gursoy and Gulnara (2007) found no meaningful relationship between beta coefficients and risk premiums in Turkey stock market.

The stock markets play vital roles for the economy of any countries. There were lots of researches regarding the emerging stock markets (for example, for Taiwan stock market, Chiang *et al.* (2004); for Malaysian stock market, for Nigerian stock market, Agwuegbo *et al.* (2010); for Iranian stock exchange, Oskooe (2010) and for Indian stock market), but in Bangladesh, studies related to stock market were few. The objective of this study is to analyze and estimate the portfolio performance of Bangladesh stock market in the CAPM framework. This study is to investigate not only the validity of the CAPM in the portfolios but also the capital market behavior of Bangladesh over the period 2005-2009.

### 1.1. Brief Description of Dhaka Stock Exchange (DSE)

The Dhaka Stock Exchange (DSE) was first incorporated as the East Pakistan Stock Exchange Association Limited. It was renamed as Dhaka Stock Exchange (DSE) Limited on June 23, 1962. The service on the stock exchange continued successively until 1971. The trading was suspended during the liberation war and resumed in 1976 initially with 9 listed companies and total paid-up capital of Tk. 137.52 million. At 31 October, 2010 the number of listed securities were 442 and the total issued capital of all listed securities was Tk. 646,490.00 million. The Securities and Exchange Commission (SEC) which is the regulator of the capital market of Bangladesh was established on 8th June, 1993. After the establishment of SEC, public interest to invest in the capital market has improved because of investment friendly rules and regulations. Foreign portfolio investment started to stream due to favorable regulatory conditions.

### 1.2. Studies in DSE Market

In DSE, there are several studies have been conducted for market efficiency. Hassan *et al.* (1999) studied on time-varying risk-return relationship for DSE market by utilizing a unique data set of daily stock prices and returns. He found that the DSE equity returns show

positive skewness, excess kurtosis and deviation from normality and the returns display significant serial correlation, implying the stock market is inefficient. Haque *et al.* (2001) tested the Efficient Market Hypothesis (EMH) based on the data four months before and four months after the automation which was imposed in DSE market on 10th August, 1998. The test results indicated that the market does not improve and even after automation, manipulation continued. Kader and Rahman (2005) showed that there is no evidence that DSE is weak form efficient by using technical trading rule. Islam and Khaled (2005) analyzed on the predictability of the share price in Dhaka Stock Exchange prior to the boom in 1996 and found evidence in favor of short-term predictability of share prices in the Dhaka stock market prior to the 1996 boom. In order to test whether CAPM is a good indicator of asset pricing in Bangladesh, Rahman *et al.* (2006) considered Fama and French (1992) methodology on five variables (Stock market return, Beta, Book to market value, Market capitalization and Sales) and found that the variables have significant relationship with the stock return. Uddin and Alam (2007) examined the linear relationship between share price and interest rate, share price and growth of interest rate, growth of share price and interest rate and growth of share price and growth of interest rate which were determined by Ordinary Least-Square (OLS) regression. For all of the cases, they found that interest rate has significant negative relationship with share price and growth of interest rate has significant negative relationship with growth of share price in Dhaka Stock Market, which means that DSE is not weak form efficient. Alam *et al.* (2007) investigated the relationship between risk and the expected rate of return on a risky security by using the CAPM model and found that CAPM is invalid in DSE market. Uddin and Khoda (2009) investigated whether stock-price indexes of Dhaka stock market can be characterized as random walk (unit root) processes by using the Unit Root test and the ADF test. They provided evidence that the DSE is not efficient even in weak form and DSE does not follow the random walk model. Ali *et al.* (2010) tested the validity of the CAPM in the DSE market and concluded on weak practical implication of CAPM in this market. Mollik and Bepari (2011) tried to measure the risk and return relationship in DSE market and reported that there was statistically significant positive relationship between risk and return at the individual security level. This study is different from the previous studies because, here we find out the risk-return relationship among the portfolios of DSE market.

## 2. MATERIALS AND METHODS

### 2.1. Data Selection

The data were collected from DSE market consisting 80 companies for the period of January 2005 to December 2009. This study selected 60 months as an estimation period because many studies (see for example Fama and French, 1996) use an estimation period of 60 months when employing monthly returns. DSE was concentrated in this research because it is the main and country's oldest stock exchange of Bangladesh.

Monthly data was used in this analysis, because the daily data, though better for estimating risk-return relationship, is very noisy (Basu and Chawla, 2010). The All Share Price Index (DSI) was 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 3-Month T-bill rate was used as the proxy for the risk-free asset.

### 2.2. Portfolio Construction

In order to test the validity of CAPM in portfolios, at first the construction of the portfolios is needed. For this construction, all the studied companies were arranged in descending order of beta and grouped into 10 portfolios of 8 stocks each such that Portfolio\_1 contained the first 8 stocks representing the 8 highest beta values and Portfolio\_10 contained the last 8 stocks representing the 8 lowest beta values. This was done to achieve diversification and reduce any errors that might occur due to the presence of residual variance (Amanulla and Kamaiah, 1997). This procedure generated 10 equally-weighted portfolios comprised of 8 companies in each in **Table 3**.

DSE prepares individual company's monthly closing price. Using the closing price of individual company, the return of individual company was calculated as follows: Individual Company's Return =  $\ln(P_t) - \ln(P_{t-1})$  where,  $P_t$  = closing price at period t;  $P_{t-1}$  = closing price at period t-1 and  $\ln$  = natural log. In this study, portfolio's return was taken as a dependent variable. The portfolio's return can be found by using the individual company's return as follows (Michailidis *et al.*, 2006):

$$R_{pt} = \frac{\sum_{i=1}^k R_{it}}{k}$$

Where:

$k$  = The number of companies included in each portfolio ( $k = 8$ )

$p$  = The number of portfolios ( $p = 1 \dots 10$ )

$R_{it}$  = The excess return on companies

### 2.3. Estimation of the CAPM in Portfolios

According to the CAPM and followed by Basu and Chawla (2010), returns can be explained as:

$$R_{pt} = R_{ft} + \beta_p (R_{mt} - R_{ft}) \quad (1)$$

Where:

$R_{pt}$  = The return on portfolio p at time t

$R_{ft}$  = The return on the risk free asset at time t

$R_{mt}$  = The market return at time t

$\beta_p$  = The beta of portfolio p

The Equation (1) can be estimated using the two stages regression (Omran, 2007). In the first stage regression, time series data was used to estimate systematic risk and unique risk in the portfolios as follows:

$$R_{pt} - R_{ft} = \alpha_p + \beta_p (R_{mt} - R_{ft}) + e_{pt} \quad (2)$$

$$UR = \sigma_p^2 - \beta_p^2 \sigma_m^2 \quad (3)$$

Where:

$e_{pt}$  = The random disturbance term in the regression equation at time t

UR = Refers to the unique risk for the portfolio

$\sigma_p^2$  = Refers to the variance of the returns for the portfolio p

$\sigma_m^2$  = 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). Equation 3 measured Unique Risk (UR), which is the difference between the total variance of the returns on the portfolio and the portfolio's market risk.

The following second stage regression was a cross sectional regression Equation 4:

$$R_{pt} - R_{ft} = \gamma_0 + \gamma_1 \beta_{pt} + \gamma_2 \beta_{pt}^2 + \gamma_3 UR_{pt} + e_{pt} \quad (4)$$

Where:

$R_{pt}$  = The return on portfolio p at time t

$R_{ft}$  = The return on the risk free asset at time t

$\beta_{pt}$  = The beta of portfolio p at time t; representing systematic risk

$\beta_{pt}^2$  = The squared beta of portfolio p at time t; representing non-linearity of returns  
 $UR_{pt}$  = The unique risk of portfolio p at time t; representing unsystematic risk and  
 $e_{pt}$  = Random disturbance term in the regression equation at time t  $\gamma_0, \gamma_1, \gamma_2$  and  $\gamma_3$  are the parameter to be estimated.

### 2.4. Hypotheses of CAPM Testing

For CAPM to hold true in the portfolios, the following hypothesis should be satisfied:

- $\gamma_0 = 0$ , as any excess return earned should be zero for a zero-beta portfolio
- $\gamma_1 > 0$ , as there should be a positive price for risk taken
- $\gamma_2 = 0$ , as the Security Market Line (SML) should represent a linear relationship
- $\gamma_3 = 0$ , as the unique risk which can be diversified away should not affect return

## 3. RESULTS

**Table 1** contains summary statistics of the main variables as average return, beta and residual variance. The table shows that the average beta during the period was 0.2129. The minimum beta was 0.0028 and the maximum beta was 0.5928 with a standard deviation of 0.1578. However, there was no company that had a negative beta during the period. The mean average return for the period was -2.94%. The maximum return during the period was -0.29% and the minimum return during the period was -5.57%, **Table 2** contains the yearly average returns of the studied 80 companies. The maximum return yielding company was “Meghna Condensed Milk”. Beta estimate for that company was 0.1191. The minimum return yielding company was “National Tubes”. Beta estimate for that company was 0.1772. From **Fig. 1**, it was found that return was increasing during the studied period except in the year between 2007 to 2008.

**Table 1.** Summary statistics

	Average return	Beta	Residual variance
Mean	-0.0294	0.2129	0.0252
Standard deviation	0.0114	0.1577	0.0189
Minimum	-0.0557	0.0028	0.0039
Median	-0.0301	0.1723	0.0218
Maximum	-0.0029	0.5928	0.1578

**Table 2.** Yearly average returns of the studied companies

Companies average return	2005	2006	2007	2008	2009
Aftab Automobiles	-0.1055	-0.0669	-0.0386	-0.0363	0.0967
Aziz pipes	-0.0775	-0.0370	0.0690	-0.0664	0.0305
Olympic industries	-0.1027	-0.0435	0.0027	-0.0137	0.0664
Bangladesh lamps	-0.0755	-0.0692	-0.0135	-0.0186	-0.0065
Eastern cables	-0.0674	-0.0405	0.0297	-0.0548	-0.0345
Monno Jutex	-0.0675	-0.0654	-0.0270	-0.0341	0.0424
Monno Stafflers	-0.0560	-0.0382	-0.0591	-0.0282	0.0061
Singer bangladesh	-0.0908	-0.0719	0.0248	-0.0465	-0.0214
Atlas Bangladesh	-0.0796	-0.0694	0.0032	-0.0658	-0.0270
BD.Autocars	-0.0768	-0.0135	0.0217	-0.0454	0.0414
Quasem drycells	-0.1023	-0.0621	0.0094	0.0160	-0.0176
Renwick Jajneswar	-0.0683	-0.0539	0.0080	0.0579	-0.0156
National tubes	-0.0817	-0.0813	-0.0027	-0.0600	-0.0528
Anwar Galvanizing	-0.0994	-0.0430	-0.0203	-0.0263	0.0364
Kay and Que	-0.1030	-0.0608	-0.0036	0.0099	-0.0235
Rangpur Foundry	-0.0686	-0.0604	-0.0074	0.0220	-0.0095
National Polymer	-0.0212	-0.0287	-0.0251	-0.0311	-0.0247
Alpha Tobacco	-0.1356	-0.0490	-0.0541	-0.0391	0.0182
Apex foods	-0.1094	-0.0447	0.0050	-0.0324	-0.0258
Bangas	-0.0845	-0.0602	-0.0192	-0.0269	0.1021
BATBC	-0.0834	-0.0588	-0.0026	-0.0246	0.0090
National tea	-0.0875	-0.0651	-0.0152	0.0141	0.0098
Beximco synthetics	-0.1180	-0.0345	-0.0307	-0.0058	0.0182
Zeal Bangla Sugar	-0.0691	0.0648	-0.0422	-0.0140	-0.0442
Bangladesh Plan.	-0.0422	-0.0339	-0.0423	-0.0008	-0.0386
AMCL (Pran)	-0.0824	-0.0582	-0.0109	-0.0035	-0.0155
Shayampur Sugar	-0.0675	0.0317	-0.0314	-0.0226	-0.0205
Rahima Food	-0.0560	0.0441	-0.0541	-0.0284	0.0482
Meghna Pet Ind.	-0.0926	0.0317	-0.0706	-0.0068	0.0699
Meghna Condensed.	-0.0593	0.0330	-0.0251	-0.0180	0.0550
Beach Hatchery Ltd.	-0.0900	-0.0590	-0.0477	-0.0103	0.1358
BOC bangladesh	-0.0734	-0.0428	0.0326	-0.0657	0.0004
Padma oil co.	-0.0088	-0.0507	0.0206	-0.0480	-0.1200
Bd. Welding Elec.	-0.0631	-0.0156	0.0303	-0.0309	0.0333
Stylecraft	-0.0543	-0.0812	-0.0557	-0.0088	0.0239
Saiham Textile	-0.0615	-0.0586	-0.0027	-0.0369	0.0331
Desh Garmants	-0.0573	-0.0452	-0.0415	-0.0533	0.0731
Dulamia Cotton	-0.0545	-0.0482	-0.0963	-0.0102	0.0440
Tallu Spinning	-0.0294	-0.0819	-0.0572	-0.0532	0.0257
Bextex limited	-0.0992	-0.0481	-0.0642	-0.0304	0.0521
Apex spinning.	-0.0760	-0.0732	-0.0051	-0.0132	-0.0046
Delta spinners	-0.0641	-0.0455	-0.0318	-0.0163	0.0633
Sonargaon Textiles	-0.0396	-0.0669	-0.0377	0.0101	0.0126
Prime textile	-0.0673	-0.0387	-0.0137	-0.0231	0.0425
Alltex Ind. Ltd.	-0.0743	-0.0460	-0.0416	-0.0510	0.0026
H.R.textile	-0.0698	-0.0412	-0.0315	-0.0196	0.0238
Square textile	-0.0936	-0.0575	-0.0057	-0.0569	-0.0543
Metro Spinning	-0.0577	-0.0671	-0.0242	0.0362	-0.0204
Ambec pharma	-0.0730	-0.0584	-0.0353	0.0232	-0.0098
Beximco pharma	-0.0888	-0.0561	-0.0423	0.0372	-0.0561
Glaxo smithkline	-0.0684	-0.0509	-0.0205	-0.0053	0.0156
ACI limited.	-0.0754	-0.0493	0.0293	0.0378	-0.0628
Renata Ltd.	-0.0554	-0.0473	0.0235	-0.0467	-0.0136
Reckitt benckiser	-0.0566	-0.0147	0.0098	-0.0357	0.0547
Therapeutics	-0.0956	0.0566	-0.0669	-0.0130	-0.0249
Pharma Aids	0.0292	-0.0279	0.0413	-0.0326	-0.0344
The Ibn sina	-0.0738	-0.0635	-0.0117	-0.0304	-0.0130
Libra Infusions Ltd.	-0.0724	-0.0580	-0.0221	-0.0095	0.0016
Orion Infusion	-0.0430	-0.0584	-0.0781	-0.0014	0.0685
Square pharma	-0.0867	-0.0564	-0.0095	-0.0630	-0.0576
Samorita Hospital	-0.0783	-0.0512	-0.0486	-0.0296	0.0570
Heidelberg cement	-0.1175	-0.0294	0.0018	-0.0494	-0.0023
Confidence cement	-0.0786	-0.0343	0.0317	-0.0623	0.0733
Meghna cement	-0.0788	-0.0402	-0.0299	-0.0424	0.0514
Niloy cement	-0.0931	-0.0052	0.0103	-0.0851	0.0000
Aramit cement	-0.0905	0.0004	0.0101	-0.0364	0.0465
Padma Cement	-0.0611	-0.0575	-0.0526	-0.0208	0.0944
Lafarg surma cement	-0.0537	-0.0551	-0.0329	-0.0446	-0.0513
Information services	-0.0980	-0.0674	-0.0063	-0.0209	-0.0121
BDCOM Online Ltd.	-0.0764	-0.0775	-0.0190	-0.0028	0.0043
In Tech Online Ltd.	-0.0475	-0.1022	-0.0213	-0.0224	-0.0234
Agni Systems Ltd.	-0.0756	-0.0642	0.0010	-0.0066	-0.0467
Apex tannery	-0.0921	-0.0378	0.0142	0.0019	-0.0267
Bata shoe	-0.0717	-0.0670	0.0009	-0.0199	-0.0084
Apexadelchly Ft.	-0.0809	-0.0343	0.0784	-0.0422	-0.0433
Samata Leather	-0.1120	-0.0167	0.0134	-0.0174	-0.0271
Legacy Footwear	-0.0707	-0.0681	-0.0043	0.0411	-0.0024
Monno Ceramic	-0.0868	-0.0647	-0.0337	-0.0458	0.0106
Fu-Wang Ceramic	-0.0729	-0.0610	-0.0230	-0.0346	0.0515
Beximco	-0.0677	-0.0660	-0.0457	0.0834	-0.0074
<b>Average</b>	<b>-0.0741</b>	<b>-0.0444</b>	<b>-0.0154</b>	<b>-0.0213</b>	<b>0.0081</b>



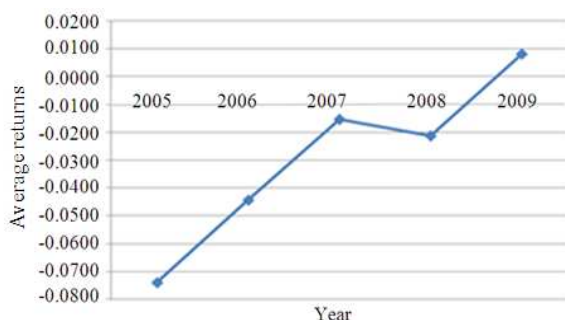


Fig. 1. Yearly average returns of the companies

## 4. DISCUSSION

### 4.1. Significance of Stock Beta Coefficient Estimates

From **Table 3**, it was found that the beta coefficients for 25 individual stocks were statistically significant at 1% level of significance, 6 individual stocks were 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. Among the 80 companies, the highest beta attainable company was “Square Textile” ( $\beta = 0.5928$ ) and the lowest beta attainable company was “Monno Stafflers” ( $\beta = 0.0028$ ).

### 4.2. Estimates of the OLS Regression of the Constructed Portfolios

According to the critical condition of CAPM, the intercept term, the coefficient of beta-squared and the unique risk should not be significantly different from zero and the coefficient of beta should be positive and significant. Therefore, for intercept, beta-squared and residual variance terms a two-tailed test was used whereas for slope term a one-tailed test was used. The results of **Table 4** indicated that for all the 10 portfolios, the intercept terms were not significantly different from zero. Also, among the 10 portfolios, the coefficients of squared beta and unique risk were insignificant. These outcomes indicated that the “expected return-beta” relationship was linear in portfolios and unique risk had no affect on the expected return of the 10 portfolios. These conclusions were partially contradicted to the findings of Omran (2007) in terms of intercept and unique risk and fully contradicted to the findings of Basu and Chawla (2010) in terms of intercept, squared beta and unique risk. In order to test the CAPM, Omran (2007) examined 42 individual companies in the Egyptian stock market and found that the intercept term is significantly different from zero at 5% level of

significance and the unique risk has no affect on the expected return of the individual company. In the other study, Basu and Chawla (2010) showed that the intercept terms are significantly different from zero for all the 10 portfolios, the coefficients of beta-squared are significant in five portfolios and the coefficients of unique risk are significant in four portfolios out of 10 portfolios in the Indian stock market.

In this study, the coefficients of beta were found to be negative in three portfolios (Portfolio 2, 7 and 9) out of 10 portfolios and for all portfolios the coefficients of beta were statistically insignificant. The outcomes in terms of beta coefficients were almost similar to the findings of Claessens and Glen (1995) and Basu and Chawla (2010) and fully dissimilar to the findings of Omran (2007). Claessens and Glen (1995) showed in his research that beta coefficients are negative and insignificant in the 11 country’s stock market (for example, Chile, India, Indonesia, Portugal, Thailand, Venezuela and Zimbabwe) out of 20 country’s stock market. Basu and Chawla (2010) found that the beta coefficients are insignificant in 7 portfolios out of 10 portfolios whereas Omran (2007) showed that the coefficients of beta are statistically significant at 5% level of significance. Hence, based on the slope criterion the CAPM hypothesis cannot be accepted for the portfolios in the context of DSE market which was supportive to the findings of Michailidis *et al.* (2006) in the Greek stock market and Sehgal (1997) and Manjunatha and Mallikarjunappa (2006) in the Indian stock market. So, CAPM is not a good indicator of asset pricing in Bangladesh stock market which is contradicted to the studies of developed country’s stock market (Sauer and Murphy, 1992; Limmack and Ward, 1990) and developing country’s stock market (Srinivasan, 1988; Dhankar and Kumar, 2007).

### 4.3. Comparison between Average Portfolio Returns and Portfolio Betas

From **Table 5**, it was noticed that that the range of the estimated stock portfolio betas was between -1.012 the minimum and 3.999 the maximum. Among the 10 portfolios, the highest beta attainable portfolio was “Portfolio 3” ( $\beta = 3.991$ ) and the lowest beta attainable portfolio was “Portfolio 2” ( $\beta = -1.012$ ). The results of the portfolio did not support that “higher risk (beta) is associated with a higher level of return”. For example, Portfolio 3, the highest beta portfolio produced lower return (Return = -0.0315) than the Portfolio 2, the lowest beta portfolio (Return = -0.0309). The highest return (Return = -0.0249) yielding portfolio was Portfolio 6 whereas the lowest return (Return = -0.0379) yielding portfolio was Portfolio 1.

**Table 3.** Results of the stock beta coefficient estimates and constructs the final 10 Portfolios

Portfolio	Company	Beta	t- value	Portfolio	Company	Beta	t-value
1	Square textile	0.5928*	5.60	6	Rahima Food	0.1694@	1.31
	Heidelberg cement	0.5592*	5.13		Anwar Galvanizing	0.1639@	1.26
	Lafarge surma cement	0.5507*	5.02		Bangas	0.1625@	1.25
	Singer bangladesh	0.5486*	4.90		BDCOM Online Ltd.	0.1624@	1.25
	Bangladesh lamps	0.5176*	4.60		Renwick Jaineswar	0.1520@	1.17
2	BOC bangladesh	0.4938*	4.32	7	Pharma Aids	0.1512@	1.16
	Confidence cement	0.4599*	3.94		Atlas Bangladesh	0.1442@	1.11
	Apex foods	0.4452*	3.78		Rangpur Foundry	0.1440@	1.10
	Apex adelchy Ft.	0.4174*	3.49		Saiham Textile	0.1427@	1.09
	Eastern cables	0.4123*	3.40		Libra Infusions Limited	0.1419@	1.09
3	Beximco pharma	0.3959*	3.28	8	Meghna Condensed.	0.1191@	0.91
	Niloy cement	0.3913*	3.23		Kay and Que	0.1104@	0.85
	Reckitt benckiser	0.3891*	3.21		Agni Systems Ltd.	0.1091@	0.84
	BATBC	0.3780*	3.10		Dulamia Cotton	0.1040@	0.80
	The Ibn sina	0.3761*	3.09		Legacy Footwear	0.0972@	0.74
4	Meghna cement	0.3660*	2.99	9	Fu-Wang Ceramic	0.0968@	0.74
	Bextex limited	0.3632*	2.97		Sonargaon Textiles	0.0914@	0.70
	Olympic industries	0.3514*	2.85		Stylecraft	0.0898@	0.69
	Renata Ltd.	0.3479*	2.82		Padma Cement	0.0754@	0.58
	Apex tannery	0.3470*	2.81		Beach Hatchery Ltd.	0.0736@	0.56
5	Bata shoe	0.3382*	2.73	10	Aftab Automobiles	0.0726@	0.55
	ACI limited.	0.3330*	2.69		National Polymer	0.0717@	0.55
	AMCL (Pran)	0.3306*	2.66		Orion Infusion	0.0679@	0.52
	Square pharma	0.3229*	2.59		Monno Jutex	0.0661@	0.50
	Aramit Cement	0.2959*	2.36		BD.Autocars	0.0660@	0.50
6	Padma oil co.	0.2761**	2.19	10	Alltex Ind. Ltd.	0.0655@	0.50
	Beximco	0.2732**	2.16		Samata Leather	0.0651@	0.49
	Quasem drycells	0.2691**	2.12		Bd.Welding Elec.	0.0634@	0.48
	Aziz pipes	0.2641**	2.09		Shaympur Sugar	0.0501@	0.38
	Delta spinners	0.2635**	2.08		Metro Spinning	0.0479@	0.37
7	Information services	0.2503**	1.97	10	Desh Garmants	0.0349@	0.27
	Glaxo smithkline	0.2433***	1.91		Tallu Spinning	0.0321@	0.24
	Apex spinning.	0.2202***	1.72		Alpha Tobacco	0.0299@	0.23
	Therapeutics	0.2116***	1.65		Zeal Bangla Sugar	0.0283@	0.22
	Beximco synthetics	0.1943@	1.51		Monno Ceramic	0.0192@	0.15
8	Prime textile	0.1926@	1.49	10	Bangladesh Plan.	0.0175@	0.13
	National tea	0.1820@	1.40		In Tech Online Ltd.	0.0166@	0.13
	H.R.textile	0.1773@	1.37		Samorita Hospital	0.0123@	0.09
	National tubes	0.1772@	1.37		Meghna Pet Ind.	0.0091@	0.06
	Ambee pharma_	0.1753@	1.36		Monno Stafflers	0.0028@	0.02

\*, \*\*, \*\*\*: Significance level at 1, 5, 10% consecutively, @ means insignificant, S.E = Standard Error

**Table 4.** Results of the OLS regression in 10 portfolios

Portfolio no	Coefficient/ t-value	Constant	$\beta$	$\beta^2$	Residual variance
1	Coefficient	-0.747@	1.147@	-1.188@	0.035@
	t-value	-0.783	0.804	-0.857	0.338
2	Coefficient	1.648@	-1.012@	1.039@	-0.038@
	t-value	0.373	-0.384	0.390	-0.416@
3	Coefficient	-7.825@	3.999@	-3.971@	0.007@
	t-value	-0.825	0.812	-0.800	0.071
4	Coefficient	-0.431@	0.256@	-0.247@	-0.014@
	t-value	-0.192	0.179	-0.173	-0.273
5	Coefficient	-0.729@	0.719@	-0.703@	-0.070@
	t-value	-0.431	0.418	-0.410	-1.213
6	Coefficient	-4.131@	2.857@	-2.858@	0.005@
	t-value	-0.960	0.955	-0.957	0.080
7	Coefficient	0.455@	-0.839@	0.853@	0.039@
	t-value	0.539	-0.574	0.576	0.502
8	Coefficient	-0.176@	0.208@	-0.204@	0.008@
	t-value	-0.190	0.156	-0.150	0.095
9	Coefficient	-0.006@	-0.079@	0.057@	0.041@
	t-value	-0.029	-0.126	0.091	0.701
10	Coefficient	-0.035@	0.059@	-0.091@	-0.003@
	t-value	-0.684	0.204	-0.280	-0.036

\*, \*\*, \*\*\* Significance level at 1, 5, 10% consecutively, @ means insignificant, S.E = Standard Error

**Table 5.** Comparison between average portfolio returns and portfolio betas

Portfolio No.	Average portfolio return	Portfolio beta
Portfolio_1	-0.0379	1.147
Portfolio_10	-0.0313	0.059
Portfolio_2	-0.0309	-1.012
Portfolio_3	-0.0315	3.999
Portfolio_4	-0.0279	0.256
Portfolio_5	-0.0323	0.719
Portfolio_6	-0.0249	2.857
Portfolio_7	-0.0274	-0.839
Portfolio_8	-0.0254	0.208
Portfolio_9	-0.0280	-0.079

The CAPM theory indicates that higher risk (beta) is associated with a higher level of return. The results of the study did not support this hypothesis. Hasan *et al.* (2012) was also found the same results in the context of individual companies in DSE market.

## 5. CONCLUSION

The article analyzes the portfolio performance and examines the validity of CAPM in the portfolios for the Dhaka Stock Exchange market. The results of the coefficients of squared beta and unique risk indicate that the “expected return-beta” relationship is linear in portfolios and unique risk has no affect on the expected return of the 10 portfolios. The intercept terms for the 10 portfolios are not significantly different from zero. The above three findings support the validity of CAPM. But, the CAPM’s prediction for the slope is “slope should be positive and significant”. The results in term of slope of this research contradict the above hypothesis and indicate evidence against the CAPM in the portfolios. This study concludes the practical incompleteness of CAPM and can motivate researcher to search further for a sound pricing mechanism in future.

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