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Evidence of Momentum and Non Factor Profits in the Nigerian Equity Market

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Abstract: This research documents the form of trends in the four factor model in the Nigeria capital market. In addition will determine among others whether market factor perform well than non-market factor and examine size and value effects across the portfolio and market. Monthly average return of fifty nine (59) stocks were employed from Jan.2012 to June 2017 to test for the validity of four-factor model and compare with single factor and three-factor models. Descriptive and ordinary least square are used in analysing the parameters for the conditional and unconditional form of the models. The study documents that size is profitable in high beta portfolio and low return market condition and value effects are only statistically valid in a low beta portfolio condition. Momentum effects are stronger in the portfolio with high beta and market condition with low return. The findings demonstrate that momentum profits were generated more than 1 per cent throughout the period and the return of the market shows evidence of mean reversion and underreaction to news in the market. The study recommends that investors discounting the expected return of their investments or computing the required rate of return of investments should adopt the four-factor model. The use of a single factor model for discounting/compounding should be discouraged because its explanatory power lacks basic information and the government through the appropriate authority should provide 'bail up fund' to the capital market to ensure that the market is adequate liquid; so that the incidence of thin trading can be addressed. Additionally, the flotation charges and listing requirements should be lessened to allow frequent quotations in the market.

Keywords: Momentum; Momentum; Risk Premium; Value Premium; Size Premium; Four-factor model

Introduction

The veracity of Nigerian capital market as a hub of profitable investment has witness numerous test to affirm the claim as its counterpart in the developed economy which has facilitate the use of different techniques and

tools. Though many financial researchers (Adedokun and Olajoko, 2012, Osamwonyi and Asien (2012), Nwude and Eyisi, 2013, Oke (2013) and lately Ajayi, Oloyede, Omankhanlen, Ajibola, Adeyeye, and Iseolorunkanmi 2019) has made assertions and counter claims to the efficacy of the Capital Asset Pricing Model (CAPM) as a modern tool that will efficiently measure the relationship between risk and return in the market. There has not been a conclusive stance to the whether CAPM can relay define the relation of risk and return. This has made the market receive low patronage from investors which also hinder its development. The above also includes various incident of reported inside trading, theft and unauthorised sale of shares among others. The market has witness a big boom during the consolidation and recapitalisation of the Banking and Insurance sector. But the trading in the market has been inactive in some sectors which has reveals that the length and breadth of its instruments traded are grossly inadequate for robust economic development.

Among these studies are Oke (2013), Adedokun and Olakojo (2012), Osamwonyi and Asien (2012), Abdullahi, Lawal and Ibrahim (2011) and Olakojo and Ajide (2010) using the single factor that is weak in explaining variation in risk and return of the market. Oke (2013) applies the single-factor model (CAPM) to the Nigerian Stock Market, and the result shows that CAPM was not valid in the market. Osamwonyi and Asien (2012) adopt the Sharpe-Lintner version as proposed by Campbell, Lo and Mackinlay (1997) for their studies that indicate that a positive significant relationship exists between security return and the measured market betas. Their evidence was not in affirmative of the stance of CAPM in Nigeria that may be due to the techniques employed in their work by using the single factor model. From the aforementioned, it is necessary to empirically establish the presence of CAPM with the aim of providing evidence to the investors that the capital market is profitable and not too risky and that they could gain from the anomaly that exists in the market with the use of market and non-market portfolio.

From the undermentioned, it could be established that this study is necessary since the various work done on validating CAMP in the Nigerian stock market were contradictory. Some researchers in their findings show that CAPM was valid while other results were rejecting the validity of CAPM. Besides, with the use of a single factor which has weak explanatory power to determine the factors that affect risk and returns on stocks may have contributed to their conclusion on the Nigeria capital market.

The main objective of this paper is to ascertain the validity of CAPM in the Nigeria capital market. Some key questions have to be answered about the workings of the asset pricing models in the Nigerian stock market that are under-stipulated as, (i) Does Capital Asset Pricing Model (CAPM) using

the four-factor model (momentum factor) valid in the Nigeria capital market? And (ii) Does market factor perform better than non-market factor?

This study becomes significant in filling the observed gap in the literature by asserting the validity of the CAMP as proposed by French-Fama-Cahart (1997) in Nigerian capital market. Since the assertion of literature between risk and return has not been adequately and thoroughly investigating to a logical conclusion in the framework of asset pricing equations using the Nigerian capital market as a case study. Therefore, it is needful to use time-series data to identify momentum, size and value and price them cross-sectionally. Hence, this study is carried out to fulfil this task. It would also give an insight into the movements of risks and return of different portfolios held by investors.

This study contributes to knowledge by validating and refuting the findings of existing research. Since it employed the use of multifactor models which are more practically applicable and that the CAPM in the Nigerian Stock Exchange has not yet been conclusively validated by empirical evidence. The test of all the three models that are (single, three and four-factor models) using uniform diagnostic measures and a comprehensive dataset will postulate the model that best suit the Nigerian case. It will also be more beneficial to an investor as Fama-French-Carhart Multifactor Model correctly offers investment consequences on investor and fund manager choices, particularly on company size, large book-to-market stocks, and momentum factor in anticipating changes in portfolio stock returns with high accuracy.

2. Literature

Oke (2013), test the Capital Asset Pricing Model (CAPM) on the Nigerian stock market using weekly data of 110 firms quoted on the Nigerian stock exchange (NSE) from the period of 2007 January to 2010 February. The securities were formed into portfolios and the evidence from the study invalidate the CAPM's assertion that higher level of return is associated with a higher risk (*beta*) and that the intercept should be equal to zero when measuring the Security Market Line (SML). The CAPM's proposition that the slope of the (SML) must be equal to that of the excess market portfolio return, this is also refuted by the result. Conclusively the study invalidates the assertion of CAPM in respect to the Nigeria Capital market. Though the study did not build a Momentum portfolio, which may account for the invalidation of the model and a single factor model was considered.

Adedokun and Olakojo (2012) empirically test the validity of CAPM employed the methodology of Sharpe and Linter using monthly stock data value of 16 firms for the period between January 2000 and December 2009

found that CAPM was not sufficient to explain asset risk and return. The study follows the line of Osamwonyi and Asien (2012) and identifies deficiencies according to Jensen for likely error in the model specification that may arise due to the use of proxies for variables.

The five-factor model of Fama and French (2015), which includes investment and profitability variables in the three-factor model and the modification of Cahart's four-factor model by incorporating market and industry-adjusted value, profitability and momentum variables, has spurred significant assertions to asset pricing literature. The fundamental hypothesis of the extra variables is that companies with greater working profitability and a low continuous rate of expansion in the asset are above average returns. The value-weighted portfolios of the row of five-factor model regressions, sorted by size and book-to-market, show that alphas are unchanged and significantly negative for small-growth portfolios in comparison to the conventional three-factor model, and substantial but positive for small-value portfolios and large-growth portfolios.

The input of Harvey, Liu, and Zhu (2016) and Hou, Xue, and Zhang (2017) are extremely crucial for the extensive list of complementary factor models proposed. This is certain that no single model will be able to explain all anomalies in the literature effectively. The proposal made by remarkable writers is hereby summarised in this concluding portion. (Fama and French, 2018), suggest that the high numbers of priced factors will cause the problem of comparison and (Hou *et al.*, 2015, Blitz *et al.*, 2018) conclude that it will lead to lack of theoretical motivation with data mining producing simple noise (Hou *et al.*, 2015).

Although McLean and Pontiff (2016) were distinct in that he believes that some trials are not statistically accurate and that all the above-mentioned open criticism will eventually lead future research to suggest models/solutions that will define the real return factor in the multitude of variables. Feng, Giglio and Xiu's proposal (2017) aims at a model-selection technique that is more discipline/clarity on the set of variables lately found in the literature. Harvey, Liu and Zhu's (2016) proposal is for a structure that enables various trials and derives suggested levels of statistical significance for current asset pricing studies. Finally, Fama and French (2018) suggest that asset-pricing models be ranked alternately in terms of the highest squared Sharpe factor ratio in a model.

3. Methodology

For the single factor model of CAPM, Fama and French three-factor model and Carhart four-factor model, the Ordinary Least Squares (OLS) technique

was used in estimating their parameters both at the first and second pass regression models. Moreover, the methodological of empirical testing of the Capital Asset Pricing Model is the Two-Pass Regression as employed by Fama-Macbeth (1973) was used in the test for the conditional and unconditional form of the model. The stock betas are been calculated by running a simple regression equation between each stock's monthly average return and the corresponding return on the market index during the period Jan 2012 and June 2017. In this way, we got estimates for SMB, HML and WMLO up to June 2017. The average figures for the constants of SMB, HML and WMLO have to be obtained.

Carhart (1997) proposition of four-factor model which is an expansion of the Fama-French three-factor model by the addition of one more factor called momentum. Define Momentum as the difference of the highest performing firm's equal-weighted average and the lowest performing firm's equal-weighted average lagged one month (Carhart, 1997). However, the researcher employs the value-weighted average as proposed by Cremers *et al* (2010). There is momentum if the previous 12-month average of returns of a stock is positive. The four-factor model could be used by an investor for its portfolio holding as well as for active management and mutual fund evaluation model.

The postulation of Carhart four-factor model is as follows: The One Pass regression model of the following format:

$$R_p - R_{ft} = \beta_0 + \beta_{im} R_{mt} - R_{ft} + \beta_{is} SMB + \beta_{ih} HML + \beta_{imt} WMLO + \varepsilon_{it}$$

The intercept in this model is been called "four-factor alpha"

Where

$R_p - R_{ft}$ – is the monthly excess returns of the portfolio,

$R_{mt} - R_{ft}$ – this is the premium of the market, representing market excess return and the risk-free interest rate.

SMB - this is the difference of equal monthly weighted average of small stock mimicking portfolios or portfolios with small market capitalisation stocks returns and the big stock portfolios or portfolios with big market capitalisation stocks returns. It indicates the size premium.

HML - is the difference of equally weighted average of high book to market ratio stock mimicking portfolios returns and the low book-to-market ratio stock portfolios returns. It indicates the Value premium.

WMLO is the difference of equally weighted average of the Winner mimicking portfolios returns or portfolio of stocks with the highest previous returns and the loser portfolios returns or portfolio of stocks with lowest previous returns.

It indicates a momentum factor or earning premium.

β_{im}, β_{is}, β_{ih} and β_{imt} are the slopes of the one pass regression which is the risk-factor sensitivities. β_0 is the intercept of the model and ε_{it} is the stochastic error term.

4. Data Analysis and Interpretation of Results

This table 4.1 is on the descriptive statistical values computed on the four factor model which comprises of factor portfolios (Momentum, Size and Value) and the market portfolio. The research describes these variables based on their mean, standard deviation, minimum/maximum, the skewness and as well as kurtosis value of their distributions. The summary is given in as follows;

Table 4.1
Descriptive Statistic Results for the Four Factor Model

Statistic	*RM*	*SMB*	*WMLO*	*HML*
Mean	0.002567	0.202893	0.56947	0.225363
Maximum	0.329621	3.088508	6.392367	3.565022
Minimum	-0.53682	-0.43528	-0.20545	-0.78547
Std. Dev.	0.132281	0.610178	1.373813	0.691657
Skewness	-1.08817	3.151203	2.798125	2.766434
Kurtosis	6.929238	13.24671	10.11164	11.89829
Jarque-Bera	50.43846	361.7885	204.7336	274.4805
Probability	0	0	0	0

As shown in Table 4.1, none of the portfolios, that does not have a negative minimum return. Value portfolio has the lowest minimum value, followed by market portfolio, while the winner's portfolio has a minimum value that is approximately zero. The winner's portfolio has the highest maximum value, which could be traced to August 2016. Looking at the mean values, the market portfolio performs very low almost 0.00 per cent. Winner's portfolio takes the lead with the sample mean value of 57 per cent; value portfolio has about 22 per cent. However, the market portfolio has the lowest standard deviation/risk of 0.132281, while winners' portfolio exhibits the highest standard deviation of 1.3738 indicating that variation return is the highest. The riskiest portfolio is the winner and value portfolios. They also have the highest return. Therefore, the convention that the non-market portfolios perform better and are riskier than the market portfolio is valid in this context. With the exception of the market portfolio, the other portfolios are positively skewed and more highly leptokurtic. This suggests that they have more panorama than the market portfolio. However, the JB

statistics are significant in each of the portfolio variables, and thus, there is evidence to confirm that the returns of these portfolios are non-Gaussian.

4.2. Validation of the CAPM: Four-Factor Models

The first objective of this study is to validate CAPM four factor model in the market. The researcher used time series and cross-sectional versions of the CAPM four-factor model by employing the average constant and respective probabilities, average coefficient of determination for the time series; while the researcher conducted Ramsey Reset test, serial correlation and heteroskedastic test to verify the efficacy of the cross-sectional version of the model. The study also looks at the significance of the constant term and the slope coefficients.

Table 4.2
Validation of Time Series

Pricing Identification of CAPM with 4 Factors		
Average Constant	*Average Probability*	*Average R-squared*
-0.00608	0.531268	0.5121

Table 4.3
Validation of Cross-sectional Pricing Identification of CAPM with 4 Factors

PANEL-A

Ramsey RESET Test	*Value*	*P-value*	*LM Test*	*Value*	*P-value*	*BPG Test*	*Value*	*P-value*
t-statistic	3.205	0.0023	F-statistic	0.2829	0.7548	F-statistic	0.624	0.6474
F-statistic	10.27	0.0023	Chi-squared	0.6349	0.728	Chi-squared	2.607	0.6256

PANEL-B

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
B1	-0.00271	0.009424	-0.28703	0.7752
B2	0.187471	0.006631	28.27231	0
B3	0.133903	0.015264	8.772362	0
B4	0.487564	0.019828	24.58974	0
C	0.018463	0.013999	1.31889	0.1928
JB	1081.89			0

4.3. Robustness Checks and Validity Test of Capital Asset Pricing Model (CAPM)

To substantiate our results, we implemented a set of robustness tests at various stages of the research. The first step is that prior to the test of Cahart Four Factor Model, the researcher considers examining the empirical

validity of the CAPM based on four prepositions-positive risk-return relationships, linearity hypothesis, slope hypothesis and systematic risk hypothesis. The test of each of these hypotheses is conducted on the overall sample period of 2012 to 2016, first sub-sample period of 2012 to 2014, second subsample period of 2013 to 2015 and third subsample period of 2014 to 2016. The one-year overlapping period is allowed to justify the original design of the earliest studies on the test of the CAPM.

4.3.1. Overall Period (2012 to 2017) Tests

In this period, the study investigates whether the four hypotheses mentioned above are empirically fair in the context of the Nigerian equity market. The test results are reported as follows:

Table 4.4
Test of Positive Risk Hypothesis and Slope Hypothesis 2012 to 2017

Regressor	*Coeff*	*Sdt-Error*	*T-stat*	*P-value*
BETA1	-0.354734	0.040433	-8.773425	0.0000
C	0.470749	0.089385	5.266541	0.0000

Table 4.4 shows that the beta (systematic risk) coefficient for the aggregate sub-period is -0.35 approximately and the associated p-values and T-stat are 0 and -8.04 respectively. This means that systematic risk and average return are significantly but inversely related in the period 2012 to 2016. Thus, the claim of the CAPM that risk and return are positively related does not hold in this sub-period. However, the slope hypothesis holds because the coefficient of beta or systematic risk is found to be significantly different from zero. This implies that investors are rewarded by the market not for taking high risk but low risk; so contradicting the so-called convention the higher the risk the higher the return.

Table 4.5
Test of Linearity Hypothesis 2012 to 2016

Regressor	*Coeff*	*Sdt-Error*	*T-stat*	*P-value*
BETA1	-0.0135	0.0168	-0.8023	0.4258
BETA1^2	0.0487	0.0018	26.7735	0.0000
C	0.0176	0.0296	0.5936	0.5552

From the above table 4.5, it reveals that the coefficients of beta and beta-squared components are -0.013 and 0.049 respectively. Moreover, their corresponding P-values are 0.43 and 0 respectively. This means that

the slope coefficient of beta is not significantly different from zero, but that of beta squared is significantly different from zero. It is clear that the CAPM structure changes when a nonlinear term (beta squared) is added to it. This means that for this sub-period the linearity hypothesis is rejected, and the emphasis is placed on a nonlinear association-ship between risk and return.

Table 4.6
Test of Systematic Risk Hypothesis 2012 to 2016

Regressor	*Coeff*	*Sdt-Error*	*T-stat*	*P-value*
BETA1	-0.081961	0.029026	-2.823710	0.0066
SD1	0.216331	0.016509	13.10417	0.0000
C	0.006305	0.057062	0.110488	0.9124

As shown in table 4.6 the beta (systematic risk) and SD (unsystematic risk) coefficients are -0.08 and 0.22 respectively, while their corresponding P-values are 0.01 and 0. This suggests that the two risk components are statistically significant. Thus, it is not only systematic risk that commands risk premium. This has questioned the overwhelming claim of the CAPM that the only relevant risk in the stock market is systematic. In this period 2012 to 2016, the study has established that diversification is still inefficient, additional stocks are required to quash the relevant of the unsystematic risk.

4.3.2. The First Sub-Period (2012 to 2014) Tests

The first sub-period of research design is three years, which starts in 2012 and ends in 2014: the tests above are repeated in this period and results are shown as follows in Table 4.17:

Table 4.7
Test of Positive Risk Hypothesis and Slope Hypothesis
2012 to 2014

Regressor	*Coeff*	*Sdt-Error*	*T-stat*	*P-value*
BETA2	-0.099854	0.025456	-3.922525	0.0002
C	0.123106	0.024180	5.091296	0.0000

The systematic risk component coefficient is inverse (-0.10) and significant at 1 per cent (p = 0). This means that return significantly declines with a rise in systematic risk. A positive relationship between systematic risk and average return does not hold, but the slope coefficient is significant justifying the CAPM's assumption on slope hypothesis.

Table 4.8
Test of Linearity Hypothesis 2012 to 2014

Regressor	*Coeff*	*Sdt-Error*	*T-stat*	*P-value*
BETA2	-0.217151	0.029358	-7.396741	0.0000
BETA2^2	0.130964	0.023393	5.598502	0.0000
C	0.103849	0.019834	5.235976	0.0000

Table 4.8 indicates that the nonlinear risk component is positive and highly significant. So also, the linear risk component is significant but inverse. Therefore, the linearity hypothesis is refuted because there is evidence in support of the nonlinear positive relationship between risk and return for the sub-period 2012 to 2014.

Table 4.9
Test of Systematic Risk Hypothesis 2012 to 2014

Regressor	*Coeff*	*Sdt-Error*	*T-stat*	*P-value*
BETA2	-0.003321	0.005210	-0.637403	0.5265
SD2	0.166071	0.004076	40.74034	0.0000
C	-0.001160	0.005360	-0.216417	0.8294

In case table 4.9 the slope coefficient is still not in tandem with the a priori speculation; while the unsystematic risk component is positive (0.17) and significant at 1 % (p=0), meaning that unsystematic risk governs average return significantly. In this regard, the assumption of the CAPM that the only relevant risk is systematic risk cannot be defended in this sub-period.

4.3.3. The Second Sub-Period (2013 to 2015) Tests

The second sub-period spans through 2013 to 2015, a maturity date of 3 years. This period precedes the recent economic crises, which looked up the country, Nigeria, in Shoe Leather Inflation. Therefore, the study confirms if the CAPM's assumptions would hold in this period, and the results are show in table 4.20 as follows:

Table 4.10
Test of Positive Risk Hypothesis and Slope Hypothesis 2013 to 2015

Regressor	*Coeff*	*Sdt-Error*	*T-stat*	*P-value*
BETA3	0.351969	0.070741	4.975467	0.0000
C	-0.203116	0.108999	-1.863464	0.0676

Table 4.10 shows that the coefficient of beta or systematic risk is positive (0.35) and significantly at 1 per cent (p = 0). This result is in consonance

with the CAPM's prepositions of positive risk-return relationship and significant slope coefficient. My findings in this sub-period 2013 to 2015 reveal that a unit increase in risk influences average return by 0.35 units. Hence, the risk is a positive determinant of average return.

Table 4.11
Test of Linearity Hypothesis 2013 to 2015

Regressor	*Coeff*	*Sdt-Error*	*T-stat*	*P-value*
BETA3	-0.341225	0.212989	-1.602076	0.1148
BETA3_2	0.123606	0.036171	3.417211	0.0012
C	0.280885	0.173399	1.619877	0.1109

After accounting for the nonlinear term the slope coefficient of the beta component changed to negative, while the term beta squared appears positive and significant. This confirms that the empirical relationship between risk and return is nonlinear, and not linear as suggested by the CAPM.

Table 4.12
Test of Systematic Risk Hypothesis 2013 to 2015

Regressor	*Coeff*	*Sdt-Error*	*T-stat*	*P-value*
BETA3	0.100571	0.018927	5.313607	0.0000
SD3	0.192297	0.006315	30.45196	0.0000
C	-0.111092	0.026416	-4.205437	0.0001

Table 4.12 reveals that the beta and unsystematic risk coefficients are both positive and significant. This implies that the market rewards investors for taking both systematic and unsystematic risks. This is contrary to the claim of the CAPM. Because of this and this sub-period, the study finding is not in support of systematic risk hypothesis.

4.3.4. The Third Sub-Period (2014 to 2017) Tests

The third sub-period pre-includes the period of the recent economic crises, which rocked various markets (with no exemption to the equity market) of the Nigerian economy. Therefore, I confirm if the CAPM's assumptions would hold in this period, and the results are shown in table 4.23 as follows:

Table 4.13
Test of Positive Risk Hypothesis and Slope Hypothesis 2015 to 2017

Regressor	*Coeff*	*Sdt-Error*	*T-stat*	*P-value*
BETA4	-0.300510	0.118910	-2.527205	0.0143
C	0.666559	0.234157	2.846636	0.0061

The beta coefficient (-0.30) appears significant at 1 per cent. Meaning that the slope coefficient is significant but negative. In this sub-period that coincides with the economic crisis, the positive risk hypothesis does not hold. This could be the reason for many investments in stocks crashed even though their risks were high during the recent economic crisis in Nigeria.

Table 4.14
Test of Linearity Hypothesis 2015 to 2017

Regressor	*Coeff*	*Sdt-Error*	*T-stat*	*P-value*
BETA4	-0.599105	0.151548	-3.953243	0.0002
BETA4^2	0.045218	0.015498	2.917644	0.0051
C	0.784430	0.223778	3.505400	0.0009

This result is closely related to the result obtained in the aggregate period, where the systematic risk has a negative coefficient, while the systematic risk squared appears positive and significant. Therefore, the study document that for the period 2014 to 2017 a nonlinear relationship exists between risk and return. To this extent, the CAPM has failed empirically.

Table 4.15
Test of Systematic Risk Hypothesis 2015 to 2017

Regressor	*Coeff*	*Sdt-Error*	*T-stat*	*P-value*
BETA4	0.086021	0.048711	1.765942	0.0829
SD4	0.335496	0.017768	18.88185	0.0000
C	-0.260996	0.099946	-2.611377	0.0116

Contrary to the CAPM's claim, both the systematic and unsystematic coefficients are positively significant (though the systematic risk is significant at 10 per cent). This provides further impetus to refute the systematic risk hypothesis and support that all irrelevant risks are significantly priced in the Nigerian equity market.

5. Summary and Findings

The results of the study indicate that Multi-factor model can be used to explain the risk-return relationship in the Nigerian capital market given the necessary market conditions and state of the portfolio. The times series investigation evidence shows that the four-factor model is fair and valid with the average constant term not distinguished from zero. CAPM four-factor model sufficiently explains the risk premium overtime with average R-squared at 51 per cent which is in collaboration with concepts that the constant term.

The evidence of the cross-section findings is that three of the factor are significant (SMB, HML and WML) while the return of the market is not significantly different from zero. This by implication is that the market cannot sufficiently predict its own return in the long run and the negative beta of the market return indicates that there is mean reversion in the market. However, with three of the four factors significant, the CAPM four-factor model is valid in the Nigerian capital market Cahart (1997).

CAPM asserted that the systematic risk and return are positively related this does not hold in the market during the period of study. Nevertheless, the slope hypothesis holds since the coefficient of beta is significantly different from zero. This also affirms the result of the high market condition that momentum effects are inversely related to return which indicate the absence of momentum.

The linearity of the CAPM hypothesis shows a nonlinear relationship in the Nigerian capital market and that emphasis ought to be base on a nonlinear relationship between risk and return in the market. Markowitz (1952) and Sharpe (1964)

CAPM stance on systematic risk hypothesis is that only systematic risk is relevant. However, evidence from this study indicates that the unsystematic risk is significant and that diversification is not efficient so additional stocks are necessary to eliminate the relevance of the unsystematic risk. This is an assertion of CAPM theory that unsystematic risk cannot be eliminated by diversification Markowitz (1952, 1959), Sharpe (1964) and Lintner (1965).

Previous studies of Osamwonyi and Asien (2012) and Adedokun and Olakojo (2012) that assert a positive relationship between risk and return was refuted because of the numbers of stocks used and the selection procedure that only allow for high-capitalised stocks. This study used 59 stocks that the selection is only based on the frequency of trading during the period and document that 78 per cent were significant and that size stock (small minus big) which are referred to as growth stocks are profitable in all market conditions. Using growth stocks satisfied, the condition that small stocks could relatively perform better than big firms. This is one of the gaps filled by this study although this is contradicting to the evidence of Olakojoand Ajide (2010) that invalidate CAPM that beta was not zero and the relationship between return and risk are not linear. This is in confirmation of the findings of this study.

This research work validates the study of Oke (2013) that opined that higher return is associated with higher risk. The study also employed the building of 10 portfolios of high capitalised and high-value firms using 110

stocks from the Nigerian capital market and document that return was related to risk. The study does not test for the effects on market conditions and portfolios were only on size and value why this study includes momentum.

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