The Conditional Relation between Beta and Returns: Evidence from a Frontier Market

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Abstract

Capital Asset Pricing Model (CAPM) is one of the most significant finance literature models, which assumes a positive linear relationship between the required rate of return and systematic risk on stocks. The model is frequently used in the business world, but empirical tests repeatedly reject the model's validity in its unconditional form. Pettengill et al. have developed an alternative conditional CAPM approach where the unconditional test procedure developed by Fama & MacBeth, (1973) is improved by taking up and down market conditions. This paper investigates both the conditional and unconditional versions of CAPM in both individual and portfolio stock returns between January 2008 and December 2019 on the stocks listed in the Colombo Stock Exchange (CSE). Population of this research includes all the companies listed on CSE and the top 50 stocks with large market capitalization has been selected as the sample. The results of unconditional test procedure show that there is no statistically significant risk-return relationship is found in any test period in both individual and portfolio stock returns. Thus, this result is similar with the previous literature findings. The results of the conditional tests show that there is no significant positive (negative) risk-return relationship in portfolio stock returns and individual stock returns in CSE during up (down) market months. But findings indicate a significant positive risk-return relationship in individual stock returns in upmarket periods; whereas, a significant inverse risk-return relationship is not provided in down market periods.

Keywords: Colombo Stock Exchange, CAPM, Conditional Relation, Unconditional Relation

INTRODUCTION

The risk-return relationship was one of the most debatable and important concepts in finance. Researchers have given considerable attention to capital asset pricing models. Out of these, the best known is the Capital Asset Pricing Model (CAPM) originally developed by Sharpe, (1964) and which was extended and clarified by Lintner, (1965) Mossin,(1966) and Treynor, (1961) independently, based on the earlier study of Harry Markowitz, (1959) on diversification and modern portfolio theory. Capital Asset Pricing Model (CAPM) is utilized to determine a theoretically appropriate required rate of return of an asset and values the sensitivity of the asset to non-diversifiable risk. Non-diversifiable risk is also known as systematic risk or market risk and which is often represented by the Beta *(β)*. The equation used to predict risk-return relationship of Conventional CAPM is,

$$\boldsymbol{E(R_i) = R_f + \beta_i(E(R_M) - R_f)}$$ **Equation (1)**

Where,

$E(R_i)$ = expected return on security i

R_f = risk free rate of return.

$E(R_M)$ = expected return of the market

$E(R_M) - R_f$ = market premium or risk premium.

β_i = beta coefficient. In other words β_i is the sensitivity of asset returns to market returns and which can be calculated by dividing the covariance of asset return with the market return from the variance of the market return.

$$\boldsymbol{\beta_i = \frac{cov\,(R_{i,}R_{m,})}{\sigma^2(R_m)}}$$ **Equation (2)**

Where,

$cov\,(R_{i,}R_{m,})$ =covariance between the return of security and the market return

$\sigma^2(R_m)$ = variance of market return.

Numerous test methodologies have been developed to test the CAPM model. The three-stage methodology developed by Fama and Macbeth (1973) is frequently used by later researchers and has become the foundation of many subsequent test methodologies. Even though many analysts have empirically investigated the performance of the Capital Asset Pricing Model (CAPM) in explaining the cross-section of realized average return, the reported results revealed low empirical support of the CAPM. As well as the usefulness of beta as the only measure of risk has been challenged. According to Chen et al., (1986), several macroeconomic variables were significantly better at explaining the cross-section of realized average returns than was beta, while others have found that there would be an influence of several measures of unsystematic risk on stock returns. (Lakonishok and Shapiro(1984)). Similarly, Sriyalatha(2009) revealed that the empirical findings of the relationship between risk and return in the Colombo Stock Exchange were not supportive of CAPM predictions. The CAPM's central prediction is that higher beta securities are riskier than low beta securities; therefore, they must give a higher expected return for investors because they are bearing high risky securities. These disappointing CAPM empirical results led researchers to cast doubts on the model. To improve the power of the Capital Asset Pricing Model, Pettengill et al. (1995) developed a conditional test of the CAPM by suggesting that the deviation of positive and negative relations during up and down markets has contributed to the acceptance of beta as a useful measure of market risk. Pettengill et al.,(1995) has argued that the relationship between beta-return should be favorable in up markets and negative in down markets. Several researchers investigated the conditional relationship between beta and return in several stock markets by following Pettengill et al., (1995). Some of these studies including Nimal and Fernando, (2013) in Tokyo and Colombo Stock Exchanges, Sriyalatha, (2010) in Colombo Stock Exchange, Theriou *et al.*, (2010) in Athens Stock Exchange, Sandoval, and Saens, (2004) in different Latin American stock markets such as Argentina, Brazil, Chile, and Mexico, Lam, (2001) in Honk Kong Stock Exchange, Hodoshima et al., (2000) in Tokyo Stock Market, Fletcher,(1997) in the UK stock market, and Fletcher,(2000) in Europe's 18 developed capital markets. This conditional beta return relationship in portfolio stock returns has been supported in different markets but very few studies have been tested the conditional relationship on individual stock returns. There is a lack of research on the conditional relationship between beta and returns on both individual and portfolio of stocks listed in CSE. Therefore this study attempts to fill the research gap and the objective of the study is to examine the conditional and unconditional relations between beta and returns on both individual and portfolio of stocks listed in CSE

Hopefully, this study may provide insights for existing and prospective investors to make their investment in a rational manner and that will positively contribute to our economy, finance managers in determining the cost of capital, and portfolio managers in developing effective portfolios as well as for future researchers who wants to advance the knowledge and literature in CAPM.

A brief review of the literature related to the conventional CAPM and its conditional version is discussed in the next section. Throughout the third section, the test data and methodology are then explained. The findings of the tests are presented and analyzed in section four. The last section finishes with a review of the study and its outcomes.

REVIEW OF LITERATURE

The relationship between average return and risk for common stocks in the New York Stock Exchange (NYSE) has been tested by Fama & MacBeth (1973). To check the SLB model, they followed a three-stage process. In the first step, portfolios were formed for individual firms, based on the estimated beta. They tested three research implications: (1) The beta return relationship on the stock in any portfolio is linear, (2) systematic risk of a stock is a full measure of the risk of that individual stock in the efficient portfolio, (3) higher the risk higher the return which stated that there was a positive flat relationship between systematic risk and return. But could not dismiss the hypothesis of linearity between security portfolio risk and its expected return, as suggested by the two-parameter model. At the same time, Fama & MacBeth (1973) has been tested the additional risk which can't be calculated by beta and found that no risk assessment, besides portfolio risk, systematically affects average returns.

A considerable number of researchers tested the empirical relationship between risk and return, following Fama & MacBeth (1973), Reinganum, (1981) used daily returns and monthly returns and tested the NYSE risk-return relationship. There was no systematic relationship between projected beta and average return over securities for daily stock returns, which also showed that there was not enough power on the SLB model to clarify the risk-return relationship. During the period 1964-1979, it has been determined that the low beta portfolios earned greater daily returns than those of the high beta portfolios. A positive risk-return relation has been found in the monthly stock return. According to the findings, higher beta portfolios gave higher returns than low beta portfolios. Nevertheless, there were two weak points. Although this showed a good tradeoff, it was not compatible with the sub-periods. The other point was that there was no substantial average difference in returns across portfolios.

Pettengill et al.,(1995) suggest that the conflicting results of the beta-average-return equation may have contributed to convergence of returns through up and down market periods also argued that the relationship between beta-return should be favorable in up markets, and negative in down markets. In line with this statement, the relationship between beta and expected return during up (down) markets should be is significant and favorable (negative). In other words, this study, unlike previous studies, found a clear and highly significant relationship between beta and cross-sectional portfolio returns.

The conditional relationship between beta and return on international stock returns for the period January 1970 to July 1998 is investigated by Fletcher, (2000). There is no indication of a positive unconditional relationship between beta and return, in line with previous research. Nonetheless, there is evidence for the model when the results are calculated taking into account the conditional relationship between beta and return. In up-market months, the paper shows a significant positive relationship, and in down-market months a significant negative relationship. Furthermore, the relationship is symmetrical, and the world index has a positive mean excess return. That is consistent with the Pettengill et al, (1995) proof. Most of these observations are retained over the two sub-periods. The results also hold, and are even marginally stronger, using the subset of European countries. A further important finding is the role of the seasonal effect in January. The January effect has a significant impact on the Beta-Return conditional relationship. There is a significant positive relationship in up-market months in the month of January, but no relation in down-market months. It indicates the relation is asymmetric. Generally, the paper suggests that beta is a useful tool to describe cross-sectional disparities in country index return.

The beta-return relationship in the Japanese stock market using cross sectional data for the period 1956-1995 has been examined by (Hodoshima, Garza-Gómez, and Kunimura, 2000) by using a three-step method to predict betas for the portfolio and estimated beta for each security in the first step, using two years of data. Based on the results obtained, by rating the individual beta from the largest to the smallest, they created 20 portfolios. The study recommended regression for each portfolio in the second step using the next two years of data. Ultimately, which used another two years of data and calculated the portfolio's return by comparing the returns of the shares in each portfolio. The 20 portfolios demonstrated a flat relationship between average return and average beta. In terms of the goodness of fit measures, they have found that the conditional relationship is generally better suited in the down market than in the upmarket.

The standard Fama & MacBeth (1973) method has been updated by Pettengill et al.,(1995) and Lam, (2001) used to investigate the risk-return relationship on the Hong Kong stock market and noticed that both a clear positive and negative relationship exists between risk and return on the up and down markets, respectively. In addition to strong risk-return relationships, these test results also indicate that the estimated market risk premiums of up and down markets is insignificantly different from the corresponding market risk premiums expected Nonetheless, there is an asymmetric interaction between the calculated up and down market risk premiums. The magnitude of the market risk premium estimated in down market is significantly higher than that of the market risk premium estimated in up market. The calculated security market line (SML) is therefore positive and flatter in the up-market but steeper negative in the down-market.

On the stocks listed in Tokyo Stock Exchange (TSE), Nimal, (2006) investigated the conditional relationship between beta and return suggested by Pettengill et al, (1995) .This tests proved that the conditional relationship between beta and return can even be seen in individual stock returns. That is the mean slope of the cross section FM regression of individual stock betas on individual stock returns is substantially positive (negative) in up (down) markets.

The conditional cross-sectional Capital Asset Pricing Model (CAPM) relationship between portfolio beta and return on the Colombo Stock Exchange (CSE) has been evaluated by Sriyalatha, (2010) using the approach of Pettengill et al.,(1995). The results show that the conditional CAPM is a dominant method for measuring a relationship between risk and return. Statistically significant results can be seen in risks and returns between up and down markets; however, there is a steeper negative slope in down markets, and this steeper negative relationship seems to have played a major role in the negative relationship in CSE's average portfolio returns. Therefore, Sriyalatha,

(2010) concluded that the conditional relationship is generally a better match than the unconditional CSE test. The study results indicate that market beta still has a legitimate role to play as a market risk indicator.

The relationship between beta and returns on the Athens stock exchange (ASE) was analyzed by Theriou *et al.*, (2010), taking into account the disparity between the positive and negative excess yield on the market. To sum up, the conclusions drawn from their findings tend to support the existence of a conditional CAPM relationship between risks and return tradeoff. Nonetheless, support for this relationship is not 100% assured because one of Pettengill's criteria, i.e., the presence of a positive average excess market return, does not hold in ASE's case for the entire period under examination.

Both unconditional and conditional pricing models have been analyzed by Nurjannah, Galagedera and Brooks, (2012) using a sample of Indonesian stocks listed on the stock exchange. The unconditional models in the cross-section fail to explain the risk–return relationship. Nevertheless, if the market shift (up / down) is implemented as the conditioning variable, the beta risk relationship in the up-market and down-market is statistically significant. And the beta risk premium in up (down) market is positive (negative) respectively.

Nimal and Fernando, (2013) argued that if the market movements are guided by systemic factors, the beta-return relationship in realized returns should be conditional upon the realized market premium and therefore the estimated market premiums of the FM cross-sectional regressions would be positively related to the realized market premiums. In line with this argument, Nimal and Fernando, (2013) found that the expected market premiums are positively linked with realized market premiums, indicating that the relationship between beta-return is conditional on the market premium being realized. In conclusion, therefore, their findings suggested that there is a systematic relationship between beta and portfolio realized return, justifying the continued use of beta as a measure of market risk, given the market premium.

METHODOLOGY

Sample and Sampling Technique

The study covers a period of eleven years from July 2008 to December 2019. A sample of 50 stocks with the highest market capitalization is considered as the sample. The All Share Price Index (ASPI) is used as a proxy for the market portfolio, and the 91-day T-bill rate is used as a proxy for the risk-free rate.

Collection of Data

This study uses secondary data, and primary data is not used in this analysis. The main sources for collecting data are the Colombo Stock exchange (CSE) data library, annual reports, and websites of selected companies.

Monthly data is used for all variables and adjusted for dividends, and stock splits. Theriou et al. (2010). The Stock price returns have been calculated using the following formula:

$$\boldsymbol{r_{it} = ln(\frac{P_{it}}{P_{i,t-1}})}$$ **Equation (3)** Where,

r_{it} = Return on stock *i* at month *t*.

P_{it} = Price per share of stock *i* at month *t*.

$P_{i,t-1}$ = Price per share of stock *i* at month *t-1*

the market returns have been calculated as:

$$\boldsymbol{r_{mt} = ln(\frac{P_{mt}}{P_{m,t-1}})}$$ **Equation (4)** Where,

r_{mt} = Return on the market index at month *t*.

P_{mt} = Value of market index at month *t*.

$P_{i,t-1}$ = Value of market index at month *t-1*

since, 91-days Treasury bill rates (which has been taken as a proxy for the risk-free rate) is quoted on an annual basis, these rates are converted into monthly equivalents as per the following formula,

$$\boldsymbol{r_{ft} = \sqrt[12]{1 + TBR} - 1}$$ **Equation (5)**

Where,

r_{ft} = Monthly rate of return on risk free asset

TBR = Annual rate on 91-day Treasury Bills

Data Analysis Method

Methodologies suggested by Fama and Macbeth,(1973) and Pettengill et al,(1995) has been employed to test unconditional and conditional risk-return relationship, respectively. E-views 10 has been utilized for the analysis of this study.

Fama and McBeth's Approach to Test Conventional CAPM

Most empirical tests on CAPM's beta return relationship have conducted using a two-pass regression approach. There are two main approaches, known as the BJS approach and the FM approach**.** This study has been conducted using the FM approach.

First-Pass Regression

In this step, the beta of each security has been calculated by regressing the return of each security against the market return.

$\boldsymbol{R_i - r_{ft} = \alpha + \beta_i(R_{mt} - r_{ft}) + e_{it}}$ **Equation (6)** Where,

R_i = expected return of asset i, r_f = risk free rate of return, β_i = beta coefficient or the systematic risk measure of asset *i* (R_{mt}) = expected return of the market portfolio.

Second-Pass Regression

In FM approach uses the stock excess returns over a period and regress against its beta.

$\boldsymbol{(R_{it} - R_{ft}) = \gamma_{0t} + \gamma_{it}\widehat{\beta}_i + u_{it}}$ **Equation (7)** Where,

$(R_{it} - R_{ft})$ = excess return on any security *x* at time *t* γ_{it} = estimated market excess return at time *t* γ_{0t} = estimated intercept term at time *t*

Pettengill et al.'s Approach to Test Conditional CAPM

To test the conditional association between beta and stock returns, months with positive market excess returns and months with negative market excess returns should be tested separately. This has been done with the equation developed by Pettengill et al. (1995). $\boldsymbol{(R_{it} - R_{ft}) = \gamma_{0ut} + \gamma_{1ut}\widehat{\beta}_i + u_{iut}}$ **Equation (8)** $\boldsymbol{(R_{it} - R_{ft}) = \gamma_{0Dt} + \gamma_{1Dt}\widehat{\beta}_i + u_{iDt}}$ **Equation (9)** Where,

γ_{1u} = upmarket excess returns γ_{1D} = down market excess returns.

If the mean value of the coefficient, γ_{1U} is greater than zero, there is a positive relationship during up markets and if the mean value of the coefficient γ_{1D} is less than zero; there is a negative relationship between beta and returns during down markets. Therefore, as per Pettengill et al.,(1995), it is required that the intercept must be varied in terms of the definition of conditional relations for in the upmarket months and down market months. The sample period has been separated as per table 1.

Table 20.Separation of the sample period

Stock beta and stock return		*Portfolio Beta and Portfolio Return*		
Estimation period	*Test Period*	*Portfolio formation period*	*Estimation period*	*Test period*
01/2011-12/2013	1/2014-12/2014	01/2011-12/2013	01/2011-12/2013	1/2014-12/2014
01/2012-12/2014	1/2015-12/2015	01/2012-12/2014	01/2012-12/2014	1/2015-12/2015
01/2013-12/2015	1/2016-12/2016	01/2013-12/2015	01/2013-12/2015	1/2016-12/2016
01/2014-12/2016	1/2017-12/2017	01/2014-12/2016	01/2014-12/2016	1/2017-12/2017
01/2015-12/2017	1/2018-12/2018	01/2015-12/2017	01/2015-12/2017	1/2018-12/2018
01/2016-12/2018	1/2019-12/2019	01/2016-12/2018	01/2016-12/2018	1/2019-12/2019

In the stock beta-return relationship test, every 4 year period is subdivided into a 3-year beta calculation period and a 1-year test period. The securities included in the 4-year sample period only if they have been traded during the sample period. That means no missing values and no suspensions and have a complete relative price history in the test period. The first sub-period is known as the beta estimation period. The beta of each security has been calculated by regressing the excess return of each security against the excess market return as per Equation 6. The second sub-period is known as the test period. Monthly excess returns for each stock for each month from January to December of year t have been taken to test the stock beta–return relationship. Then the second pass FM cross-sectional regression (equation 07) test for each time period (i.e., from January 2014 to December 2019 - for 72 months) has been performed. As the final step, the mean slope of the coefficient γ_{1t} , its standard deviation, standard error, t-value, and p-value have been calculated for the entire 6-year period and for the two sub-periods (which cover the periods between January 2014 to December 2016 and January 2017 to December 2019, respectively). T-test has been performed using the following formula:

$$\frac{\boldsymbol{\gamma_{1t}}}{\boldsymbol{\sigma_{\gamma 1t}/\sqrt{T}}}$$

Equation (10) Where,

γ_{1t} = mean slope of coefficient γ_{1t}

$\sigma_{\gamma 1t}$ = standard deviation of the mean slope of the coefficient γ_{1t}

$\sqrt{T}$ = number of observation.

Each 7-year period is subdivided into a 3-year portfolio formation period, a 3-year beta estimation period, and a 1-year test period in the portfolio beta-return relationship test. Securities included in each 7-year period have a complete price relative history (no missing values and no suspensions).

The first sub-period is known as the portfolio formation period. The beta of each security has been calculated by regressing the excess return of each security against the market return. These securities have been divided into ten portfolios based on the betas of the individual securities. So the securities with the highest betas are part of the first portfolio, and securities with the second-highest betas are part of the second portfolio. Each portfolio includes five securities. The second sub-period is known as the portfolio beta estimation period. In the second sub-period, excess returns of the portfolios have been calculated, with the help of these excess portfolios returns, portfolio betas are estimated by regressing portfolios excess returns against excess market returns. The third sub-period is known as the test period, and portfolios' average excess returns have been calculated and regressed against betas of the portfolios calculated in the second sub-period. The study takes excess returns as the dependent variable and portfolios lagged betas as an independent variable. As the final step mean slope of the coefficient γ_{u1t} and γ_{D1t}, its standard deviation, standard error, t-value, and p-value have been calculated for the entire 6-year period and for the two sub-periods (which cover the periods between January 2014 to December 2016 and January 2017 to December 2019, respectively).

CONCEPTUAL FRAMEWORK

This study analyzes the relationship between beta and returns in CSE. Therefore risk premium will be taken as the independent variable, and excess return will be taken as the dependent variable.

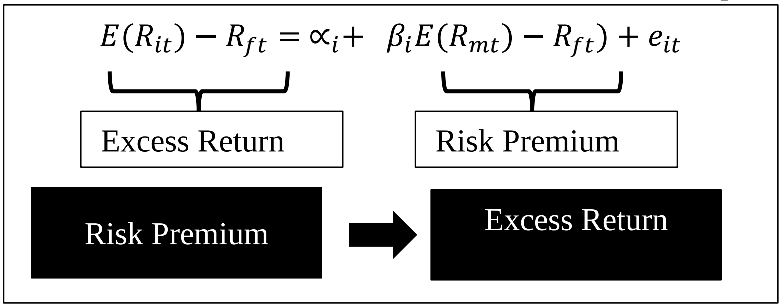

Figure 1. Conceptual Framework

DATA PRESENTATION AND ANALYSIS

Stock Beta and Stock Return

Table 2 presents the test results of the cross-section regression equation 7, 8, 9 for both unconditional and conditional CAPM during the full sample period and the sub-sample periods.

Table 21. Estimates of Slope Coefficients for Total sample period and Subsample periods of Individual Stocks

(Mean is the average of γ_{1t}, Std. is the standard deviation of γ_{1t}, and t has been calculated by dividing the mean by its standard error. The number of months in each test has been presented in the last column)

Period	*Mean*	*Std.*	*t*	*P-Value*	*Months*
	Unconditional Test-All months			*(Equation 07)*	
Total period (2014-2019)	0.006644625	0.035026957	1.609660627	0.111923	72
Period 01 (2014-2016)	0.009992484	0.040660614	1.474520388	0.149286	36
Period 02 (2016-2019)	0.003296766	0.028504159	0.693954778	0.492325	36
Conditional Tests					
Period	*Mean*	*Std.*	*t*	*P-Value*	*Months*
	Conditional Test-Panel A: Up Markets (Equation 08)				
Total period (2014-2019)	0.027225791	0.035884043	3.476872743	0.0023	21
Period 01 (2014-2016)	0.025956400	0.041542060	2.337870537	0.0360	14
Period 02 (2016-2019)	0.029764573	0.023277164	3.383129448	0.0148	7
	Conditional Test-Panel B: Down Markets (Equation 09)				
Total period (2014-2019)	-0.001829973	0.031240265	-0.418326144	0.6804	51
Period 01 (2014-2016)	-0.000166372	0.037538573	-0.020788036	0.9842	22
Period 02 (2016-2019)	-0.003092015	0.026116906	-0.637556748	0.5293	29

The beta coefficients in unconditional CAPM in all months are not significantly positive in any period suggesting that beta and average returns are not positively related. The beta coefficients become significantly positive when the market is segmented into the upmarket during the total sample period and two sub-sample periods. At the same time, beta coefficients have become negative but not statistically significant when the market is segmented into the down market during the total sample period and two sub-sample periods. Therefore, it can be concluded that there is no conditional relationship between stock beta and stock returns in CSE.

Portfolio Beta and Portfolio return

Table 3 presents the test results of the cross-section regression equation 7, 8, 9 for both unconditional and conditional CAPM during the full sample period and the sub sample periods.

Table 22. Estimates of Slope Coefficients for Total sample period and Subsample periods of 10-Beta sorted Portfolios

(Mean is the average of γ_{1t}, Std. is the standard deviation of γ_{1t}, and t has been calculated by dividing the mean by its standard error. The number of months in each test has been presented in the last column.)

Period	*Mean*	*Std.*	*t*	*P-Value*	*Months*
		All months	*(Equation 07)*		
Total period (2014-2019)	0.004718312	0.047341225	0.845694361	0.40050	72
Period 01 (2014-2016)	0.006755707	0.045513582	0.890596646	0.37911	36
Period 02 (2017-2019)	0.002680917	0.049662783	0.323894539	0.74802	36

Period	Conditional Tests				
	Mean	*Std.*	*t*	*P-Value*	*Months*
	Panel A: Up Markets (Equation 08)				
Total period (2014-2019)	0.00839492	0.046809312	0.8218526	0.42088	21
Period 01 (2014-2016)	0.00421831	0.049575371	0.3183735	0.75531	14
Period 02 (2017-2019)	0.01674813	0.043087621	1.0284019	0.34342	7
	Panel B: Down Markets (Equation 09)				
Total period (2014-2019)	0.0032044	0.0479378	0.4773708	0.63522	51
Period 01 (2014-2016)	0.0083704	0.0438635	0.8950651	0.38093	22
Period 02 (2017-2019)	-0.0007146	0.0512225	-0.0751297	0.94075	29

As reported in Table 3, the results show that the mean slope in all months are not significantly positive in any period suggesting that beta and average return are not positively related. According to Panel A and B of Table 3, a positive relationship between stock beta and stock returns can be observed during up markets, and a negative relationship cannot be observed during down markets, respectively. Mean slopes of up markets and down markets are not statistically significant in total period and two sub-sample periods. Therefore, it is suggested that the conditional relationship between beta and return cannot be seen in 10-beta sorted portfolio returns. Table 4 presents an overall conclusion on both tests.

Table 23. Overall conclusion on CSE

(Since $\bar{\gamma}_{1t}$ is the mean slope of γ_{1t} under unconditional test suggested by Fama and Macbeth, (1973) and $\bar{\gamma}_{1Ut}$ is the mean slope of γ_{1Ut} and which is estimated in periods with positive market returns and the expected sign of the coefficient is positive. In contrast $\bar{\gamma}_{1Dt}$ is the mean slope of γ_{1Dt} and which is estimated in periods with negative market returns and the expected sign of the coefficient is negative. Given in parentheses are the respective t-values)

Relationship between Portfolio Stock Beta and Portfolio Stock Return				
Time Period	*Market*	$\bar{\gamma}_{1t}$	$\bar{\gamma}_{1Ut}$	$\bar{\gamma}_{1Dt}$
Total period (2014-2019)	*CSE*	0.006644625 (1.6097)	0.027225791 (3.4769)**	-0.001829973 (-0.4183)
Period 01 (2014-2016)	*CSE*	0.009992484 (1.4745)	0.025956400 (2.3379)**	-0.000166372 (-0.0208)
Period 02 (2017-2019)	*CSE*	0.003296766 (0.6940)	0.029764573 (3.3831)**	-0..3092015 (-0.6376)
Relationship between Portfolio Stock Beta and Portfolio Stock Return				

Time Period	*Market*	$\bar{\gamma}_{1t}$	$\bar{\gamma}_{1Ut}$	$\bar{\gamma}_{1Dt}$
Total period (2014-2019)	*CSE*	0.0047183312 (0.8457)	0.00839492 (0.8219)	0.00320044 (0.4774)
Period 01 (2014-2016)	*CSE*	0.006755707 (0.8906)	0.00421831 (0.3184)	0.0083704 (0.8951)
Period 02 (2017-2019)	*CSE*	0.002680917 0.3239	0.01674813 (1.0284)	-0.0007146 (-0.0751)

*** significant at 10%, ** significant at 5%, * Significant at 1%

Therefore, the researcher has found that there is no positive (negative) relationship between beta and return during up (down) markets in both portfolio returns and individual stock returns in CSE.

CONCLUSION

This paper investigated the conditional and unconditional relationship between beta and returns in both individual and portfolio stock returns between January 2008 and December 2019 on the stocks listed in the CSE using the approaches of Fama & MacBeth, (1973) and Pettengill et al., (1995). The unconditional relationship between beta and return is positive but not significant in both individual stock returns and portfolio stock returns over the 2008-2019 observation period, which is consistent with the study of Fama & French, (1973). Following Pettengill et al., (1995), when splitting the whole sample period into two parts as up market and down market, there was no support for a positive (negative) relationship between beta and return during up (down) markets in both portfolio returns and individual stock returns in CSE over the 2008-2019 observation period. This is inconsistent with the previous studies by Pettengill et al., (1995) and Nimal, (2006) in developed markets and also with Sriyalatha, (2010) and Nimal and Fernando, (2013) in Sri Lanka.

By examining the relationship between beta and returns in both individual stock returns and portfolio stock returns has greater importance to academics, researchers, and investors. Beta is one of the critical factors that mainly affects stocks' returns though there are noticeable arguments with empirical evidence. This study will give guidelines to investors to improve their understanding of markets. The companies will be able to make sound decisions on the returns of their portfolios. As well as the information on the beta return relationship would be useful to future researchers who want to advance the knowledge and literature in CAPM.

Various models are available for pricing a financial asset. The one which has gained tremendous attention in recent years is the Fama-French factor model. Therefore, further studies may be extended to test Fama-French Factor models and consider a detailed study of the conditional risk-return relationship in South Asia's developed and developing markets.

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