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Testing the Empirical Validity of Capital Asset Pricing Model: Evidence from Dhaka Stock Exchange

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Abstract:

This study investigates the validity of Capital Asset Pricing Model (CAPM) in Dhaka Stock Exchange (DSE) for a sample of 26 companies chosen from DSE-30 index during 2012-2013. This study applied a Paired sample t-test to examine whether the CAPM predicts more accurately the expected return on a security for short run. In addition, this study used OLS regression to know whether there exists a significant linear relationship between systematic risk and rate of return of sample companies. Results show that CAPM predicts the expected return on a short term investment as there is no significant difference between average daily actual return and CAPM return for the most of the selected firms. But the results fail to confirm a significant positive relation between systematic risk and rate of return of sample stocks. The overall results demonstrate that the CAPM is completely not valid in DSE.

Keywords: Capital Asset Pricing Model (CAPM), Empirical Validity, Paired sample t-test, OLS regression, Dhaka Stock Exchange (DSE), Bangladesh

1. Introduction

Ensuring a sustainable economic development of an economy strongly requires an effective function of the stock market. The effectiveness of a stock market mostly depends on rational changes in stock prices, but it is subject to how precisely investors are predicting share prices while they are planning to invest. It is typically considered that investment in an equity share in the stock market is highly risky as investors are almost uncertain about their future returns measured in dividend yield plus capital gain. Thus, in pricing any capital asset or security the measurement of risk associated with that asset has been an important financial issue to investors.

The capital asset pricing model (CAPM) developed by Sharpe (1964) and Linter (1965) is one of the most important developments in modern financial literature to estimate the required rate of return from a potential security with the assessment of the riskiness of the cash flow associated with the security. An investor should be concerned about the systematic risk component of total risk of a portfolio rather than unsystematic risk as it is argued in CAPM that investors should hold well diversified portfolios at which unsystematic risk will be reduced to zero at virtually no cost (by diversifying) and, therefore, systematic risk will be only living part in the total risk of the portfolio. Thus the beta used as a measure of systematic risk is relevant for investors in determining the expected return (and the risk premium) on any security even it is certainly linearly related to expected return no matter how much total risk a security has, from the point of view of CAPM. The principle of risk premium implies that there is no option to investors except taking a higher beta risk to raise higher return from potential assets. However, empirical evidence has found weak or no statistical relationship between beta and higher return [Banz (1981); Basu (1983); Fama and French (1996) and others].

Dhaka Stock Exchange (DSE), which is the largest stock market in Bangladesh, recently has followed an astonishing movement in its activity. The benchmark index of the Dhaka Stock Exchange (DSE) crossed 4000 points for the first time and reached at 4148 points. In 2010, the index crossed 8500 points, but in the first quarter of 2011 it got a dramatic collapse, and finally stood at around 5,500 points in October 2011. Moreover, the Bangladesh capital market has been exposed to greater risk since price earnings ratio rose from 19.9 times to 29.71 times from January, 2010 to November, 2010. It is the highest in the Asian regional markets in that time. A validity test of CAPM in the context of Dhaka Stock Exchange Limited (DSE) in Bangladesh faces greater challenges due to suffering from market inefficiencies caused by government intervention, political instability, greater influence of insider trading, lack of appropriate evaluation of stock by investors, lack of efficiency in primary market, and others which have been found in empirical researches like Mobarek and Keasey (2000), Uddin and Alam (2007), Nguyen and Ali (2011), and Khandoker et al., (2011). But if the inefficiencies in the market are not extreme then majority of the securities will be efficiently priced and thus an empirical test of CAPM can give meaningful results nevertheless (Vaidyanathan, 1995).

Empirical test of CAPM in Bangladesh conducted by Rahman and Baten (2006) and Hasan et al. (2011) also found that beta does not properly determine the movement of share prices. But the developments of stock market in any country is a continuous

process and following this continuity DSE recently made a dramatic improvements in its website by adding DSE market summary, DSE close price archive, DSE news archive, and Day end archive and these whole thing creates an opportunity especially for retail investors in DSE, who were kept out of reach of this information at minimum cost, to compute the risk associated with any security and expected return on bearing this risk with more accuracy. That is why the main purpose of the study is to determine how accurately the CAPM predicts the expected return of any security listed on DSE on the basis of the estimation of beta risk.

2. Literature Review

This study penetrates earlier researches in order to explore a suitable position where it can stand robustly and demonstrate its significance by discovering new issues empirically in the concerned field. The portfolio theory developed by Markowitz (1952), a concept of using the variance of expected returns as a measure of risk an investor can form an efficient portfolio that minimizes the risk for a given level of return and maximizes the return for a given level of risk, had a greater influence over the development of CAPM by Sharpe (1964) and Linter (1965). The CAPM is an extension of portfolio theory, which implies that beta alone is sufficient to explain the cross section return of any security at any given point of time. Thereafter, numerous researches on the CAPM have been made to test the validity of this model but empirical test results generated many unsolved questions regarding the applicability of this model in different markets throughout the world. Black et al. (1972) conducted a study on the stocks of the New York Stock Exchange over the period 1931-1965 and found a linear relationship between beta and average excess portfolio return that means the higher beta security produces high return. Fama and McBeth (1973) estimated beta from time series regression over the monthly data for the period 1935-1968 and then performed a cross-sectional regression for each month to compute the risk premium over twenty portfolios of assets. They argued that the coefficient of beta is statistically significant in the CAPM. Thereafter, Tinic and West (1984) conducted a study using all stocks listed on NYSE during 1935-1982 to examine the seasonality in the basic relationship between expected return and risk and found a positive relationship between return and risk in January and no significant relationship during the remaining eleven months, which are mostly contrary to evidence of Fama and McBeth (1973). Jagannathan and Wang (1996) strongly supported conditional CAPM when betas and expected return are allowed to vary over time by assuming that the CAPM holds in each and every period. Clare et al. (1998) found a linear and positive relationship between beta and expected return using monthly stock return data collected from the UK markets over the period 1980-1993. Sauer and Murphy (1992) have confirmed that CAPM is the best model for describing the German Stock Market data. Nimal and Horimoto (2005) conducted a study in Tokyo Stock Exchange (TSE) and reported that the relationship between beta and average return is not significant in all months and even it is negatively significant in non-January months in some periods. Clare and Priestley (1998) using data from three emerging South East Asian stock markets Hong Kong, Malaysia, and Singapore, have shown that in these markets beta has significant positive effects on average stock returns. Khan et al. (2012) assessed and tested the CAPM through the calculation of beta of ten companies registered on the KSE, and the comparison between actual and expected returns. It was found that the Capital Asset Pricing Model (CAPM), failed to give accurate results. Hanif and Bhatti (2010) investigated the validity of CAPM on 60 firms listed on KSE during 2003-2008 and concluded that CAPM model is not applicable in Karachi stock exchange.

In the context of Bangladesh Mobarek and Mollah (2005) investigated the underlying factors determining share returns on the Dhaka Stock Exchange (DSE) and found unsupportive results of the critical condition of the CAPM that stock beta is positively related to share return. Rahman and Baten (2006) examined the validity of the CAPM in Bangladesh using 120 non-financial firms listed in DSE for the period of 1999 to 2003. They found that the variables like beta, book to market value and size have strong relationships with stock return. Hasan et al. (2011) examined the risk-return relationship within CAPM framework in DSE using monthly stock returns from 80 non-financial companies during the five-year period from 2005 to 2009. In their study it is revealed that beta has insignificant positive relation with share return. Rahman (2012) in his study found a significant negative relationship between taking risks and extra return using weekly data of 87 publicly listed companies in DSE from 2000 to 2008. A review of literature indicates an increasing mixed conclusion about the validity of CAPM. To the best knowledge of author, very few researches have been conducted to test the applicability of the standard form of capital asset pricing model in Bangladesh and it is also found that none of the research has used daily data from financial firms in examining its applicability. Moreover, in Bangladesh the researchers did not use any statistical tool to examine whether the difference between actual and expected return is significant or not but this study does. Therefore the present study is proposed to test the validity of standard capital asset pricing model in DSE.

3. Objectives of the Study

The primary objective of this study is to test whether the CAPM has the validity in the context of Dhaka Stock Exchange in Bangladesh. That is why this study aims to accomplish the following specific objectives:

- To examine whether a higher risk stock yields higher expected rate of return.
- To examine whether the CAPM predicts more accurately the expected return on a security in short run.
- To examine whether the expected rate of return is linearly related to the systematic risk.

4. Methods and Methodology of the Study

4.1. Data Collection Procedures

The main objective of this research is to examine the validity of Capital Assets Pricing Model on Dhaka Stock Exchange. To attain this goal relevant data are collected from 26 companies, including financial institutions, which are the part of DSE-30 index

for the period of 1st January 2012 to 31st December 2013. It is expected that in the study periods market started rational functioning after a dramatic rise and fall of DSE during 2010-2011 recognized as abnormal period. Thus this study tests the applicability of CAPM on DSE for the periods which are not covered in any study earlier in Bangladesh. The major focus of this research is the calculation of beta of 26 companies using daily basis data and then with the help of beta daily expected rate of return are calculated which are compared with the daily actual rate of return of the securities. It is worthwhile to mention that the daily data have not been used in any previous research attempting to check empirical validity of CAPM in the context of Bangladesh. According to Brown and Warner (1985) the daily prices are better for auto correlation in event methodology and that weekly and monthly data do not provide a very meaningful relationship between risk and return and hence daily data is used in this study. The 91-day Treasury bill rate is specifically chosen as the proxy for the rate of risk-free assets in Bangladesh because it can better reflects the short term changes in the financial market and also a number of studies used the same. The daily closing values of DSE general index (DGEN) are used as a proxy for the market portfolio. The returns on sample companies and market index are calculated and as : $R_{it} = (P_{it}/P_{it-1})-1$ & $R_{mt} = (P_{mt}/P_{mt-1})-1$ respectively, where R_{it} = Return on security i at time t , P_{it} = closing price of security i at time t , P_{it-1} = closing price of security i at time $t-1$, R_{mt} = return on market index at time t , P_{mt} = closing value of market index at time t , and P_{mt-1} = closing value of market index at time $t-1$. To calculate the beta coefficient (systematic risk) of 26 individual securities for daily returns an OLS regression, based on CAPM model, of each stock's excess return on the excess market index return is applied in the following equation.

$$R_{it} - R_{ft} = \alpha_i + \beta_i(R_{mt} - R_{ft}) + \epsilon_{it} \dots\dots\dots(i)$$

Where:

- R_{it} = return on security i at time t
- R_{ft} = risk free rate of return at time t
- α_i = common intercept of security i
- β_i = estimated beta of security i (which is the systematic risk)
- R_{mt} = return on market index at time t
- ϵ_{it} = random error term of security i at time t

The above equation can also be expressed as follows;

$$r_{it} = \alpha_i + \beta_i(r_{mt}) + \epsilon_{it} \dots\dots\dots(ii)$$

Where:

- $r_{it} = R_{it} - R_{ft}$ = excess return of security i at time t (dependent variable)
- $r_{mt} = R_{mt} - R_{ft}$ = excess return of market index or average risk premium (independent variable)

After calculating the beta for each security, expected return or required rate of return of each security is calculated by using the equations of CAPM as given below.

$$R_{it} = R_{ft} + \beta_i(R_{mt} - R_{ft}) \dots\dots\dots(iii)$$

To investigate whether the difference between actual and expected return is significant or not a statistical tool of “Paired Sample t-test” is used in this research.

In addition, to examine the relationship between systematic risks (beta) and rate of return of individual security the following equation is used.

$$R_i = \gamma_0 + \gamma_1 \beta_i + \mu_i \dots\dots\dots(iv)$$

5. Analysis and Discussion of Results

This section contains the descriptive statistics, paired sample t-test and the results of regression analysis of 26 sample firms listed in DSE during the two year period from 2012 to 2013. The interpretation of the empirical findings is also presented in this section.

5.1 Descriptive Statistics

Descriptive statistics of 26 individual stocks selected from DSE30 index are reported in table 1. The daily average mean return of the sample companies is -0.1353% and -0.05339% in year 2012 and 2013 respectively, which implies that on average market was gradually experiencing positive gains after a crash in 2011. In 2012, the maximum daily return has 0.1406% on a company of DELTALIFE and the minimum return has -0.5752% on a company of PADMAOIL with their standard deviation of 4.5947% and 2.2172% respectively. In 2013, the BATBC has a maximum return of 0.2718% with a standard deviation of 2.1027% and the DELTALIFE has a minimum return of -1.1939% with a standard deviation of 19.8020%. In both of 2012 and 2013, companies which have lowest mean return do not possess lowest standard deviation and companies having highest standard deviation do not possess highest mean return.

| Company Trading Code | 2012 | | 2013 | |
|----------------------|-------------|--------------------|-------------------|--------------------|
| | Mean | Standard Deviation | Mean | Standard Deviation |
| ACI | -0.00169765 | 0.02590631 | 0.00081683 | 0.02562344 |
| AFTABAUTO | -0.00226137 | 0.03591725 | 0.00027271 | 0.02794849 |
| BATBC | 0.00123805 | 0.01666637 | 0.00271802 | 0.02102745 |
| BEXIMCO | -0.00275984 | 0.03309420 | -0.00291238 | 0.02811257 |
| BSRMSTEEL | -0.00247185 | 0.03237485 | 0.00004922 | 0.02586584 |

| | | | | |
|-------------------|--------------------|-------------------|--------------------|-------------------|
| BXPHERMA | -0.00242292 | 0.03286585 | -0.00071080 | 0.02230068 |
| DELTA LIFE | 0.00140584 | 0.02217285 | -0.01193942 | 0.19802059 |
| DESCO | -0.00220125 | 0.03508170 | -0.00088545 | 0.02280738 |
| GP | -0.00001476 | 0.02014404 | 0.00057992 | 0.02522088 |
| HEIDELBCEM | 0.00011841 | 0.02610160 | 0.00152695 | 0.02404402 |
| ISLAMIBANK | -0.00103631 | 0.01949052 | -0.00089363 | 0.01675154 |
| JAMUNAOIL | -0.00004993 | 0.03330362 | -0.00228627 | 0.02080326 |
| LAFSURCEML | 0.00089615 | 0.03133354 | 0.00007594 | 0.01541093 |
| MPETROLEUM | 0.00088900 | 0.03694645 | 0.00120212 | 0.02772711 |
| NATLIFEINS | -0.00090701 | 0.02447462 | 0.00031158 | 0.02611994 |
| NBL | -0.00479059 | 0.04124259 | -0.00263646 | 0.02360672 |
| OLYMPIC | -0.00149908 | 0.04681532 | 0.00168938 | 0.03573370 |
| PADMAOIL | -0.00575205 | 0.04594785 | 0.00124723 | 0.03025405 |
| POWERGRID | -0.00067693 | 0.03225322 | -0.00021711 | 0.01921157 |
| PRIMEBANK | -0.00088676 | 0.02678565 | -0.00149863 | 0.02887052 |
| PUBALIBANK | -0.00176180 | 0.03172378 | -0.00006415 | 0.01630444 |
| RENATA | -0.00228988 | 0.02385195 | -0.00010063 | 0.02161122 |
| SQURPHARMA | -0.00149688 | 0.02883340 | 0.00050650 | 0.02091711 |
| SUMITPOWER | -0.00175621 | 0.03135122 | -0.00137764 | 0.02750157 |
| TITASGAS | -0.00035703 | 0.02932794 | 0.00040231 | 0.01857566 |
| UCBL | -0.00263563 | 0.03271148 | 0.00024069 | 0.02460656 |
| Average | -0.00135301 | | -0.00053397 | |

Table 1: Summary Statistics of Daily Stock Returns

5.2. Results of Paired Sample t-test

Table 2 shows the results of paired sample test to examine whether the CAPM predicts more accurately the expected return on a security in short run. In addition, the beta of individual security is given in this table to examine whether a higher risk stock yields higher expected rate of return. After a run of the regression analysis on data for the year of 2012 on daily basis the study found that there are only two firms, (AFTABAUTO and SUMITPOWER), having aggressive beta and five firms having negative beta. Remaining nineteen firms have defensive beta in year 2012. The result does not support the statement that higher risk stock requires higher return as the AFTUBAUTO, which has the highest beta value, fails to generate highest return. On the other hand, there are also two sectors having aggressive beta, (AFTABAUTO and SUMITPOWER), in 2013 shown in table 3. There are sixteen firms which have negative betas. The highest beta value is also found in AFTABAUTO though it is not providing the highest returns in the market meaning that higher beta stock in DSE did not ensure higher return in 2013.

| S. No. | Trading code of Company | Beta | Actual Return | Expected Return | Difference | t-value | p-value |
|--------|-------------------------|----------------|---------------|-----------------|-------------|---------------|-------------|
| 1 | ACI | 0.6856 | -0.00169765 | -0.00063160 | -0.00106605 | -.757 | .450 |
| 2 | AFTABAUTO | 1.3308 | -0.00226137 | -0.00151439 | -0.00074698 | -.498 | .619 |
| 3 | BATBC | 0.0141 | 0.00123805 | 0.00029722 | 0.00094083 | .867 | .387 |
| 4 | BEXIMCO | 0.1525 | -0.00275984 | 0.00025372 | -0.00301356 | -1.410 | .160 |
| 5 | BSRMSTEEL | 0.0985 | -0.00247185 | 0.00027372 | -0.00274557 | -1.311 | .191 |
| 6 | BXPHERMA | 0.1137 | -0.00242292 | 0.00026631 | -0.00268923 | -1.265 | .207 |
| 7 | DELTA LIFE | -0.0150 | 0.00140584 | 0.00027940 | 0.00112644 | .786 | .433 |
| 8 | DESCO | 0.0902 | -0.00220125 | 0.00027672 | -0.00247797 | -1.092 | .276 |
| 9 | GP | 0.0523 | -0.00001476 | 0.00029097 | -0.00030573 | -.235 | .815 |
| 10 | HEIDELBCEM | -0.0022 | 0.00011841 | 0.00030535 | -0.00018694 | -.110 | .912 |
| 11 | ISLAMIBANK | -0.0194 | -0.00103631 | 0.00030556 | -0.00134187 | -1.062 | .289 |
| 12 | JAMUNAOIL | 0.0025 | -0.00004993 | 0.00021780 | -0.00026773 | -.124 | .901 |
| 13 | LAFSURCEML | 0.0921 | 0.00089615 | 0.00027633 | 0.00061982 | .306 | .760 |
| 14 | MPETROLEUM | 0.0001 | 0.00088900 | 0.00030258 | 0.00058642 | -.498 | .619 |
| 15 | NATLIFEINS | 0.0869 | -0.00090701 | 0.00027647 | -0.00118348 | -.748 | .455 |
| 16 | NBL | 0.0731 | -0.00479059 | 0.00028039 | -0.00507098 | -1.898 | .059 |
| 17 | OLYMPIC | 0.1323 | -0.00149908 | 0.00025691 | -0.00175599 | -.580 | .562 |
| 18 | PADMAOIL | -0.1171 | -0.00575205 | 0.00032945 | -0.00608150 | -2.042 | .042 |
| 19 | POWERGRID | 0.0110 | -0.00067693 | 0.00029373 | -0.00097066 | -.464 | .643 |
| 20 | PRIMEBANK | -0.0390 | -0.00088676 | 0.00030818 | -0.00119494 | -.689 | .492 |

| | | | | | | | |
|----|------------|--------|-------------|-------------|-------------|--------|------|
| 21 | PUBALIBANK | 0.1682 | -0.00176180 | 0.00025249 | -0.00201429 | -.980 | .328 |
| 22 | RENATA | 0.2014 | -0.00228988 | 0.00024241 | -0.00253229 | -1.638 | .103 |
| 23 | SQURPHARMA | 0.7719 | -0.00149688 | -0.00073027 | -0.00076661 | -.492 | .623 |
| 24 | SUMITPOWER | 1.1440 | -0.00175621 | -0.00127064 | -0.00048557 | -.363 | .717 |
| 25 | TITASGAS | 0.0897 | -0.00035703 | 0.00024566 | -0.00060269 | -.318 | .750 |
| 26 | UCBL | 0.1306 | -0.00263563 | 0.00026613 | -0.00290176 | -1.369 | .172 |

Table 2: Results of paired sample t-test on daily basis return for the year of 2012

This study applied Paired sample t- test to find the p-value which indicates the significance of difference between actual and expected return. If the p-value is less than 0.05 or 0.10, which means there is a significant difference between actual return and CAPM return at 5% or 10% level of significance. The results of analysis reveal significant difference in only two sectors out of 26 sectors; NBL and PADMAOIL in 2012. The results of twenty four sectors out of 26 sectors show that there is no significant difference between actual return and CAPM return. These findings confirm the validity of capital asset pricing model on Dhaka stock exchange as the CAPM accurately predicts the expected return of different sectors in 2012. The findings shown in table 3 indicate that there is no significant difference between actual return and CAPM return of twenty two sectors in 2013. These findings also confirm the validity of capital asset pricing model on Dhaka stock exchange in 2013. The results of this study are consistent with the findings of Raza et al. (2011) where they found that capital asset pricing model (CAPM) predict more accurately the expected return on a short term investment as compare to long term investment Karachi Stock Exchange in Pakistan.

| S. No. | Trading code of Company | Beta | Actual Return | Expected Return | Difference | t-value | p-value |
|--------|-------------------------|----------------|---------------|-----------------|-------------|---------------|-------------|
| 1 | ACI | 0.5158 | 0.00081683 | 0.00023727 | 0.00057956 | .362 | .718 |
| 2 | AFTABAUTO | 1.0574 | 0.00027271 | 0.00023228 | 0.00004043 | .026 | .979 |
| 3 | BATBC | -0.1283 | 0.00271802 | 0.00023577 | 0.00248225 | 1.827 | .069 |
| 4 | BEXIMCO | -0.1615 | -0.00291238 | 0.00023415 | -0.00314653 | -1.732 | .085 |
| 5 | BSRMSTEEL | -0.0158 | 0.00004922 | 0.00024126 | -0.00019204 | -.115 | .909 |
| 6 | BXPHERMA | -0.1040 | -0.00071080 | 0.00023696 | -0.00094776 | -.657 | .512 |
| 7 | DELTALIFE | -0.6743 | -0.01193942 | 0.00020914 | -0.01214856 | -.947 | .344 |
| 8 | DESCO | 0.0048 | -0.00088545 | 0.00024226 | -0.00112771 | -.763 | .446 |
| 9 | GP | 0.1127 | 0.00057992 | 0.00024753 | 0.00033239 | .204 | .839 |
| 10 | HEIDELCEM | 0.0981 | 0.00152695 | 0.00024681 | 0.00128014 | .822 | .412 |
| 11 | ISLAMIBANK | -0.0115 | -0.00089363 | 0.00024147 | -0.00113510 | -1.045 | .297 |
| 12 | JAMUNAOIL | -0.0362 | -0.00228627 | 0.00024026 | -0.00252653 | -1.873 | .062 |
| 13 | LAFSURCEML | 0.0079 | 0.00007594 | 0.00024241 | -0.00016647 | -.167 | .868 |
| 14 | MPETROLEUM | 0.0482 | 0.00120212 | 0.00024438 | 0.00095774 | .533 | .595 |
| 15 | NATLIFEINS | -0.0253 | 0.00031158 | 0.00024080 | 0.00007078 | .042 | .967 |
| 16 | NBL | -0.0200 | -0.00263646 | 0.00024105 | -0.00287751 | -1.881 | .061 |
| 17 | OLYMPIC | -0.2207 | 0.00168938 | 0.00023126 | 0.00145812 | .632 | .528 |
| 18 | PADMAOIL | -0.0739 | 0.00124723 | 0.00023842 | 0.00100881 | .515 | .607 |
| 19 | POWERGRID | -0.1147 | -0.00021711 | 0.00022599 | -0.00044310 | -.357 | .721 |
| 20 | PRIMEBANK | -0.1289 | -0.00149863 | 0.00022400 | -0.00172263 | -.922 | .357 |
| 21 | PUBALIBANK | 0.0229 | -0.00006415 | 0.00024315 | -0.00030730 | -.291 | .771 |
| 22 | RENATA | -0.1133 | -0.00010063 | 0.00023650 | -0.00033713 | -.241 | .810 |
| 23 | SQURPHARMA | 0.3565 | 0.00050650 | 0.00023874 | 0.00026776 | .203 | .840 |
| 24 | SUMITPOWER | 1.0505 | -0.00137764 | 0.00023234 | -0.00160998 | -1.045 | .297 |
| 25 | TITASGAS | -0.1455 | 0.00040231 | 0.00019151 | 0.00021080 | .176 | .860 |
| 26 | UCBL | -0.0273 | 0.00024069 | 0.00023858 | 0.00000211 | .001 | .999 |

Table 3: Results of paired sample t-test on daily basis return for the year of 2013

5.3. Test of Risk-Return Relation

Based on the beta, β , values and rate of returns obtained, the results of the regression analysis are presented in table 4 along with model summary.

| Coefficients | | | | | | | | |
|--------------|------------|-----------------------------|------------|---------------------------|--------|------|-------------------------------|-------------|
| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | 95% Confidence Interval for B | |
| | | B | Std. Error | Beta | | | Lower Bound | Upper Bound |
| 1 | (Constant) | -.103 | .033 | | -3.084 | .003 | -.170 | -.036 |
| | VAR0002 | .066 | .087 | .107 | .762 | .450 | -.108 | .241 |

Table 4: Results of regression analysis
a Dependent Variable: VAR0001 (rate of returns)

5.4. Model Summary

| | |
|---------------------|-------|
| R- Squared | .011 |
| Durbin-Watson | 1.990 |
| F-statistic | .581 |
| Sig. (F-statistic) | .450 |

Table 5

The estimation result of R-squared (.011) shows that the explaining ability of systematic risk to sample rate of return is very low and the payoff of sample rate of return to systematic risk is relatively low. F-statistic, .581, shows that overall model is not satisfied at the 5% level. The results of this study confirm that there is no evidence of serial correlation as Durbin-Watson is 1.999.

As it is observed from the table 4, the value of constant term is -0.103 meaning that investors are considering risk free return as negative and they are paying a low attention to the time value of asset, but persuades a high risk and a high return. Such an irrational behavior of investors presents that Dhaka Stock Exchange is still on an immature stage. The coefficient value of systematic risk measured in beta (β) is 0.066 indicating that a positive linear relationship exists between systematic risk and rate of return, so systematic risk has effects on asset pricing process. However, a low t-value of 0.762 shows an insignificant result implying the significant linear relationship between systematic risk and rate of return does not exist in the sample in 2012 and 2013. This result is in line with the previous study done by Hasan et al. (2011) in Bangladesh where they concluded that CAPM liner relationship is sufficient to describe the returns generating process.

6. Conclusion

This study attempted to investigate the applicability of Capital Asset Pricing Model (CAPM) on DSE. For this study a sample of 26 companies is selected from the DSE-30 Index during two years (2012-2013). The findings of the study show that CAPM can accurately predict the expected return on a short term investment since there is no significant difference between average daily actual return and CAPM return of 24 sectors out of 26 sectors in 2012. On the other hand the daily actual returns of 20 sectors were not significantly different from average daily CAPM return in 2013. But the results confirm an insignificant positive relation between systematic risk and rate of return of the 26 sample stocks listed in DSE, which is consistent with the findings of previous study done by Hasan et al (2011) in Bangladesh and thus a high risk stock does not always imply a high return. Nevertheless, it is consistent with the implications of CAPM and provides evidence in favor of CAPM. In the light of above findings, it can be concluded that beta is completely not ignored in DSE in determining the expected returns on securities for short run. Since this study was conducted based on the daily data set gathered in DSE and, therefore, beta value obtained in this study might not be applicable in a long-term forecasting with more accuracy. The future area of research may include the applicability of CAPM in long run investment process using more observations, sophisticated tool (GARCH) and models such as multifactor model, arbitrage pricing theory (APT).

7. References

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