2ND Revision Original Research Article

DETERMINANTS OF STOCK MARKET DEVELOPMENT IN NIGERIA: A COINTEGRATION APPROACH

ABSTRACT

This study examined the determinants of stock market development for the period of 1977-2010. The study further investigated the long run and short run relationship between the variables, using ex-post facto research design and the utilization of Johansen Co-integration and Error Correction Model (ECM) approach. The empirical result indicates that market capitalization, credit to private sector and exchange rates are all important determinants of stock market development both in the long run and short run in Nigeria as these variables have positive effect and thus stimulate economic growth in Nigeria while inflation and saving rate had negative impact on stock market development in Nigeria. These results as they stand have some policy implications and it therefore follows that to achieve accelerated stock market development and economic growth in Nigeria, monetary authorities should effectively moderate and control the inflation and savings rates so as to sustain macroeconomic stability. The study therefore recommended amongst others that policy makers should be concerned with stock market liquidity, given that market capitalization is a strong indicator of stock market development in Nigeria.

Keywords: **Market capitalization, Stock Market Development, Economic growth, Exchange rate, Inflation rate, Savings rate, Private sector credit.**

INTRODUCTION

1.1 Background of the study

The determinants of Stock Market Development have drawn the attention of many scholars and researchers in recent times. Studies have revealed that a well developed and functioning stock market can boost economic growth by enhancing faster capital accumulation and allowing for a better resource allocation in developing countries. Thus, it is the general belief amongst scholars that stock markets play a pivotal role in the growth and development of an economy (Misati 2007; Levine and Zervos, 1998; McKinnon, 1973).

Currently, Nigerian Stock Exchange (NSE) reports indicated some mixed developments. According to CBN (2010), the aggregate volume of traded securities declined by 9.3 percent, while the value increased by 16.3 percent. CBN (2010) also reported that aggregate market capitalization of the 264 listed securities rose by 41.0 percent to close at 9.9 trillion naira compared with 7.0 trillion naira recorded in 2009. The Nigeria capital market experienced a bullish trend when it started the year 2008 at 58,580 with market capitalization of N10,284 trillion and went to achieve its highest value ever of N66,371 on March 5, 2008, with market capitalization of about N12,640 trillion (Aluko, 2008).

The Nigerian Stock Exchange dates back to 1960 when the Lagos Stock Exchange was incorporated on September, 15, 1960 and commenced operations on June 15, 1961 as a private self-regulatory organization that supervises the operations of the formal capital market. The Lagos Stock Exchange was transformed into Nigerian Stock Exchange (NSE) in December, 1977.

The exchange has witnessed some tremendous growth and development since inception, particularly, following the deregulation of the economy in 1986. Nzotta, (2004) noted that the Nigerian Stock Market has grown remarkably since inception in 1961. The growth according to him has been very remarkable since the beginning of the reforms in 1986. The securities listed consisting of government stocks/bonds, industrial bond/debentures, common stock and preference stock increased in 2002 (NSE, 2006).

However, Nzotta (2004), opined that the depth and breadth of the market, the liquidity and efficiency is still low relative to those of other emerging markets.

In Nigeria, the Stock Market is classified into two broad markets namely, the primary and the secondary markets. The primary market is essentially the markets for new issues. This is the market where shares coming to the public for the very first time are traded. This market is regarded as a platform where public companies and government can raise cheap funds for investment and development purposes. Quoted companies raise fresh funds from this market. Both security and exchange commission and the Nigerian Stock Exchange regulate the activities of the market (NSE, 2006). On the other hand, the secondary market is the market where existing securities are bought are sold. Okafor (1983) pointed out that the secondary market is a re-sale market and that securities exchanged therein do not share the same image of inferiority which attaches to assets sold in the second-hand markets.

In view of the above one would be tempted to ask question what determines Stock market development. The determinant of stock market development varies from country to country. In some countries, the size, adequate facilities, adequate flow of funds/stock market liquidity, values of shares traded, volume of shares traded, turnover, GDP per capita, broad money, market capitalization, level and Banking sector development are key Macroeconomic indicators or Determinants of Stock market development. Laws and their enforcement are critical in determining the rights of security holder and the functioning of financial system (John, Ojong and Akpan, 2007; Rahman and Salahuddin, 2010).

The broad objective of the study is to examine whether market capitalization, credit to private sector, inflation rate, exchange rate, and savings rate are determinants of stock market development in Nigeria. The rest of the paper is structured as follows: section two review of existing literature; section three provides research methodology; section four describes the empirical data and results; and section five presents the concluding remarks and recommendations.

LITERATURE REVIEW

2.1 Empirical Literature Review

The Determinants of Stock Market development has drawn the attention of many scholars in recent times. Herger, Hodler and Lobsiger, (2007) examined a sample of 129 high and upper middle income countries for the period 1990s, using OLS and 2SLS, and found that institutions constraining the political elite from expropriating financiers exhibit a strong positive effect on the size of capital markets.

Garcia and Liu (1999) studied the macroeconomic determinants of stock market development during the period 1980 to 1995 using pooled data from 15 industrial and developing countries and found that real income, saving rate, financial intermediary development and stock market liquidity are important determinants of stock market capitalization. They observed that macroeconomic volatility does not prove significant, and that stock market development and financial intermediary development are complements and not substitutes.

Yartey (2008) examined the institutional and macroeconomic determinants of stock market development using a panel data of 42 emerging economics for the period of 1990 to 2004, and found that income level, gross domestic investment banking sector development, private capital flows and stock market liquidity are important determinants of stock market development in emerging market countries. The results further indicate that political risk, law and order and bureaucratic quality are important determinants of stock market development because according to him they have the viability of external finance. He stressed that the result suggests that the resolution of political risk can be important factor in the development of emerging markets.

Also, Kemboi and Tarus (2012) studied the macroeconomic determinants of stock market development in emerging markets, using quarterly secondary data for the period 2000 to 2009 by applying Johansen-Juselius Co-integration analysis. The results indicates that macro economic factors such as income level, banking sector development and stock market liquidity are all important determinants of the

development of Nairobi stock market. They also found that macro economic stability is not significant predictor of the development of the securities market.

Similarly, Nacuer, Omran and Ghazouani (2007) examine the determinants of stock market development in the Middle Eastern and North African region using unbalanced panel data. The study found that savings rate, financial intermediary, stock market liquidity and the stabilization variables are the important determinants of stock market development and that financial intermediaries and stock markets are complements rather than substitutes in the growth process.

John, Ojong and Akpan (2010) studied the determinants of stock market development in Nigeria using and Error Correction Model (ECM) approach. The study found that stock market liquidity, savings rate, and one-period lagged stock market development were significant predictors of stock market development in Nigeria.

El-Wassal (2005) investigates the relationship between stock market growth and economic growth, financial liberalization policies, foreign portfolio investment and country risk in 40 emerging economies for the period 1980 – 2000. He used 2 stages least square combined with fixed effect techniques were employed and the results suggest that economic growth, financial liberation policies and foreign portfolio investments were the leading factors of the emerging stock market growth. He averred that this result seems to validate the demand following hypothesis, suggesting that economic growth have indeed activated stock market in these countries and that the stock market development and expansion is a multifaceted process. Asongu (2010) in his study used a panel of 8 countries from 1989 to 2008 and concluded that in policy making, not all aspect of financial intermediary should be prioritize for stock market development.

Rahman and Salahuddin (2010) provided an empirical analysis of the relationship between economic growth and its determinants with special focus on stock market development in Pakistan. They used data for the period 1971 to 2006 by employing FMOLS and ARDL bounds in testing a long run relationship and ECM approach and found a positive relationship between efficient stock market and economic growth both

in the short run and long run, while financial instability and inflation have negative effect and that human capital, foreign direct investment and stock market liquidity have positive effects on growth. The results according to them were consistent with the theoretical and empirical predictions.

Quartey and Gaddah (2007) investigated macro economic factors affecting stock market development in Ghana using Johansen's co-integration procedure for the period 1991 to 2004. Their study revealed that gross domestic savings positively affected stock market development, while Treasury bill rates have negative impact on the long run development of Ghana Stock Exchange. However, contrary to expectation inflation rate did not prove to be a significant factor in predicting the long run development of the stock market in Ghana.

In their study Boyd, Levine and Smith (2001) analyze the effect of inflation on both bank based liabilities for GDP, bank assets, to GDP, credit to private sector and to GDP and stock market based value traded, market capitalization to GDP, turnovers, volatility equity returns, development indicators for the financial sector, these result indicate that there is a significant and negative relationship between inflation and both banking sector development and stock market activity.

El-Nader, and Al-Raimony, (2013) examines the cause of stock market development in Jordon, using multivariate co-integration and variance decomposition analysis and their finding suggest that all the variables, money supply to GDP, total value traded relative to GDP, gross capital formation relative to GDP, consumer price index (CPI) and credit to private sector relative to GDP were all positive and have considerable influences on stock market development they observed that, nominal gross domestic product and net remittances relative to GDP had a negative impact on stock market development. In view of the above, this study therefore, attempts to bridge the research gap by investigating the actual relationship between stock market development and economic growth in Nigeria, using current data from 1977 to 2010. Whereas, Garcia and Liu (1999) used 1980 to 1995 data; Yartey (2008) used 1980 to 2004 data; El-Wassal (2005) used 1980 to 2000 data; and Quartey and Gaddah (2007) used 1991 to 2002 data.

METHODOLOGY

3.1 Research Methodology

The study adopted *ex-post facto* research design, as a set of regression estimation techniques were utilize to examine the determinants of stock market development in Nigeria.

3.2 Sources of Data

The study used secondary data from the Central Bank of Nigeria (CBN) annual reports/statistical bulletin and the National Bureau of Statistics (NBS) from 1977 to 2010.

3.3 Model Specification

In an attempt to determine the determinants of Stock Market Development, a model that justify the relationship between these variables were adopted following Cobb Douglas production function as specified below:

$$Q = f(K, L) \quad (1)$$

Q = Output of the economy

K = Capital

L = Labour

In line with the objective of this study, the baseline analytical model was derived from equation (1) above. Thus, the analysis commenced with Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) unit root tests for the variables of interest as well as

Johansen Co-integration regression model followed by Error Correction Model (ECM). The linear regression model is therefore specified in the form as stated below:

$$RGDP = f(MCAP, PCR, INF, EXR, SAVR) \quad (2)$$

Thus, the linear function of equation (2) above can be specified explicitly as follows:

$$Y_t = B_0 + B_1X_{1t} + B_2X_{2t} + B_3X_{3t} + B_4X_{4t} + B_5X_{5t} + \mu_t \quad (3)$$

where

Y_t	=	Dependent Variable (RGDP)
X_{1t}	=	Market Capitalization (MCAP)
X_{2t}	=	Credit to Private Sector (PCR)
X_{3t}	=	Inflation Rate (INF)
X_{4t}	=	Exchange Rate (EXR)
X_{5t}	=	Savings Rate (SAVR)
t	=	Annual Time Series Values
B_0	=	The Constant Term
B_1- B_5	=	Regression Coefficient to be estimated
μ_t	=	The Error Term

The above equation is hereby restated to carry their parameters as follows:

$$RGDP_t = B_0 + B_1MCAP_t + B_2PCR_t + B_3INF_t + B_4EXR_t + B_5SAVR_t + \mu_t \quad (4)$$

3.4 Techniques of Data Analysis

The study employed descriptive and analytical econometric methods to analyze the data.

DESCRIPTION OF RESULTS

4.1 Discussion of Empirical Results

4.1.1 Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) Unit Root Tests

The study commenced with the analysis of testing the time series variables, as often than not most time series data exhibit non stationary behavior as non stationary data posses' series of problem leading to estimation of spurious regression results. Thus, to guide against this phenomenon, the study explored ADF and Phillip Perron (PP) unit root test procedures to test the level of integration whether the variables are stationary and are Co-integrated of order one, i.e. whether they were integrated of the same order I (1) so as to completely avoid the estimation of spurious regression.

Consequently, the results of the Unit root tests of the variables are presented in table 1 and 2 below.

Table 1: Augmented Dickey-Fuller (ADF) Unit Root Test Results

Series	ADFTest Statistic	5%Critical Values	10%Critical Values	Order of Integration	Remark
RGDP	-4.699936	-1.952910	-1.610011	1(1)	Stationary 1st dif
MCAP	-5.472912	-1.952910	-1.610011	1(1)	Stationary 1st dif
PRC	-2.074562	-1.952910	-1.610011	1(1)	Stationary 1st dif
INF	-5.391709	-1.952910	-1.610011	1(1)	Stationary 1st dif
EXR	-4.653098	-1.952910	-1.610011	1(1)	Stationary 1st dif
SAVR	-5.693913	-1.952910	-1.610011	1(1)	Stationary 1st dif

Source: Authors Computation Using Eview 7.1 version

Table 2: Phillips Perron (PP) Unit Root Test Results

Series	PPTest Statistic	5%Critical Values	10%Critical Values	Order of Integration	Remark
RGDP	-4.611134	-1.952910	-1.610011	1(1)	Stationary 1st dif
MCAP	-5.472912	-1.952910	-1.610011	1(1)	Stationary 1st dif
PRC	-2.906132	-1.952910	-1.610011	1(1)	Stationary 1st dif
INF	-9.048519	-1.952910	-1.610011	1(1)	Stationary 1st dif
EXR	-4.641229	-1.952910	-1.610011	1(1)	Stationary 1st dif
SAVR	-5.733590	-1.952910	-1.610011	1(1)	Stationary 1st dif

Source: Authors Computation Using Eview 7.1 version

The above test from table 1 and 2 reveals that all the variable were integrated of same order' 1(1). In other words, the series are said to be all stationary at first difference as shown above.

Having determined the order of integration, we therefore proceed to perform the Johansen Co-integration Test to establish the long run effect of the variables and again the variables are integrated of same order i.e 1(1) which is a pre condition of the application of the Johansen Co-integration techniques.

Table 3 therefore, presents the Johansen Co-integration trace test.

4.2 Johansen Co-integration Test

The co-integration test provides evidence on the existence of a long run relationship/association between the variables of interest such as RGDP, MCAP, PCR, INF, EXR, and SAVR respectively.

Table 3: Johansen Co-integration Test

Trend assumption: Linear determination trend series, FGDP, MCAP, PCR, INF, EXR, SAVR,. Unrestricted Co-integration Rank Test (Trace) Hypothesized

No. of CE(s)	Eigen Value	Trace Statistic	5% Critical Value	Prob**
None*	0.099754	299.8879	95.75366	0.0000
At most 1*	0.909135	169.7428	69.81889	0.0000
At most 2*	0.982191	100.1898	47.85613	0.0000
At most 3*	0.736836	55.98988	29.79707	0.0000
At most 4*	0.354901	17.27550	15.49471	0.0267
At most 5*	0.145600	4.563336	3.841466	0.0327

Trace test indicates 6 co-integrating equ(s) at the 0.05 level

*Denotes rejection of the hypothesis at the 0.05 level

** Mackinon-Hang-Michellis (1999) P-values

Source: Authors Computation Using Eview 7.1 version

The results indicates from table 3 that the Eigen value statistic shows existence of six unique co-integrating equation between the variables; RGDP, MCAP, PCR, INF, EXR and SAVR at 5 percent level. Thus, the null hypothesis of no co-integration is rejected at the 5 percent level of significance.

In order to absolve the short term dynamics of the relationship among the series, an Error Correction Model (ECM) was employed.

Table 4 presents the parsimonious ECM test results.

Table 4 Presents the Parsimonious ECM Test Results

Dependent Variables: D (RGDP)

Variables	Coefficient	STD Error	t-Statistic	Prob.
C	18081.31	5836.008	3.098233	0.0051
D (MCAP)	0.007831	0.002882	2.717590	0.0123
D (PCR)	0.007263	0.006426	1.130349	0.2700
D (INF)	-127.2588	268.7565	-0.473510	0.6403
D (EXR)	431.6686	372.5070	1.158820	0.2584
D (SAVR)	-1281.571	2364.808	-0.541934	0.5931
ECM (-1)	-0.665627	0.116579	-5.709672	0.0000

R-square	0.599889	Mean dependent var.	26310.42
R-squared	0.599889	S.D dependent var.	37687.16
Sum squared resid	1.65E+10	Akaike info criterion	23.75578
Mog likehood	-344.4317	Durbin-Watson stat.	1.161193

F – statistics 5.747348

Prob (F – statistics) 0.000899

Source: Authors Computation Using 7.1 version

The result of ECM indicated that the coefficient of the ECM test as expected shows a negative sign and was statistically significant at 5 percent level of significance. The test also reveals that market capitalization was found to be positive and was significant statistically. Meaning that market capital capitalization as determinants of stock market development promotes or stimulates economic growth in Nigeria.

Furthermore, the coefficient of the ECM is -0.665627, which means that the system corrects it to previous period disequilibrium at a speed of 66.56% annually. Meaning that the speed of adjustment to disequilibrium is 67% approximately, this further validates the long run equilibrium relationship between the variables.

Consequently, the study concludes that RGDP can be said to be positively influenced by changes in MCAP, PCR and EXR except INF and SAVR that had a negative effect. The findings of this study are consistent with the findings of Quartey and Gaddah (2007) and Kemboi and Tarus (2012).

The R^2 value indicates that 60% of the total variations is RGDP is accounted for by explanatory variables, meaning that our model suggests an adequate and a good fit. Furthermore, the result shows that R^2 value of 0.599889 is less than the Durbin Watson statistic value of 1.16 which indicates that there is no evidence of first order serial correlation.

There is therefore ample justification for our research objectives: that market capitalization, credit to private sector, exchange rate, inflation rate and savings rate are all determinants of stock market development. While market capitalization, credit to private sector and exchange rate have positive influence, inflation rate and savings rate have a negative influence over stock market development.

Also, the implications of the research results to our hypotheses are as follows:

(1) Hypothesis one. That market capitalization does not play any significant role in stock market development is rejected, as market capitalization has positive influence on stock market development.

(2) Hypothesis two. That credit to private sector does not play any significant role in stock market development is rejected, as credit to private sector has positive influence on stock market development.

(3) Hypothesis three. That inflation rate does not play any significant role in stock market development is rejected, as inflation rate has negative influence on stock market development.

(4) Hypothesis four. That exchange rate does not play any significant role in stock market development is rejected, as exchange rate has positive influence on stock market development.

(5) Hypothesis five. That savings rate does not play any significant role in stock market development is rejected, as saving rate has negative influence on stock market development.

CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

This study examined the determinants of stock market development in Nigeria for the period 1977 – 2010. The study investigated the long run and short run relationship between the variables by using Johansen Co-integration and Error Correction Model (ECM) approach.

The empirical result shows that market capitalization, credit to private sector, and exchange rate are all important determinants of Stock Market Development in Nigeria both in the short run and the long run as these variables have positive effect and thus stimulates economic growth in Nigeria. While inflation rate and savings rate have negative impact on Stock Market Development in Nigeria as these variables are found to be statistically insignificant in predicting the development of the Stock Market.

5.2 Recommendations

Base on the findings of this study, the following recommendations are advanced:

i. That policymakers should be concerned with stock market liquidity, given that market capitalization is a strong indicator of stock market development as it is positive and statistically significant.
ii. To promote stock market development in Nigeria, the banking sector should be encouraged to increase lending to the private sector of the economy so as to boast economic growth and development in the country.

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