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OBJECTIVES

HYPOTHESES

RESEARCH METHODOLOGY

RESULTS & DISCUSSION

INDINGS

RECOMMENDATIONS/SUGGESTIONS

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THE LONG RUN RELATIONSHIP BETWEEN STOCK MARKET RETURNS AND INVESTMENT GROWTH IN NIGERIA: (1960 - 2010)

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ABSTRACT

The movement in the stock prices is an important factor that determines investment behaviour in both advanced and less developed economies. This study examines the long run relationship between stock market returns and investment growth in Nigeria. Annual data from (1960 – 2010) were used in this study. The results revealed that there exists a short run relationship between stock market returns. Investment growth and stock prices are negatively related to investment and inflation, while, interest rate has a positive relationship with stock prices. The granger causality test was carried out and it revealed a bi-lateral causality that runs from stock market returns to investment growth and from investment growth to stock market returns. The impulse response graph was further used to ascertain the impact of these variables on stock prices.

KEYWORDS

Investment, stock, inflation, interest rat, market.

INTRODUCTION

tock market is a major component of the capital market. An organized and managed stock market stimulate investment opportunities by recognizing and financing productive projects that lead to economic activity, mobilize domestic savings, allocate capital proficiency, help to diversify risks, and facilitate exchange of goods and services (Mishkin 2001 and Caporale et al, 2004). Stock markets are expected to increase economic growth by increasing the liquidity of financial assets, make global and domestic risk diversification possible, promote wiser investment decisions, and influence corporate governance. (Vector, 2005). In addition, stock markets are best indicator to forecast future economic activity and describe actual causal affect between future economic growth and stock prices. On the contrary, the relationship between stock market development and real economic growth can be explained as any change in stock market will eventually change the cost of rental capital. If the firms cost of borrowing will become high as compared to investment, it slows down the growth of the economy.

Empirical evidence has shown that stock markets play an important role in allocation of capital to corporate sector which in turn stimulate real economic activities. Many countries were facing financial constraints particularly developing countries, where bank loans are restricted to some favourable groups of companies and personage investors. This limitation can also reflect constraints in credit markets (Mirakhor & Villanueva, 1990).

There is no doubt that the function performed by the capital market determines, to a large extent the amount of capital supplied for investment. They argued further that capital markets channel savings into investment returns at a given level of risk. If there were no risk, fund would be allocated when the interest rate is uniform in all uses. It also creates a continuous market for immediate sales or purchase of investment at prices determined by their value where supply and demand forces enable investors who have such marketable securities to maintain continuous liquidity, as they are not obliged to holding them indefinitely (Remeth and Ronald (1977))

Osinubi (2010) stresses that, Effective and efficient resource mobilization in an economy foster sustainable growth and development, therefore funds must be effectively mobilized and allocated to enable the economy realize optimal output. The stock market in an economy promotes efficiency in capital formation and allocation. Numerous attempts by emerging stock markets to develop the financial sector have been evident in the recent past, as they strive towards market efficiency Rajni and Mahendra (2007). An efficient stock market, acts as a barometer to economic growth. Policy makers therefore rely on market estimates of volatility as a barometer of the vulnerability of financial markets. However, the existence of excessive volatility, or "noise," in the stock market undermines the usefulness of stock prices as a "signal" about the true intrinsic value of a firm, a concept that is core to the paradigm of the information efficiency of markets (Karolyi, 2001).

Stock market is an integral part of the financial system that provides an efficient delivery mechanism for mobilization and allocation, management and distribution of long-term funds (Alile and Anao, 1986). It facilitates the flow of funds from the area of surplus funds to the area of needs; canalization of funds from those who desire to invest to those who need it for economic endeavors. Apart from judicious mobilization of idle savings into productive use; the stock market creates an avenue for foreign investment and the influx of foreign capital for developing projects that increase the welfare of citizens.

According to Kenneth Ronald (1970), long-term financing of investment is a form of finance with maturities that extend beyond the period of five years. The stock market is important to investors as far as the mobilization of long-term funds for investment growth. The services of stock markets are rendered to investors and investment is the means through which operations of stock market is promoted. The services of the stock market fall into three parts namely: advisory, investment and planning. There has been an astronomical rise in stock returns in recent years, which has attracted so many to the market. Investment in the stock market has been necessitated by existence of unfavourable economic conditions in Nigeria.

- 1) Is there a long run relationship between the All Share Index and other macroeconomic variables such as investment growth, interest rate and inflation in Nigeria;?
- 2) Does investment growth have any causal relationship with stock market returns?
- 3) Does stock prices exhibit any form of impulse response relationship with investment growth, interest rate and inflation?

OBJECTIVE OF THE STUDY

- 1) To ascertain, whether there exists a long run relationship between the All Share Index (which is used as a proxy to stock market returns) and the core independent variable; investment growth in Nigeria together with interest rate and inflation.
- 2) To determine if investment growth has any causal relationship with stock prices.
- 3) To determine the response of stock prices to shocks in investment growth, interest rate and inflation.

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STATEMENT OF HYPOTHESIS

 H_{01} : Stock market returns have no long run relationship with investment growth, interest rate and inflation.

H₀₂: Investment growth has no causal relationship with stock prices.

H₀₃: stock prices does not exhibit any form of impulse response relationship with investment growth, interest rate and inflation.

LITERATURE REVIEW

The theoretical literature behind this work is essentially derived from the random walk theory, capital asset pricing model and the efficient market hypothesis (being theories backing stock market returns) and James Tobin's q theory, Keynesian theory and accelerator theory of investment (being theories backing investment). The theory that stock prices move randomly was early proposed by Maurice Kendall in his 1953 paper "the analytics of economic time series." Maurice Kendall examined this proposition in 1953. He found to his great surprise that he could identify no predictable pattern in stock prices, Prices seemed to evolve randomly. They were as likely to go up as they were likely to down on any particular day regardless of past performance. The data provided no way to predict price movement.

Capital Asset Pricing Model (CAPM) was developed in an articles by William Sharpe, John Litner and Jan Mossin in 1964, as a centerpiece of modern financial economies. The model gives us a precise prediction of the relationship that we should observe between the risk of an asset and its expected return. This relationship serves two vital functions. First, it provides a benchmark rate of return for evaluating possible investments. Secondly, it helps us make educated guess as to the expected return on assets that have not yet been traded in the marketplace.

The efficient market hypothesis (EMH) states that it is impossible to consistently outperform the market by using any information that the market already knows, except through luck. Efficient Market Hypothesis asserts that financial market are "information efficient" or those prices on traded assets, for example, stocks, bonds or property already reflects all known information the efficient market theory of stock returns uses the concept of rational expectation to reach the conclusion that when properly adjusted for discounting and dividend, stock prices follows a random walk.

James Tobin formulated an investment theory based on financial markets. Tobin argued that firms' investment level should depend on the ratio of the present value of installed capital to the replacement cost of capital. This ratio is *Tobin's q*. The *q* theory of investment argues that firms will want to increase their capital when q > 1 and decrease their capital stock when q < 1. If q > 1, a firm can buy one dollar's worth of capital (at replacement cost) and earn profits that have present value in excess of one dollar. Under those conditions, firms increase profits by investing in more capital, so we expect investment to be high.

Keynes began by rejecting the classical assumption that the economy automatically reverts to full employment quickly and reliably. Under conditions where markets do not clear, he argued, a shortage of aggregate demand may prevent the economy from producing at full capacity. Since investment is the component of aggregate demand that falls most strongly in business-cycle downturns, it was a natural candidate for Keynes in his search for the causes of these declines in demand. This theory asserts that investment is the result of firms balancing the expected return on new capital (we call it the marginal product of capital); he called (the marginal efficiency of capital) with the cost of capital, which depends primarily on the real interest rate, Malcolm Spittler (2002).

In an empirical study conducted by Ralph and Eriki (2001) on Nigerian stock market, they found that there exists a negative relationship between stock prices and inflation. Besides, they also show that the stock prices are also strongly motivated by the level of economic activity measured by GDP, interest rate, money stock, and financial deregulation. To examine the role of stock market in promoting economic growth, Osunubi (2004), using data between 1980 to 2000, and employing the least square method, found that although the stock markets in Nigeria enjoys a positive relationship with the economy's growth rate, its effect on the Nigeria economy is weak. Ezeoha, et al (2009) investigated the nature of the relationship that exists between stock market development and the level of investment (domestic private investment and foreign private investment) flows in Nigeria. The study discovered that stock market development promotes domestic private investment flows, thus suggesting the enhancement of the economy's production capacity as well as promotion of the growth of national output. However, the results show that stock development has not been able to encourage the flow of foreign private investment in Nigeria.

THE MODEL

The methodology that will be used in this research work is the Vector Autoregressive (VAR) model. Unit root and cointegration tests were carried out as preestimation tests to determine the noossibility of transforming the model to Vector Error Correction. The VAR process of order k is given as;

 $Yt = \sum_{t=1}^{K} \varphi i Y_t - 1$

Where Y_t is an L x 1 vector of innovations, and $\mathbf{P}^{\mathbf{I}}$ {i = 1, 2, ..., k}. In this case, L = 4 and Y_t = {ASI, INV} where each variable denotes All share Index (ASI) and Investment growth (INV) respectively.

Equation (1) can be re-written to capture individual equations in accordance with the synthesis of the mainstream and ecological economic models of economic growth. In line with this theory, the variables of interest include All share Index (ASI), Investment (INV), Interest Rate (INTR) Inflation (INFL), and Money supply (MS) as recommended by the ecological economic models.

CAUSALITY TESTS

In analysing Granger-Causality relationships, our main interest is to find the lead/lag relationship between variables. The Granger (1969) approach to the question of whether X causes Y is to determine how much of the current Y can be explained by past values of Y, and then to see whether adding lagged values of X can improve the explanation. Y is said to be Granger-caused by X if X helps in the prediction of Y, or if the coefficients on the lagged Xs are statistically significant. Note that two-way causation is frequently the case: where X Granger-causes Y and Y Granger-causes X). Hypotheses:-

 $H_0: \gamma_i = \psi = 0$ for all i's

 $H_1: \gamma_i \neq 0$ and $\psi \neq 0$ for at least some i's.

Now the criteria for causality will be examined. The hypothesis would be tested using chi-square (χ^2) statistics. If the values of the γ_i coefficient are statistically significant but those of the ψ are not, then X causes Y (X \rightarrow Y). On the contrary, if the values of the coefficients are statistically significant but those of the coefficient are not, then Y causes X (Y \rightarrow X).

THE AUTOCORRELATION TEST

The relevant LM statistic is given as: $QLM = T \{K - tr (\&n - 1 \&ne)\}$...

It has an asymptotic χ^2 (hk 2) distribution under the null hypothesis for both (0) and 1 (1) systems (Bruggerman et al, 2006).

The quantity et denotes a white noise error term. The hypothesis Testing is as follows:-

Ho: No serial correlation at lag order h, that is $\beta 1 = ... = \beta h = 0$

H1: No serial correlation at lag order h, that is $\beta \ddagger 0$ for at least one i ϵ {i, ..., h} is called for.

Decision Rule: Reject H 0 if p-value is less than level of significance, do not reject if otherwise.

THE IMPULSE RESPONSE FUNCTION

VAR models are difficult to interpret. One solution is to construct an impulse response function (IRF). The IRF traces the response of the endogenous variables to one-standard deviation shock to one of the disturbance term in the system. This shock is transmitted to all of the endogenous variables through the dynamic structure of the VEC models (Lutkepohl, 2001).

We can express the equation (1) in a vector moving average (MA) form such as

$$Y_{t} = \sum_{i=0}^{\infty} A_{i} \Sigma_{t-1} + \sum_{i=0}^{\infty} G_{i} D_{i}$$

SOURCES OF DATA

The data used in this work were gotten from CBN statistical bulletin. All Share Index was transformed from monthly to annual data (this was done by dividing the total of each year by 12 to get the average). The researcher employed software packages such as Microsoft-excel and stata.

PRESENTATION OF RESULTS

UNIT ROOT

Investment and Inflation were stationary at level form at 1%, 5% and 10% level of significance (5.362 [-2.958] ******) and (10.686 [-2.958] ******) respectively while All Share Index (ASI) and Interest Rate were stationary after first difference with their ADF value at level form being (-1.070 [-2.958] ******) and (-1.981 [-2.958] ******) and their first difference values being (-5.595 [-2.961] ******) and (-9.739 [-2.961] ******) respectively. Thus, All Share Index and Interest Rate are integrated of order one. On the basis of this, the null hypothesis of non-stationarity is rejected and it is safe to conclude that the variables are stationary.

COINTEGRATION TEST

Since the results of the unit root test above confirm stationarity of the variables at level form with the exception of ASI and INV which were stationary after being differenced once, the Johansen methodologies can then be apply in testing for cointegration (Johansen, 1988, 1991, 1992; and Johansen and Juselius, 1990).

An optimal lag length of two (2) for the variables (ASI, INV, INFL, AND INTR) was chosen.

The value of the Trace Statistics at lag length two is 12.0562 and the 5% critical value is 15.41. Since the $|\tau ca|$ is less than the $|\tau ca|$ at the 5% level of significance, the null hypothesis of no cointegration will be accepted. Accordingly, All Share Index, Investment, Inflation and Interest Rate are said not to be cointegrated at 5% level of significance. As a result, there is no long-run relationship between, Stock Market Returns and Investment Growth in Nigeria for the sample period.

INTERPRETATION OF VAR REGRESSION RESULT

VARIABLE	COEFFICIENT	T VALUE	P VALUE		
CONSTANT	324.6773	0.39	0.700		
INV	-1.115219	-3.35*	0.000		
INFL	-0.1914318	-1.06	0.287		
INTR	0.419035	2.70*	0.007		

* indicates that the t-stat is statistically significant at the 5% level.

Thus:

ASI= 324.6773 -1.115219INV -0.1914318INFL +0.419035INTR

This is the short run cointegrating equation. According to the above equation, stock prices (ASI) showed a negative relationship with Investment. Using 2t rule of thumb, investment is said to be statistically significant at 5% level of significance with the probability of 0.000.

Also, inflation rate is negatively related to the Stock Market Returns (ASI). This suggests that the market does not act as a hedge to inflation. Using 2t rule of thumb, inflation is said to be statistically insignificant at 5% level of significance with the probability of 0.287. Humpe and Macmillan (2009) discovered the same. Stock prices (LASI) showed significant short run positive relationship with interest rate in the short run because investors raises the amount of stocks when interest rates rises and also the rise in interest would mean higher borrowing cost for quoted companies therefore reducing their profit potential. Sulaiman D. Mohammad et al (2009) reported similar results.

GRANGER-CAUSALITY TESTS

In terms of All Share Index (ASI), The null hypothesis of *INV does not Granger cause ASI* is rejected at the 5percent level of significance where the value of F-statistics (α 2i) is 126.43 with probability 0.000. Also, The null hypothesis of *INFL does not Granger cause ASI* is rejected at the 5 percent level of significance where the value of F-statistics (α 3i) is 152.85 with probability 0.000. The null hypothesis of *INTR does not Granger cause ASI* is accepted at the 5 percent level of significance where the value of F-statistics (α 4i) is 2.0073 with probability 0.367.

In terms of Investment (INV), The null hypothesis of *ASI does not Granger cause INV* is rejected at the 5 percent level of significance where the value of F-statistics (β 2i) is 19.304 with probability 0.000. Also, The null hypothesis of *INFL does not Granger cause INV* is accepted at the 5 percent level of significance where the value of F-statistics (β 3i) is 3.983 with probability 0.136. The null hypothesis of *INTR does not Granger cause INV* is accepted at the 5 percent level of significance where the value of F-statistics (β 4i) is 0.49433 with probability 0.781.

In terms of Inflation (INFL), The null hypothesis of ASI does not Granger cause INFL is accepted at the 5 percent level of significance where the value of Fstatistics (λ 3i) is 0.73752 with probability 0.692. The null hypothesis of INV does not Granger cause INFL is rejected at the 5 percent level of significance where the value of F-statistics (λ 2i) is 7.0825 with probability 0.029. The null hypothesis of INTR does not Granger cause INFL is rejected at the 5 percent level of significance where the value of F-statistics (λ 4i) is 6.7722 with probability 0.034.

In terms of Interest Rate (INTR), The null hypothesis of *ASI does not Granger cause INTR* is accepted at the 5 percent level of significance where the value of F-statistics (σ 4i) is 0.00905 with probability 0.995. The null hypothesis of *INV does not Granger cause INTR* is accepted at the 5 percent level of significance where the value of F-statistics (σ 2i) is 0.36477 with probability 0.833. The null hypothesis of *INFL does not Granger cause INTR* is accepted at the 5 percent level of significance where the value of F-statistics (σ 3i) is 0.30062 with probability 0.860.

AUTOCORRELATION TEST

The p-value at lag length two is 0.13804. Since the p-values are greater than the 5% level of significance; H0 will not be rejected, which means that there is no serial correlation at lag order h.

IMPULSE RESPONSE FUNCTION

A shock in Investment led to a positive increase in stock prices from the first period to the tenth period. Also, shocks in Inflation led to an increase in stock prices in the first period and then, it fluctuates in the third and fourth period and all through the entire period of study. A shock in interest rate is insignificant in the first, second and third period but becomes increasing significant beyond the third period.

CONCLUSSION

Emanating from the research findings, it can be deduced that external shock and other macroeconomic variables dictates the movement of stock market prices performance and volatility, and some of these key variables are the significant determinants of the stock market performance in Nigeria during the reviewed period.

The result of this study shows that there exist a short run relationship between Stock Market Returns and Investment Growth in Nigeria. It was also gathered that there exist a negative relationship between stock prices and investment and even inflation.

POLICY RECOMMENDATIONS

We have found out that the market adjusts very quickly to short run equilibrium. This is obvious considering the amount of transactions that takes place daily in the market.

The following policy options are recommended to bring about enhanced stock market performance amidst macroeconomic fluctuations and external forces: The securities exchange commission (SEC) should create a special fund called "stabilization securities fund" to stabilize the market in the presence of external shocks. This is to make the market attractive to proposed, existing and foreign investors.

We recommend the Nigerian Stock exchange to make available readily all data that investors need to play a role in the market such as the credit rating of companies that want to float bonds (borrow) on the exchange. This is because the unavailability and inaccessibility of such data increases the probability of information asymmetry.

The standard of living of the citizens as measured by Per Capital Income (PCI) should be increased by providing essential infrastructural community facilities in order to increase the ability of the people to invest in the Nigerian capital market.

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