SYSTEMATIC AND UNSYSTEMATIC RISKS ON STOCKS SELECTION BY INVESTORS: AN EMPIRICAL ANALYSIS OF NIGERIAN STOCK EXCHANGE

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ABSTRACT

This study examines the impact of beta coefficient as a factor which affect the processes of stock selection by investors. The Capital Asset Pricing Model (CAPM) was adopted, using the nature and power of the relationship between the stocks. The study made use of monthly stock returns from 30 selected companies listed on the Nigerian Stock Exchange for the period between 01-04-2014 to 01-04-2019, which involves the monthly index closing values. The work employed 60 months data to calculate the beta coefficients which indicate systematic risk. Time series regression analysis was used in the study. The study describes its effects and the way beta (systematic risk) should be evaluated by investors. In the process of the findings, it was discovered that the study is not supportive of the theory's basic statement that higher risk (beta) is associated with higher levels of return. The study recommends that emphasis should be focused on the significance of beta coefficient which will not only assist investors in portfolio formation, but will enhance diversification of investment. This will go a long way in enhancing portfolio management which is a prerequisite for sustainable risk reduction.

Keywords: *Beta coefficient, Diversification, Investors, Investment, Stock selection*

1. INTRODUCTION

The main goal of corporate finance and financial management is to increase shareholders wealth by undertaking activities that are consciously designed to maintain, improve or increase the productive quality of existing stocks of capital. In real term, investment in stocks or projects must earn enough returns for the shareholders to enable them maintain the existing stocks which would take care of their future financial needs (Osamwonyi 2002). For instance, in early 1930s, investors and portfolio managers measured the portfolio performance almost on the rate of return basis.

During that time, they knew that risk was a very important variable in determining stock or investment success but they had no clear idea of measuring it.

Investors and financial researchers have paid considerable attention during the last few years to the new equity markets that have emerged around the world. This new interest has undoubtedly been spurred by the large, and in some cases, extra-ordinary returns offered by these markets. Practitioners all over the world use a plethora of models in their portfolio or stock selection process and in their attempt to assess the risk exposure to different assets.

One of the most important developments in modern capital theory is the Capital Asset Pricing Model (CAPM) as developed by Williams (1964), Lintner (1965), Mossin (1966). CAPM suggests that high expected returns are associated with high level of risk. Simply stated, CAPM postulates that the expected return on an asset above the risk-free rate is linearly related to the non-diversifiable risk as measured by the asset's beta. Although the CAPM has been predominant in empirical work over the years and is the basis of Modern Portfolio Theory, accumulating research has increasingly cast doubt on its ability to explain the actual movements of asset returns.

CAPM was attractive because it offered predictions about how to measure risk and the relationship between expected return and risk. While Treynor (1965) developed a composite measure of portfolio performance, He measured portfolio risk with beta and calculated portfolio market risk premium and Sharpe (1968) further developed the composite index which is similar to the Treynor measure, the only difference being the use of standard deviation instead of beta. Hence, investors can always diversify away with the market portfolio. In other words, they can diversify away all risks except the risks of the economy as a whole, which is inescapable (undiversifiable). Consequently, the only risk that investors will pay a premium to avoid is covariance risk (Piotroski 2000).

In a world of perfect certainty, where all future outcomes are known, Hutchison (1995) and Boie et al (1999) noted that there would be no effective distinction between assets holding because market forces would equalize their rate of returns. This study is characterized with many inherent problems since all investors are operating under uncertainty. We are therefore faced with the fact that the actual return that would be realized from an investment (a stock) may differ from the expected return on which we have based our decision.

The study by Basu (1977) also revealed that *beta* cannot explain why the firms with low price earning rates have high returns. However, the issue of stock selection has continued to generate strong arguments among researchers over the years. Such arguments are fuelled by the unsatisfactory evidence available on the relationship between return and beta coefficient. Despite this argument, most investors still select their stocks based on returns without simultaneously assessing beta coefficients relationship. The questions are, over what period historic data should be considered for the calculation of betas, since a major reason for the calculation of different betas from the same data is the intervailing effect. It is quite disheartening to note that despite various studies that been conducted on the efficacy of optimum portfolio diversification as a means of eliminating all total risks to remain systematic risk, many investors do not diversify their investments. Even when they do, they have no clear idea of actual number of stocks required to

eliminate unsystematic risk. The study therefore demonstrates whether the beta coefficient use for stock selection by the investors is appropriate.

The research gap in the study centre around the unresolved issues regarding the relationship between beta and stock returns, particularly the inconsistency in evidence about beta's effectiveness in explaining why firms with low price-earnings ratios often achieve higher returns. Additionally, there is a lack of clear guidelines on the appropriate historical period for calculating beta, as the intervailing effect can lead to

varying results. The study also points to a significant gap in investor practices, where many fail to adequately diversify their portfolios or understand the optimal number of stocks needed to eliminate unsystematic risk. Finally, the research questions the appropriateness of beta as a reliable tool for stock selection, indicating the need for further exploration in this area.

2. LITERATURE REVIEW/ THEORETICAL FRAMEWORK

The risk is defined as the state of imperfect understanding, doubt, where the decision-making firm/organization is aware of the various possible consequences of her decision and is able to evaluate the degree of probability that this or another outcome will occur¨ (Buganova, 2012).

According to Ajibade, Oyedokun and Onibiyo (2018), Systematic risks are uncontrollable by an organisation and it is macro in nature. Systematic risk is due to the impact of external influences on an organization. Such influences are normally uncontainable from an organisation standpoint While Unsystematic risk is due to the influence of internal elements predominant within an organization. Such factors are usually controllable from an organization's standpoint. It is micro in nature as it affects only a specific organization. It can be planned for so that necessary actions can be taken by the organization to mitigate (i.e. reduce the effect of) the risk.

Lakonishok and Shapiro (1986), in their work titled “Systematic Risk, Total Risk and Size as Determinants of Stock Market Return”, asserted that risk in holding securities is generally associated with the possibility that realized returns will be less than the returns that were expected. The study viewed that the source of such disappointment is the failure of dividends (interest) and/or the security’s price to materialize as expected (Grahan & Harvey, 2001).

Fama and French (2004) emphasized forces that contribute to variations in return-prices or dividends (interest) constitute elements of risk. In addition, they found that some influences which cannot be controlled and which affect large numbers of securities are external to the firm. Other influences are internal to the firm and are controllable to a large degree. The study made it clear that in investments, those forces that are uncontrollable, external and broad in their effects are called sources of systematic risk. Conversely, controllable internal factors somewhat peculiar to industries and/or firms are referred to as sources of unsystematic risk.

Grahan and Harvey (2001) in their results showed that unsystematic risk should be diversified away until only systematic remains. They stressed that systematic risk could be measured by beta and it is only this risk that investors are rewarded for bearing. The study suggested that Capital

Market Theory assumes that rational investors get rid of unnecessary risk and unsystematic risk is unnecessary. Conclusively, the remaining risk is systematic and it is measured by beta. Research into the stationarity of beta has uncovered a few important facts. A paper by Wright et al (1967) provided some evidence that despite various studies on the test of stationarity of beta, researchers and some institutional investors have been quite indecisive about the strategy or strategies to be adopted in order to ensure stationarity of beta coefficient.

Mohame and Heba (2018) examined the impact of unsystematic risk on stock returns in an emerging capital markets (ecm's) country. In this study, they aim to introduce behavior of unsystemayic risk and its forecasting ability in prediction of future return in Egyptian Stock Exchange (ESE) as an Emerging Capital market (ECM), over the period of 2006 to 2015. They measure equally weighted unsystemayic volatility by following the Campbell's (2001) Indirect Method, by considering market size and weekly basis. The results reveal that unsystemayic risk is the biggest component of total volatility and show no trend, although market volatility has a slow decreasing trend in this period. They also find that small size stocks have slightly higher volatility than the big size stocks but both portfolios have similar idiosyncratic risk behavior. Conclusively, the predictive ability of various measures of unsystematic risk provides evidence that unsystematic risk volatility is not a significant predictor for future return in ESE.

Similarly, studies by Brown and Kapadia (2007) and Irvine and Pontiff (2009), Fink et al (2010) proved a negative relationship between unsystematic risks and different profitability scales, also study of Jiang et al (2009) proved a negative relationship between unsystematic risks and stocks profits. Contrarily, study of Cao, Simin, and Zhao (2008) proved that there is a profit increase resulting from the increase in unsystematic risks fluctuations and share turnover. And by following study of Ang, Hodrick, Xing, and Zhang (2009), the study also found a positive relationship between unsystematic risks fluctuations and shares return in Thailand, Singapore, Malaysia, Indonesia and no statistical significant relationship in the Philippines.

Copeland and Weston (1992) affirmed that there are several properties of the CAPM that are important. First, in equilibrium, every asset must be priced so that its risk-adjusted required rate of return falls exactly on the straight line in fig. 2.4 which is called the security market line. The study suggested that not all the variance of an assets return is of concern to risk averse investors emphasizing that investors can reduce all risks except the covariance of an asset with the market portfolio. The study identified the two major components of total risk of any individual asset.

While Treynor (1965) developed a composite measure of portfolio performance, He measured portfolio risk with beta and calculated portfolio market risk premium and Sharpe (1968) further developed the composite index which is similar to the Treynor measure, the only difference being the use of standard deviation instead of beta. However, numerous studies have been conducted on the efficacy of the Capital Asset Pricing Model (CAPM) in the processes of stock selection and portfolio formation. The studies by Mossin (1966), Tobin (1967) and Merton (1973) argued that investors are confronted with the total risk associated with investment. Hence, investors can always diversify away with the market portfolio. In other words, they can diversify away all risks except the risks of the economy as a whole, which is inescapable (undiversifiable). Consequently, the only risk that investors will pay a premium to avoid is covariance risk (Piotroski 2000).

Capital Asset Pricing Theories

The Capital Asset Pricing Model (CAPM) was introduced by William Sharpe (1964) and John Lintner (1965). CAPM is a fundamental theory that helps investors understand the relationship between systematic risk (represented by beta) and expected return. It suggests that the expected return on a stock is a function of the risk-free rate, the stock's beta, and the expected market return. CAPM distinguishes between systematic risk, which cannot be diversified away, and unsystematic risk, which can be eliminated through diversification. The relevant of CAPM to this study is that CAPM is crucial for understanding how investors in the Nigerian Stock Exchange (NSE) price systematic risk through the beta coefficient. The theory provides a framework for analyzing whether Nigerian investors are adequately compensated for taking on systematic risk and if they effectively use beta as a metric in their stock selection process.

3. Methodology

The model adopted to test the impact of beta coefficient on stock selection by the investors is a Time Series Regression Analysis as utilized by Jensen (1968), Fama and MacBeth (1974, 2004) and Ayhan (2008) in their studies of test of Capital Asset Pricing Model. The return on a risky security and its alpha and beta coefficients can be determined using the results calculated by obtaining the beta (β_i) and alpha (α_i) coefficients formulation as tools for measuring systematic and unsystematic risks respectively.

ΣR_i : the total returns on stock i
Aver R_i: the average return on stock i
ΣR_m: the total return on the market
Aver R_m: the average return on the market
Aver (R_{is} x R_{ms}): the mean of the product of the standard deviation of the return on stock i with the standard deviation of the market return.
Aver Var R_m: the mean variance of the market return.
β_i = Aver (R_{is} x R_{ms}) / Aver var R_m
α_i = Aver R_i – (β_i x Aver R_m)

The population consisted all the listed companies in Nigeria exchange group which consist of 11 sectors. The simple random sampling approach was used to select 30 publicly-traded firms of common stocks from Nigerian Stock Exchange Market. The data used for the study consist of the closing prices of the stocks belonging to the firms in question and the monthly index closing values in the Nigerian Stock Exchange between the dates 01-04-2014 and 01-04-2019. (60 months) the selected study period.

4. DATA ANALYSIS AND INTERPRETATION

Table 4.1: The Analysis Data on the Stocks

STOCKS	∑Ri	Aver Ri	∑Rm	Aver Rm	Ris	Rms	Aver(Ris*Rms)	Aver VarRm

OANDO	-10.32	-0.17	55.085	0.918	254.57	29.545	125.356	14.549
PRESCO	358.8	5.98	55.085	0.918	123.19	29.545	60.6625	14.549
NFI INSURANCE	61.66	1.028	55.085	0.918	177.53	29.545	87.4209	14.549
AG LEVENTIS	19.56	0.326	55.085	0.918	329.43	29.545	162.218	14.549
VONO	304.4	5.074	55.085	0.918	161	29.545	79.2802	14.549
NESTLE	-38.45	-0.64	55.085	0.918	115.71	29.545	56.9773	14.549
UBA	281	4.683	55.085	0.918	32.289	29.545	15.8997	14.549
CONOIL	-22.7	-0.38	55.085	0.918	123.34	29.545	60.7341	14.549
G CAPPA	21.45	0.358	55.085	0.918	57.714	29.545	28.4199	14.549
ROYAL EXCHANGE	314.9	5.248	55.085	0.918	68.22	29.545	33.593	14.549
DUNLOP	-72.68	-1.21	55.085	0.918	96.373	29.545	47.4562	14.549
BENUE CEMENT	-146.6	-2.44	55.085	0.918	90.14	29.545	44.3871	14.549
DANGOTE F MILL	85.4	1.423	55.085	0.918	177.47	29.545	87.3883	14.549
AIICO	96.73	1.612	55.085	0.918	79.903	29.545	39.3463	14.549
FIDSON H CARE	-409.6	-6.83	55.085	0.918	522.58	29.545	257.328	14.549
JULIUS BERGER	-140.3	-2.34	55.085	0.918	121.6	29.545	59.878	14.549
SCOA	45.26	0.754	55.085	0.918	110.06	29.545	54.1975	14.549
UNI LEVER	191.9	3.198	55.085	0.918	115.64	29.545	56.9428	14.549
ZENITH	127.3	2.122	55.085	0.918	129.74	29.545	63.8867	14.549
CADBURY	273.8	4.564	55.085	0.918	49.866	29.545	24.5549	14.549
NIG AVIATION	48.8	0.813	55.085	0.918	73.485	29.545	36.1857	14.549
UACN	-13.67	-0.23	55.085	0.918	98.397	29.545	48.4532	14.549
PZ	-33.97	-0.57	55.085	0.918	32.669	29.545	16.087	14.549
NCR PLC	-124.4	-2.07	55.085	0.918	35.202	29.545	17.3343	14.549
UNION BANK	15.96	0.266	55.085	0.918	132.67	29.545	65.3322	14.549
GUINESS	-65.98	-1.1	55.085	0.918	75.328	29.545	37.0934	14.549
EVAS MEDIA	314.2	5.237	55.085	0.918	20.917	29.545	10.2999	14.549
NIG BREWERY	54.95	0.916	55.085	0.918	159.47	29.545	78.5251	14.549
ALUMA CO	69.17	1.153	55.085	0.918	101.77	29.545	50.1155	14.549
CAP	46.09	0.768	55.085	0.918	155.05	29.545	76.3516	14.549

Source: *Researchers computation, 2020*

Drawing upon the data given in Table 4.1, the beta (βi) and alpha (αi) coefficients were obtained using the following re-stated formulations and are presented in Table 4.2

βi = Aver (Ris x Rms) / Aver Var Rm

αi = Aver Ri – (βi x Aver Rm)

Table 4.2: The Beta and Alpha Coefficients of the Stocks

STOCKS	Beta (β) Coefficient	Alpha (α) Coefficient

OANDO	8.616	-8.0825
PRESCO	4.17	2.1515
NFI INSURANCE	6.009	-4.4889
A.G LEVENTIS	11.15	-9.9107
VONO	0.5449	0.0709
NESTLE	3.916	-4.2363
UBA	1.003	3.6796
CONOIL	4.175	-4.211
G. CAPPA	1.953	-1.4359
ROYAL EXCHANGE	2.309	3.1283
DUNLOP	0.6262	-4.2061
BENUE CEMENT	3.051	-5.2449
DANGOTE F. MILL	6.007	-4.0913
AIICO	2.704	-0.08707
FIDSON H. CARE	17.69	-23.065
JULIUS BERGER	0.4116	-6.1176
SCOA	0.3725	-2.6657
UNI LEVER	0.3914	-0. 03958
ZENITH	4.391	-1.9094
CADBURY	1.688	3.0141
NIG. AVIATION	2.487	0.1470
UACN	3.33	-3.2855
PZ	1.106	-1.5814
NCR PLC	1.191	0.03168
UNION BANK	4.491	-3.8568
GUINESS	2.55	-3.4403
EVAS MEDIA	0.308	4.5872
NIG BREWERY	5.397	-4.0395
ALUMA CO	3.445	-2.0096
CAP	0.548	-4.05

Source: *Researchers computation, 2020*

5. RESULTS

The beta coefficient is a factor that affects a stock and indicates the systematic market risk. It could be argued that there is a relationship between beta coefficient and stock volatility. The beta coefficient indicates the possible increases and decreases in a particular stock in the face of possible market increases or decreases. The beta coefficient of the market is always assumed to be 1. Theoretically, it could also be argued that the sum of the beta coefficients of all the stocks in the market is equal to 1. However, the beta coefficient could be interpreted in three different ways:
Beta coefficient = 1
Beta Coefficient < 1
Beta Coefficient > 1

The increases or decreases in the stocks with a beta coefficient equal to 1 are in the same direction with the market, which means that the rates of the returns yielded by the market and those expected by investors are the same.

The stocks with a beta coefficient higher than 1 are more risky than those with a beta coefficient lower than 1. Thus, the risks of the portfolios consisting of stocks with a beta coefficient higher than 1 will also increase. From another perspective, in the markets in which prices are rising (bull markets), the stocks whose beta coefficients are higher than 1 yield higher returns when compared to the market. On the other hands, in the markets in which prices are falling (bear markets), the stocks whose beta coefficients are higher than 1 yield more loses when compared to the market. Consequently, the stocks with a beta coefficient lower than 1 should be preferred in the bear markets.

Table 4.3 below shows the changes in stocks as a result of +10%/ -10% changes in the market, in accordance with the beta coefficients of the stocks.

Table 4.3.: The changes in the Stocks due to Index Changes

S/N	Stocks	Index Changes	Stock Changes
1.	Oando	+10% / -10%	+86.16%/-86.16%
2.	Presco	+10% / -10%	+41.7%/-41.7%
3.	NFI Insurance	+10% / -10%	+60.09%/-60.09%
4.	A.G. Leventis	+10% / -10%	+111.5%/-111.5%
5.	Vono	+10% / -10%	+5.449%/-5.449%
6.	Nestle	+10% / -10%	+69.16%/-39.16%
7.	UBA	+10% / -10%	+10.0%/-10.0%
8.	Conoil	+10% / -10%	+41.75%/-41.75%
9.	G. Cappa	+10% / -10%	+19.53%/-19.53%
10.	Royal Exchange	+10% / -10%	+23.09%/-23.09%
11.	Dunlop	+10% / -10%	+6.26%/6.26%
12.	Benue Cement	+10% / -10%	+30.5%/-30.5%
13.	Dangote Flour Mill	+10% / -10%	60.07%/-06.07%
14.	AIICO	+10% / -10%	+27.04%/-27.04%
15.	Fidson Health Care	+10% / -10%	+176.9%/-176.9%
16.	Julius Berger	+10% / -10%	+4.12%/-4.12%
17.	Scoa	+10% / -10%	+3.73/-3.73%
18.	Unilever	+10% / -10%	+3.914%/-3.914%
19.	Zenith Bank Plc	+10% / -10%	+0.39%/0.39%
20.	Cadbury	+10% / -10%	+16.88%/-16.88%
21.	Nigeria Aviation	+10% / -10%	+24.87%-24.87%
22.	UACN	+10% / -10%	+33.3%/-33.3%
23.	PZ Cussons	+10% / -10%	+11.06%/-11.06%
24.	NCR Plc	+10% / -10%	+11.9%/-11.9%
25.	Union Bank	+10% / -10%	+44.91%/-44.91%
26.	Guiness	+10% / -10%	+25.5%-25.5%
27.	Evan Medical	+10% / -10%	+7.08%/-7.08%

28.	Nig. Brewery	+10% / -10%	+53.97%-53.97%
29	Alumaco	+10% / -10%	+34.45%-34.45%
30.	CAP. Plc	+10% / -10%	+5.248%/-5.248%

Source: *Researchers computation, 2020*

An examination of Table 4.3 reveals that, as could be seen in the changes in stocks as a result of market changes, the increases or decreases in the value of the stocks Fidson Health Care (+179.9%/-179.9%), Oando (+86.16%/-86.16%), Nestle (+69.16%/-69.16%), NIF.Insurance (+60.09%/-60.09%), Dangote Floor Mill (+60.07%/-60.07%) A.G Leventis (+111.5%/-111.5%), Nig. Brewery (+53.97%/-53.97%) Presco (+41.7%/-41.7%), Union Bank (+44.91%/-44.91%), Nigeria Brewery (+53.97%/-53.97%), Conoil(+41.75%/-41.75%) Nestle (+69.16%/-69.16%) AIICO (+27.04%/-27.04%) and Benue Cement (+30.5%/-30.5%) were higher than the increases or decrease in the market. Furthermore, since the beta coefficients of these stocks are higher than 1, they can be designated as "attack" stocks (highly aggressive). They are high-risk stocks as they might not only yield higher returns than market increases, but also create greater losses. It could be argued that the changes observed in the stocks UBA (+10%/-10.0%) and PZ Cusson (+9.71%/-9.71%) are parallel to the market changes, as a result of which it could be attractive to risk averse-investors because its profit and loss amount will be equal to the profit and loss amount in the market in terms of market changes.

On the other hand, the increases or decreases in the value of stocks Evan Medical (+7.91%/-7.91%) Vono (+5.45%/-5.45%), Dunlop (+6.26%/-6.26%), Julius Berger (+4.12%/-4.12%), SCOA (+3.73%/-3.73%), Unilever (+3.9%/-3.9%) Zenith Bank (+3.91%/-3.91%) and CAP (+5.48%/-5.48%) are lower than the market in terms of market changes. In other words, the amount of the increases or decreases are lower

than the increases or decreases taking place in that market, which could be disadvantageous for investors due to the increase in the stock value, while it might also be an advantage as a result of the decreases in the value. From the above, further analysis of beta coefficient on stock selection by investor shows that the model as a whole is statistically significant and that there is relationship between the beta coefficient and stock volatility.

The alpha coefficient indicates unsystematic risk in the market. Portfolio managers endeavour to minimize this unsystematic risk through optimum diversification. Nevertheless, in the process of assessing stocks by their alpha coefficients, alpha is used to determine the difference between the expected return and actual return as well as the final value of the investment.

The alpha coefficient could be expressed as follows:

$E(ri) - r_i = \alpha$

E(ri): the expected return on stock i

ri : the actual return on stock i

αi: the alpha coefficient of stock i.

Drawing upon the above formula, the actual return of the stock will be found when the alpha coefficient is put in the formula and the final status of investment will be seen by calculating (Investment Amount) x (1 + Actual Return).

Below, Table 4.4 shows the actual return of investor and the final status of his investment, assuming that ₦10,000 was invested in each of the 30 stocks analyzed and that the investor expects to have a return of 20% from these stocks.

Table 4.4: The Expected-Actual Return and Final Status of the Investment.

S/N	Stocks	Investment Value	Expected Return	Realized Return	Final Status of Investment
1.	Oando	₦10,000.00	20%	82.8%	₦92,825
2.	Presco	₦10,000.00	20%	-195.5%	₦ 9515
3.	NFI Insurance	₦10,000.00	20%	468.9%	₦ 56,889
4.	A.G. Leventis	₦10,000.00	20%	930.7%	₦ 103,07
5.	Vono	₦10,000.00	20%	12.9%	₦ 11,291
6.	Nestle	₦10,000.00	20%	443.6%	₦ 54,363
7.	UBA	₦10,000.00	20%	-347.9%	₦ 24,796
8.	Conoil	₦10,000.00	20%	441%	₦ 54.110
9.	G. Cappa	₦10,000.00	20%	163.6%	₦ 26,359
10.	Royal Exchange	₦10,000.00	20%	-293%	₦ 19,283
11.	Dunlop	₦10,000.00	20%	83.6%	₦ 16,351
12.	Benue Cement	₦10,000.00	20%	544%	₦ 64,449
13.	Dangote Flour Mill	₦10,000.00	20%	429%	₦ 52,913
14.	AIICO	₦10,000.00	20%	28.7%	₦ 12,870
15.	Fidson Health Care	₦10,000.00	20%	2326%	₦ 242,650
16.	Julius Berger	₦10,000.00	20%	81%	₦ 18,118
17.	SCOA	₦10,000.00	20%	286.6%	₦ 38,657
18.	Unilever	₦10,000.00	20%	16%	₦ 11,604
19.	Zenith Bank Plc	₦10,000.00	20%	210%	₦ 31,094
20.	Cadbury	₦10,000.00	20%	-281%	₦ 18,141
21.	Nigeria Aviation	₦10,000.00	20%	5.3%	₦ 10,500
22.	UACN	₦10,000.00	20%	348.5%	₦ 44,855
23.	PZ Cussons	₦10,000.00	20%	-178%	₦ 27,814
24.	NCR Plc	₦10,000.00	20%	16.8%	₦ 11,683
25.	Union Bank	₦10,000.00	20%	405%	₦ 50,568
26.	Guiness	₦10,000.00	20%	364%	₦ 46,403
27.	Evan Medical	₦10,000.00	20%	-438.7%	₦ 33,872
28.	Nig. Breweries	₦10,000.00	20%	423.9%	₦ 52,395
29	Alumaco	₦10,000.00	20%	220.9%	₦ 32,096
30.	CAP. Plc	₦10,000.00	20%	425%	₦ 52,500

Source: *Computed from data*

When the results presented in Table 4.4 are examined, the stocks with positive returns to investors are; Oando (₦ 82,825), NFI (₦ 46,881), A. G. Leventis (₦ 93,070), Vono (₦ 1,291), Nestle (₦ 44,363), Conoil (₦ 44,110), G. Cappa (₦ 16,356), Dunlop (₦ 6,3515), Benue Cement (₦ 54,429), Dangote Flour Mills (₦ 42,913), Fidson Health Care (₦ 232,570), AIICO (₦2,870), Julius Berger (₦8,118), Scoa (₦28,657), Zenith Bank (₦ 21,094), Nigeria Aviation (₦500), UACN (₦34,859), NCR (₦1,683), Union Bank (₦40,568), Guinness (₦36,403), Nig. Breweries (₦42,395), Alumaco (₦22,096), CAP (₦42,500).

The stocks with negative returns are; Presco (# -19,515), UBA (₦ -34,796), Royal Exchange (₦-29,283), Cadbury (₦-8,141), PZ Cusson (₦-13,800), and Evan Medical (₦-23,872). The stocks

yielding lower returns than expected return; Vono (12.93%), NCR (16.83%), Unilever (16%) and Nigeria Aviation (5.3%). While the rest of the stocks yielded higher returns than the expected return (20%).

In the process of investing in a stock or stocks, investors should prefer the stocks with the lowest possible return difference; that is, the stocks with small alpha coefficients. An increase or decrease in the return expected by investors will also result in changes in the final status of the investment. In order to minimize the effect of the alpha coefficient, which indicates the unsystematic risk in portfolio investments, and thus the unsystematic risk, an investor should ensure optimum diversification in his/her portfolio. From the above analysis, it implies that investor prefers stocks with small alpha coefficient. This is because the portfolio variance approaches zero as the number of assets in the portfolio increases, the risk (unsystematic) can be eliminated by holding a large number of securities if the covariance terms among assets are equal to zero. Therefore we concluded that diversification has significant effect on risk reduction.

6. DISCUSSION OF THE FINDINGS

From the overall result as indicated in the findings which shows that indeed, there exists a serious relationship between beta coefficient and stock volatility, it was discovered that the relationship here have different interpretation and reactions from investors. It revealed that investors should decide on the value of beta for their portfolios. The values of beta of their portfolio can be greater than 1 (high risk) less than 1 (low risk) or equal to 1 (medium risk). Therefore, in a bull market when prices are rising investors should invest on securities with high beta, otherwise, in a bear market when prices are falling, investors should invest in securities with a low beta. The above findings are equally in line with the findings of Grahan and Harvey, (2001) Ayhan (2008), Grigoris et al (2006) and Fama and French (2004) that beta coefficient is a factor that determines the value of stock.

The findings also indicate that on average, the individual investors obtained returns commensurate with the amount of systematic risk they assumed. Moreover, all investors can eliminate the unsystematic risk by forming well diversified portfolios. As the number of assets in a portfolio increase, the unsystematic risk declined, which results into an increase in returns and a parallel decrease in the total risk, nevertheless, this decrease can only be reduced down to the level of systematic risk of the assets in question if investors select stocks that have negative correlation. This was not in conformity with the work of Mohamed and Heba (2018) that proved negative relationship between unsystematic risks and returns, like study of Ang, Hodrick, Xing and Zhang (2006) applied to the U.S, risks were measured by estimating unsystematic risks fluctuation as residuals standard deviation in Fama – Grench three factor model. Also Masry (2017) proved that a negative relationship exist between unsystematic risks and stocks profits.

The impossibility of eliminating the systematic risk and the possibility of totally eliminating the unsystematic risk point to the fact that the risk type which investors have to take should only be the systematic risk. This was in contrast to the work of Mohame and Heba (2018) who concluded that the predictive ability of various measures of unsystematic risk provides evidence that unsystematic risk volatility is not a significant predictor for future return in Egyptian Stock Exchange (ESE) (Sharpe, 1964; Mossin, 1966 and Fazil, & İpek, 2013).

7. CONCLUSION

Consequently, calculating and analyzing the effects of the above discussed factors, this study discussed how investors should evaluate the result of the analysis. Nevertheless, certain weaknesses of the Capital Asset Pricing Model should always be taken into consideration such as; beta values constitutes quite variable parameters as a result of specific characteristics of each period, and the presence of unsystematic risk (even in portfolio formed with sufficient amount of stocks) explains stock index relationship on the basis of a single factor. Thus, CAPM fails to provide a comprehensive explanation for unsystematic risk. Furthermore, it could be suggested that it will be in the advantage of investors to employ the model not as the sole, but simply as a supplementary instrument in the process of portfolio formation.

Our findings further suggest that unsystematic volatility is the most essential component of total volatility and displayed a different trend than the expected. The results indicate that investor prefers stocks with small alpha coefficient. This is because it has been empirically ascertained that as the portfolio variance approaches zero, the number of assets in the portfolio increases (Lintner, 1965 and Osamwonyi, 2002), the risk (unsystematic) can be eliminated by holding a large number of securities if the covariance terms among assets are equal to zero. We also found that small size stocks have a slightly higher volatility than the big ones but both portfolios have similar unsystematic risk behavior. Finally, our analyses about the predictive ability of various measures of unsystematic risk showed evidence that unsystematic risk is a significant predictor of risk reduction.

8. POLICY IMPLICATIONS

The findings of this study are applicable for global fund managers who plan to develop stock selection strategies for optimal asset allocation and portfolio formation. On an overall basis, the model used in the study seems to be efficient regarding to cross-sectional volatility-based information. For academic point of view, model exposed the weakness of CAPM as asset pricing tool for portfolios formation though it contributes to portfolio management as well as market efficiency in the academic literature.

9. RECOMMENDATIONS

Emphasis should be focused on the significance of beta coefficient which will not only assist investors in portfolio formation, but will enhance diversification of investment. Also proper supervision by the portfolio managers and other fund managers to harmonize information in the Nigerian Stock Exchange Market in order to take efficient decision on the allocation of funds managed by them. The study further recommends that emphasis should be focused on the significance of beta coefficient which will not only assist investors in portfolio formation, but will enhance diversification of investment. This will go a long way in enhancing portfolio management which is a prerequisite for sustainable risk reduction.

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