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CAPM Beta and the UK Stock Returns

Chinazaekpere Nwani

BSc (Hons) Economics, MSc Financial Management (with Distinction)

Abstract: ***The study examines the relationship between systematic risk and returns of stocks listed on the London Stock Exchange. Using monthly stock data of 100 randomly selected stocks from January 1996 to December 2013 collected from DataStream 5.0, monthly closing values of the FTSE All Share Index as proxy for the market portfolio, yield on 3-month UK Treasury Bill rate as the risk-free interest rate, the study tests the explanatory power of CAPM Beta in explaining the variations in returns of stocks listed on the equity market. The empirical results from the Ordinary Least Square (OLS) cross-sectional regression analysis of the Capital Asset Pricing Model show that Beta the only explanatory variable in the model offered insignificant explanation to variations in stock returns over the entire sample period and for all the four sub-periods formed in the study, indicating that stock returns in the UK equity market are not significantly sensitive to the systematic (market) risk.***

Keywords: Beta, CAPM, London Stock Exchange, Risk, Stock Returns

1. Introduction

The relationship between risk and return is among the principal concepts in financial economics and is considered crucial to investors and fund managers. Markowitz (1952) shows that a risk-averse investor will prefer a portfolio of stocks with the highest expected return for a given level of risk or select a portfolio with the lowest level of risk for a particular level of expected return. Hence, rational investors aim at maximizing return while concurrently minimizing risk and are always interested in knowing the level of risk involved and the expected return on their investment at the end of the holding period.

The Capital Asset Pricing Model (CAPM) by Sharpe (1964) and Lintner (1965) provides the first major attempt at resolving the risk-return relationship in asset pricing and has remained relevant and one of the most widely used asset pricing models. Miller (1999) states that CAPM through its empirical evidence has contributed immensely to the development of finance by providing great insights into the form of risk involved in asset pricing. CAPM assumes that the expected return on any asset is positively and linearly related to its market risk beta, which according to the model is the only relevant measure of undiversifiable risk of the asset. However, empirical evidence to date on the explanatory power of the CAPM beta to offer significant explanation to variations in stock returns in various equity markets has been mixed. While the findings of three early empirical studies by Black et al. (1972), Sharpe and Cooper (1972) and Fama and MacBeth (1973) conducted in the US equity markets show a strong significant relationship between systematic risk (beta) and stock returns, some recent empirical studies implementing the model to explain variations in returns of stocks in the US (Fama and French 1992), Turkey (Dalgin et al. 2012) and Hong Kong (Cheung and Wong 1992) have reported deviations from the model's predictions, indicating that investors can earn abnormal returns in excess of those predicted by the Capital Asset Pricing Model. In the UK the findings of some recent empirical has been mixed. For example Clare et al. (1998) in their empirical study found a positive and linear significant relationship between systematic risk (beta) and stock returns, while Strong and Xu (1997) confirmed in their empirical studies on the cross-section of expected return of UK stocks that book-to-market ratio is the only significant risk factor explaining risk-return relationship in the UK equity market.

As a result of the differences in previously conducted empirical studies, it is meaningful to update the current findings and provide more explanation to variations in stock returns in the UK equity market. This study employs Fama and MacBeth (1973) methodology to test the Capital Asset Pricing Model. The result is intended to provide more insight on the explanatory strength of CAPM beta in explaining variations in returns of stocks listed on the UK equity market.

2. Literature Review

Building on Markowitz (1952) portfolio theory, Sharpe (1964) and Lintner (1965) developed the Capital Asset Pricing Model to provide a framework for investors to identify the efficient portfolio of risky securities without knowing the expected return of each security in the portfolio. The model assumes the capital market to be efficient with share prices reflecting all available information in the market. The expected excess return of a stock (portfolio) is a linear function of the volatility of the market portfolio. The linear relationship implies that the expected return on stocks (portfolios) is determined by its beta with the market portfolio as given in equation 2.1 below:

$$E(R_i) = R_f + \underbrace{\beta_i\, X\left(E[R_{mkt}] - R_f\right)}_{Risk\ Premium\ \ for\ Security\ \ i} \qquad (1)$$

The linear relationship between the systematic risk and expected return established in equation 2.1 shows that the expected return on a security is equal to the risk-free rate (R_f) plus the risk premium. CAPM assumes that since investors can eliminate firm-specific risk by diversification, the only risk compensated in the market is the systematic risk. Thus the risk premium for holding a stock (portfolio) will depend on its beta (β_i), which measures the sensitivity of the stock (portfolio) to the systematic (market) risk.

Tests of the Capital Asset Pricing Model are based on three implications of the relationship between expected return and systematic risk (beta) assumed by the model. First, expected returns on stocks are linearly related to their beta and investors are not compensated for holding firm-specific risks. Second, the beta premium is positive, indicating that on average stocks with high beta values produce higher returns. Third, the slope of the relationship is the market return less the risk-free rate.

Three early empirical studies from the New York Stock Exchange by Black et al. (1972), Sharpe and Cooper (1972) and Fama and MacBeth (1973) tested the model using two-pass Ordinary Least Square regression technique suggested by Lintner (1965). Black et al. (1973) tested CAPM with monthly stock data of all the stocks listed on the equity market from 1926 to 1966 for the entire period and four subperiods. To reduce the errors involved in estimating beta values, they grouped all the stocks into ten portfolios with ten percent of the stocks with the highest beta forming the first portfolio and ten percent with lowest beta values forming the last portfolio. By using beta of a portfolio composed of many stocks in the regression, they reduced measurement errors of individual stocks. The findings of the study found a significant positive relationship between average return of the ten portfolios and the corresponding beta values.

Sharpe and Cooper (1972) implemented a strategy of buying portfolios of stocks with different beta values. The study considered all the stocks listed on the New York Stock Exchange from the period of 1931 to 1967. They estimated the beta values of stocks by using the previous 60 months of data. Using the beta values they formed ten portfolios from the highest beta stock to the lowest beta stock. The study then implemented the strategy of buying the highest beta portfolio every year, the next highest beta-sorted portfolio through to the lowest. When they considered the result of implementing the strategy they found a significant positive relationship between returns and beta, indicating that past beta values offered significant explanation to future returns.

Fama and MacBeth (1973) tested CAPM using monthly sock data of all the stocks listed on the New York Stock Exchange during the period of January 1926 to June 1968 using a slightly different two-pass Ordinary Least Square regression technique. They divided the sample period into nine subperiods with each subperiod further divided into portfolio formation period, initial estimation period and testing period. Testing for the entire sample period and for the nine subperiods, the study found significant positive and linear relationship between beta and stock returns for the entire period and in eight of the nine subperiods. The study therefore concluded that a significant positive relationship exist between systematic risk and returns.

A number of recent empirical studies in both UK and other developed and emerging equity markets have shown that the explanatory strength of CAPM has weakened in recent years. Chan and Chui (1996) covering the period of 1971 to 1990 found beta insignificant in explaining cross-section of UK stock returns. Strong and Xu (1997) used two-pass regression technique to examine the relationship between beta and returns of stocks listed on the London Stock Exchange from 1960 to 1992. The study found a positive relationship between beta and expected return when considered as the only explanatory variable. However, the effect of beta becomes insignificant when other variables are included to form a multifactor model. The study found leverage and book-to-market equity ratio significant in explaining variations in UK stock returns.

Clare et al. (1998) used monthly adjusted stock returns of 100 listed firms on the London Stock Exchange between January 1980 to December 1993 collected from the London Share Price Database (LSPD) to test for a linear and positive relationship between beta and returns of UK stocks over the sample period. The result of their test shows that beta significantly explains expected returns of UK stock data over the period. Hung et al. (2004) conducted a cross-sectional regression to determine the explanatory power of CAPM in explaining the UK stock returns from 1975 to 2000 and found that beta is a significant variable in explaining the returns of stocks from the London Stock Exchange when considered as the only explanatory variable and when combined with other explanatory variables in the model.

Morelli (2007) empirically examined the explanatory strength of beta, size and book to market value in explaining cross-sectional returns of 300 randomly selected UK stocks from 1 July 1980 to 30 June 2000. Using monthly adjusted stock data collected from the London Share Price Database (LSPD), 3-month UK Treasury Bill Rate as the risk free interest rate and a simple value weighted average of all the selected 300 firms as a proxy for the market portfolio, the study examined the role of beta (as predicted by CAPM), firm size and book to market value (as predicted by Fama and French Model) in explaining expected UK stock returns during the period. The results of the study found beta insignificant in explaining stock returns over the sample period.

3. Data and Methodology

3.1 Data Description

The principal aim of this study is to test the significance of CAPM Beta in explaining expected returns of stocks listed on the London Stock Exchange**.** This study uses monthly stock data obtained from DataStream 5.0 covering eighteen years period from January 1996 to December 2013 (216 months). Table 1 below presents the description of the data.

Table 1: Data Description

Data Desription	*DataStream Code*
Monthly adjusted closing prices of all the firms selected	P
Monthly closing value of FTSE ALL SHARE Index	FTALLSH(PI)
91-day (3-month) UK Treasury Bill Rate	UKOIR077R

Source: Author generated

Even though asset pricing models do not specify time frequency for data, empirical findings have shown that beta values are sensitive to the time frequency used. Bartholdy and Peare (2005) tested the Capital Asset Pricing Model using different time frames, data frequencies and indexes and found that the use of monthly stock data provides the best estimate. Their findings show that the use of daily and weekly data increases the level of noise in the beta value. Hence, to minimize the level of noise in the beta values, this study uses monthly data in conducting the empirical study.

The monthly closing value of the FTSE All Share Index of the London Stock Exchange is used as the proxy for the market portfolio. The FTSE All Share Index is a market-capitalisation weighted index that represents the performance of all eligible companies listed on the London Stock Exchange (LSE). It represents approximately 98% of the UK's entire market capitalisation and is the sum of the FTSE 100, FTSE 250 and FTSE Small Cap indices. The 91-day (3-month) Treasury Bill Rate is taken as the proxy for the risk free interest rate.

The sample consists of randomly selected 100 stocks of UK public companies listed on the London Stock Exchange over the sample period of January 1996 to December 2013 (216 months). To be considered in the sample frame, a firm must be a constituent of FTSE All Share Index and must have been listed on the London Stock Exchange on or before 1995. A sample of 100 firm were randomly selected from the list of all companies in the sample frame to represent all subcomponents of the FTSE All Share Index, consisting of firms from the FTSE 100, FTSE 250 and FTSE Small Cap indices. The distribution of the sample is shown in figure 1 below:

The spreading of the sample distribution captures the various components of the London Stock Exchange with small-capitalised (small), mid-capitalised (medium) and highly-capitalised (big) firms represented. The FTSE Small Cap consisting of stocks with small market capitalization contains 47% of the sample. The FTSE 250 which comprises mid-capitalised firms has 37% of the sample distribution while FTSE 100 comprising of the most highly capitalized firms in the London Stock Exchange has 16% of the sample distribution. The sample captures various classes of stocks in the UK stock market to give a representation of the market.

3.2 Estimation Technique

Fama and MacBeth (1973) implemented a two-step procedure for testing Capital Asset Pricing Model. The two-step procedure known as First-Pass (time-series) and Second-Pass(cross-sectional) Ordinary Least Square (OLS) regressions has become the most common method of testing CAPM and has been extended to test other models.

In the First-Pass (Time-series) regression the beta of all the individual stocks is calculated. All the stocks are then ranked in order, from lowest beta stock to the highest beta stock and equally weighted portfolios are created based on the beta values. This is achieved by implementing the time series regression of the CAPM model given below:

$$R_{it} - R_{ft} = \beta_0 + \beta_{im}\left(R_{mt} - R_{ft}\right) + e_{it} \quad (2)$$

Where R_{it} is the monthly return on stock i in period t; R_{mt} is the return on market portfolio in period t; R_{ft} is the risk free interest rate; β_{im} is the slope of the regression line corresponding to asset i and the estimate of the beta coefficient of the ith stock. It is a measure of systematic risk (market risk) which shows the responsiveness of each of the selected stocks to movements in the market portfolio; β_0 is the intercept and e_{it} is the random error term.

In the Second-Pass (Cross-sectional) regression, beta and the average excess return of all the equally weighted portfolios are estimated. A Cross-sectional regression of portfolios' beta values on the average excess return of the equally weighted portfolios is performed to estimate the Security Market Line (SML) required in testing the Capital Asset Pricing Model (CAPM). To estimate the Security Market Line (SML) the following equation is implemented:

$$R_{pt} = \alpha_1 + \alpha_2\beta_p + e_{pt} \quad (4)$$

Where $R_{pt} = \sum_{i=1}^{N} w_i R_{it}$ is the equally weighted average excess monthly portfolio returns on individual stocks in the portfolio; β_p is the portfolio beta; $\boldsymbol{a_1}$ is the intercept of the regression equation and $\boldsymbol{a_2}$ is the regression coefficient of beta.

This methodology takes beta as an explanatory variable in the model. This study implements the two-step Ordinary Least Square (OLS) regression technique for the entire sample period and for four subperiods. Table 1 below presents the four subperiods designed to test if the explanatory power of beta will change over the sample period.

Table 2: Estimation Subperiods

SUBPERIODS	1	2	3	4
Portfolio formation period	1996 - 1999	1999 - 2002	2002 - 2005	2004 – 2007
Initial Estimation period	2000 - 2003	2003 - 2006	2006 - 2009	2008 – 2011
Testing period	2004 - 2005	2007 - 2008	2010 - 2011	2012 – 2013
No. of stocks	100	100	100	100

Source: Author generated

In each subperiod, the first four years is used as the portfolio formation period, the next four years as the estimation period and the last two years as the testing period. In the portfolio formation period the beta of all the 100 stocks selected is estimated by implementing the First-Pass (time series) regression of the CAPM model. Based on beta values estimated, all the stocks are sorted into 10 equally weighted portfolios with each portfolio having 10 stocks. The first portfolio will comprise 10 lowest beta stocks and the last portfolio will contain the 10 highest beta stocks. In the Initial estimation period the beta and average excess return of each of the equally weighted portfolios are estimated. The beta of a portfolio is the weighted average beta of all the stocks in the portfolio. In the testing period a cross-sectional regression of the average excess portfolio returns on the portfolio beta values is conducted. The number of observations in the cross-sectional regression is equal to the number of portfolios created. This step is required to estimate the Security Market Line (SML) required in testing

CAPM. The testing procedure is implementing by taking the following steps:

a) Time-series regression to calculate the beta of each of the 100 firms by regressing each stock's excess monthly return against the excess monthly return of the market portfolio (FTSE ALL SHARE Index).
b) Ranking all the stocks according to their beta values from lowest beta stock to the highest beta stock. Ten (10) equally weighted portfolios are formed. Portfolio 1 consists of 10 stocks with the lowest beta values while portfolio 10 consists of 10 stocks with the highest beta values.
c) Estimation of beta and average excess portfolio return. Portfolio return is the average (equally weighted) of the monthly returns of all the stocks in the portfolio.
d) Cross-sectional regression of average excess portfolio return on portfolio beta values to estimate the Security Market Line (SML) required in testing CAPM. If CAPM holds in the London Stock Exchange, then intercept will be statistically insignificant and the Slope of the model will be the only statistical significant coefficient in the model.

4. Data Evaluation

Table 3 below shows the descriptive statistics for each of the ten portfolios, revealing fundamental trends in the distribution.

Table 3: Descriptive Statistics of monthly excess returns of beta sorted portfolios.

Portfolios	Mean Return (%)	Std. Dev.	Minimum	Maximum
1	1.7465	4.8222	-10.8047	13.2204
2	1.8228	5.7432	-11.7081	23.5675
3	2.2827	6.6842	-10.9691	26.4929
4	2.2654	8.2946	-11.5290	51.4710
5	2.3043	5.3175	-8.4115	23.1553
6	2.5445	5.9770	-10.0355	22.2065
7	1.8636	5.6669	-9.0871	23.1658
8	2.1547	8.8962	-7.9725	14.2220
9	2.0998	4.8697	-11.3717	44.7341
10	2.3841	7.3900	-13.9320	21.6088
R_m-R_f	0.9971	4.7152	-10.2388	11.9677

Source: Author's SPSS Output

For the entire sample period, portfolio 6 offered the highest mean monthly excess return of 2.5445% with beta of 0.8642. Portfolio 9 with the highest beta value of 1.0461 offered 2.0998% mean return. The market portfolio offered 0.9971% within the same 60 months testing period used in estimating the returns of the ten portfolios. Hence, all the ten portfolios formed based on beta offered higher excess return than the market portfolio. Portfolio 10 offered the lowest monthly return of -13.9320% while portfolio 4 offered the highest monthly return of 51.41710% over the sample period. A careful study of table 3 shows a weak positive relationship between beta and mean portfolio returns indicating a strong influence of non-systematic risk in the distribution.

5. Empirical Results and Analysis

5.1 Entire Period

The cross-sectional OLS regression results are summarised in Table 4 below:

Table 4: Cross-sectional regression result for the entire period 1996-2013

$R_{pt} = \alpha_1 + \alpha_2\beta_p + e_{pt}$					
	Coefficients	Std. Error	t-stat	p-value	Adjusted R^2
α_1	1.358	0.434	3.128	0.014 **	0.211
α_2	0.958	0.519	1.845	0.102	
Result: The t-test fails reject the null hypothesis					

Source: Author's SPSS Output

* Significant at 1%, ** Significant at 5%

Based on the assumptions of the Capital Asset Pricing Model (CAPM), $\boldsymbol{\alpha_2}$ the coefficient of beta $\boldsymbol{\beta_p}$ in equation (3.3) should be the only significant parameter in the equation. In order words the coefficient of beta should be statistically different from zero. The intercept $\boldsymbol{\alpha_1}$ in equation (3.3) should not be statistically insignificant. The cross-sectional OLS estimation results in table 8 show that intercept ($\boldsymbol{\alpha_1}$) of the model is greater than the critical t-value at 5% level of significance. With ρ-value of 0.014 the intercept is statistically different from zero, which is not consistent with the assumptions of CAPM. The t-statistics for the coefficient of beta is 1.845 with ρ-value of 0.102. The ρ-value is greater than 0.05 indicating that the coefficient of beta is not statistically different from zero. The adjusted R^2 from the OLS estimation is 0.211. This shows that beta, the only explanatory variable in CAPM explained approximately 21% of the total variations in stock returns over the period. This also indicates that about 79% of all the variations in stock returns are not explained by beta, but by other non-systematic factors.

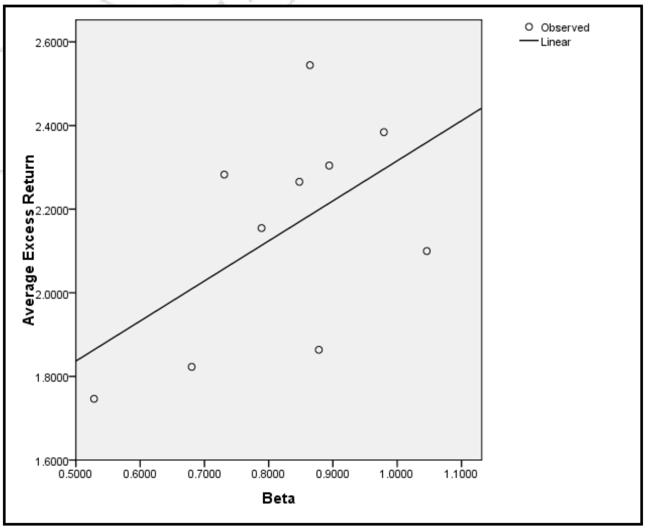

Figure 1: The security Market Line (SML)

Source: SPSS Output

Figure 1 above is the graphical representation of the Security Market Line (SML). The intercept is certainly not equal to zero. Under the assumptions of CAPM all portfolios should lie on the Security Market Line (SML). Even though the SML is upward sloping, it is clear that none of the portfolios lie on the line. Portfolio returns and beta are scattered around the SML. There are two explanations to the SML. First, the market portfolio is not equal to the efficient portfolio. As a result of this, the UK financial market is not in CAPM equilibrium and investors could have earned abnormal return by holding those portfolios that lie above the SML. Second, there are other factors that explain the variations in stock returns other than market risk premium. Thus, the excess portfolio returns are not strongly sensitive to the systematic (market) risk, suggesting that investors in the equity market could earn excess return for bearing non-market risk.

5.1 Subperiods

To test if the above empirical result will be stable over time, the entire sample period is divided into four subperiods. The first subperiod covers January 1996 to December 2005, the second subperiod covers January 1999 to December 2008, the third subperiod covers January 2002 to December 2011 and the fourth subperiod covers January 2004 to December 2013. In each subperiod, the first four years is used as the portfolio formation period, the next four years as the estimation period and the last two years as the testing period. The implementation of the Capital Asset Pricing Model for each of the four subperiods achieved by performing cross-sectional OLS regression of the model (see Appendix XI). The estimated empirical results for each of the four subperiods are given in Table 9 below:

Table 5: Cross-sectional regression results for subperiods

SUBPERIOD: 1996-2005					
	Coefficient	Std. Error	t-stat	p-value	Adjusted R^2
α_1	0.999	0.394	2.532 **	0.035	0.209
α_2	0.703	0.383	1.839	0.103	
Result: The t-test fails reject the null hypothesis					
SUBPERIOD: 1999-2008					
	Coefficient	Std. Error	t-stat	p-value	Adjusted R^2
α_1	-3.162	0.236	-13.383 *	0.000	0.122
α_2	1.311	0.874	1.500	0.172	
Result: The t-test fails reject the null hypothesis					
SUBPERIOD: 2002-2011					
	Coefficient	Std. Error	t-stat	p-value	Adjusted R^2
α_1	1.853	0.487	3.809 *	0.005	0.246
α_2	-1.794	0.400	-1.985	0.082	
Result: The t-test fails reject the null hypothesis					
SUBPERIOD: 2004-2013					
	Coefficient	Std. Error	t-stat	p-value	Adjusted R^2
α_1	1.147	0.462	2.481 **	0.038	0.225
α_2	0.771	0.405	1.901	0.094	
Result: The t-test fails reject the null hypothesis					

Source: Author's SPSS Output
* Significant at 1%, ** Significant at 5%

The empirical results for the first subperiod covering January 1996 to December 2005 shows that the intercept with ρ-value of 0.035 is significant at 5% level of significance, since the ρ-value is less than 0.05 (the significance level). This is not consistent with CAPM. The ρ-value for the coefficient of beta is 0.102, which is greater than the significance level. This indicates that beta is statistically insignificant in explaining stock returns over the subperiod. With adjusted R^2 of 0.209, beta only explained about 21% of variations in stock returns over the sample period.

In the second subperiod covering January 1999 to December 2008, t-statistics from table 9 shows that the intercept is significant at 1% level of significance with ρ-value of 0.000 while beta is statistically not different from zero with ρ-value of 0.172 greater than 5% level of significance. With adjusted R^2 of 0.122, CAPM using beta as the only explanatory variable accounted for only 12.2% of the total variations in stock returns over the sample period. The empirical result from the third subperiod covering January 2002 to December 2011 did not change the results from the first two subperiods. The intercept with p-value of 0.005 is statistically significant at 1% level of significance. The beta coefficient with 0.082 is statistically insignificant at 5% level of significance. The adjusted R^2 of 0.246 shows that beta only explained 24.6% of total variations in stock returns over the sample period.

The empirical results of the fourth subperiod covering January 2004 to December 2013 confirms the statistical insignificance of beta in explaining variations in stock returns in the London Stock Exchange over the sample period. With ρ-value of 0.038, the intercept is significant at 5% level of significance. The beta coefficient with ρ-value of 0.094 is statistically insignificant. The adjusted R^2 of 0.225 also confirms the weak explanatory strength of beta in explaining variations in stock returns over the sample period. Hence, the empirical results in all the four subperiods show that beta is not statistically different from zero, indicating that the non-market-specific risk factors are rewarded in the UK equity market.

The empirical results of this study support the findings of Chan and Chui (1996) and Morelli (2007) empirical studies. The findings of Chan and Chui (1996) and Morelli (2007) earlier found CAPM beta insignificant in explaining variations in stock returns in the UK equity market. However, the insignificance of beta in explaining UK stock returns has been rejected by some empirical studies using a different estimation technique than that used in this study and in most of the empirical studies. Clare et al. (1998) using a different approach from the traditional method of estimating the Capital Asset Pricing Model estimated beta on the assumption that non-systematic return was not correlated. The study found a highly significant role for beta in explaining UK stock returns from January 1980 to December 1993.

However, this empirical study implemented the traditional two-pass Ordinary Least Square (OLS) approach following Fama and MacBeth (1973) methodology to test the Capital Asset Pricing Model. The choice of the methodology is consistent with the assumptions of the model and follows the traditional method of testing the Capital Asset Pricing Model as suggested by Lintner (1965).

6. Conclusion and Recommendation

Following Fama and MacBeth (1973) methodology, the study tested the explanatory strength of the CAPM beta in explaining variations in monthly returns of stocks listed on the London Stock Exchange over the sample period of

January 1996 to December 2013 using 100 randomly selected stocks from the equity market. The results from the cross-sectional Ordinary Least Square (OLS) regression analysis show that beta the only explanatory variable in the CAPM model is statistically insignificant in explaining variations in stock returns over the period. This study therefore concludes that systematic risk is not a significant factor in explaining UK stock returns over the period covered.

Hence, investment decisions and strategies based on CAPM beta (market risk) to explain variations in returns of stocks listed on the equity market may fail to offer significant return. The study recommends that investors should consider non-market (firm-specific) factors in their investment decisions and strategies.

References

[1] BARTHOLDY, J. and PEARE, P., 2005. Estimation of expected return: CAPM vs Fama and French. *International Review of Financial Analysis*, 14, pp. 407-427.

[2] BLACK, F., JENSEN, M.C. and SCHOLES, M., 1972. The capital asset pricing model: Some empirical tests. In: M.C. JENSEN, ed. *Studies in the Theory of Capital Markets.* New York: Praeger. pp. 79-121.

[3] CHAN, A. and CHUI, A.P.L., 1996. An Empirical Re-Examination of the Cross-Section of Expected Returns: UK Evidence. *Journal of Business Finance & Accounting*, 23(9), pp. 1435-1452.

[4] CHEUNG, Y. and WONG, K., 1992. An assessment of risk and return: some empirical findings from the Hong Kong stock exchange. *Applied Financial Economics*, 2(2), pp. 105-114.

[5] CLARE, A.D., PRIESTLEY, R. and THOMAS, S.H., 1998. Reports of beta's death are premature: Evidence from the UK. *Journal of Banking and Finance*, 22, pp. 1207-1229.

[6] DALGIN, M.H., GUPTA, K. and SRAIHEEN, A., 2012. Testing CAPM for the Istanbul Stock Exchange. *International Journal of Economic Perspectives*, 6(3), pp. 224-234.

[7] FAMA, E.F. and FRENCH, K.R., 1992. The cross-section of expected stock returns. *Journal of Finance*, 47(2), pp. 427-465.

[8] FAMA, E.F. and MACBETH, J.D., 1973. Risk, Return and Equilibrium: Empirical Tests. *Journal of Political Economy*, 81(3), pp. 607-636.

[9] HUNG, D.C., SHACKLETON, M. and XU, X., 2004. CAPM, Higher Co-moment and Factor Models of UK Stock Returns. *Journal of Business Finance and Accounting*, 31(1-2), pp. 87-112.

[10] LINTNER, J., 1965. The valuation of risk assets and the selection of risky investments in stock portfolios and capital budgets. *Review of Economics and Statistics*, 47, pp. 13-37.

[11] MARKOWITZ, H., 1952. Portfolio Selection. *Journal of Finance*, 7(1), pp. 77-91.

[12] MILLER, M.H., 1999. The History Of Finance. *The Journal of Portfolio Management*, 25, pp. 95-101.

[13] MORELLI, D., 2007. Beta, size, book-to-market equity and returns: A study based on UK data. *Journal of Multinational Financial Management*, 17, pp. 257-272.

[14] SHARPE, W.F., 1964. Capital asset prices: a theory of market equilibrium under conditions of risk. *Journal of Finance*, 19, pp. 425-442.

[15] SHARPE, W.F. and COOPER, G.M., 1972. Risk-Return Classes of New York Stock Exchange Common Stocks, 1931-1967. *Financial Analysts Journal*, 28(2), pp. 46-81.

[16] STRONG, N. and XU, X.G., 1997. Explaining the cross-section of UK expected stock returns. *British Accounting Review*, 29, pp. 1-23.

Author Profile

Nwani Chinazaekpere received BSc (Hons) Economics (2nd Class Upper Division) from Ebonyi State University, Abakaliki, Nigeria in 2005 and MSc Financial Management (with Distinction) from Robert Gordon University, Aberdeen, United Kingdom in 2014.

APPENDIX A: 100 Randomly Selected Constituents of the FTSE All Share Index

COMPANY	DataStream Code
4IMPRINT GROUP	901095
ABERDEEN UK TRACKER	904947
AGA RANGEMASTER GROUP	900737
ANGLO PACIFIC GROUP	991221
BLOOMSBURY PBL.	135750
BOOT (HENRY)	926525
BRAMMER	901815
BRITISH ASSETS	901531
BRITISH POLYTHENE INDS.	910663
CANDOVER INVS.	904708
CAPE	900294
CAPITAL & REGIONAL	917191
CAPITAL GEARING TST.	926841
CARPETRIGHT	319752
CHEMRING GROUP	914073
CLARKSON	940015
COMMUNISIS	135860
DEVRO	319802
DIALIGHT	312742
FINSBURY GW.& INC.TST.	910876
GREGGS	952780
HEADLAM GROUP	910395
HILL & SMITH	911998
INVESCO ASIA TRUST	960673
JKX OIL & GAS	139998
JOHNSTON PRESS	943610
JPMORGAN CLAVERHOUSE	901537
KEYSTONE IT.	910833
MCBRIDE	134982
MONTANARO EUR.SMCOS.T	988915
MOTHERCARE	905308
MUCKLOW (A & J) GROUP	900340
NEW CITY HIGH YIELD FD.	955875
PANTHEON INTL.PARTS.	965471
PHOTO-ME INTL.	900917
PORVAIR	940860
RENOLD	900580
S & U	901178
SCHRODER UK MID CAP.FD.	901964
SHIRES INCOME	926252

SPEEDY HIRE	953866
ST.IVES	931202
TOWN CENTRE SECURITIES	904127
UK MAIL GROUP	319875
UNITED UTILITIES GROUP	904367
VITEC GROUP	926712
VOLEX	900528
PENNON GROUP	904391
SAVILLS	943918
OXFORD INSTRUMENTS	940013

COMPANY	DataStream Code
RANK GROUP	900918
BTG	139996
CRODA INTERNATIONAL	900476
ALLIANCE TRUST	901526
MARSTON'S	900274
DCC	135588
COBHAM	904313
RATHBONE BROTHERS	901773
WORLDWIDE HLTHCR.TST	960639
BERENDSEN	900954
DIPLOMA	910264
INTERSERVE	900346
RENISHAW	917076
HOMESERVE	928782
GO-AHEAD GROUP	135565
LAIRD	901107
DERWENT LONDON	926373
RESTAURANT GROUP	912000
BROWN (N) GROUP	914327
CAIRN ENERGY	910146
ROTORK	910649
NORTHGATE	910540
MERCANTILE IT.	901556
BODYCOTE	910119
BBA AVIATION	900293
SYNTHOMER	905310
CLOSE BROTHERS GROUP	905313
DIXONS RETAIL	900906
GREENE KING	900250
ITE GROUP	907765
BLACKROCK WORLD MNG.	953113
GRAINGER	931261
ELEMENTIS	901023
IMAGINATION TECHN.	135869
SEVERN TRENT	904373
REED ELSEVIER	901080
ASSOCIATED BRIT.FOODS	900825
CAPITA	953830
ASTRAZENECA	319608
BP	900995
INTU PROPERTIES	507516
JOHNSON MATTHEY	901152
MEGGITT	910509
SMITHS GROUP	900943
WOLSELEY	900764
RIO TINTO	901714
AVIVA	901503
PRUDENTIAL	901521
ANGLO AMERICAN	903076
ASHTEAD GROUP	906045