

Capital Market Development and Economic Growth in Nigeria's Post-Deregulation Era: Evidence from Vector Error Correction Model

¹ Muftau Adesina Abayomi and ²Tajudeen Egbetunde

^{1,2}Department of Economics, School of Logistics and Innovation Technology
Federal University of Technology, Akure, Nigeria

Abstract

This study examined the causal relationship between capital market development and economic growth in Nigeria during the deregulation era (1986 – 2020). The variables used in the study include the growth rate of real gross domestic product (as proxy for economic growth), market capitalisation and turnover ratio of domestic shares (as proxies for capital market development), and investment, broad money supply and inflation rate as control variables. The unit root test carried out, using Augmented Dickey-Fuller Statistic at the 5% level, indicated that all the variables were $I(1)$ and, therefore, amenable to the Johansen Cointegration Test. The study established the existence of two cointegrating equations and then proceeded to estimate the Vector Error Correction Model (VECM), and the VEC multivariate Granger causality test, which were all tested at the 5% level. The study also revealed that the economic growth equation best explained the causal relationship between capital market development and economic growth in Nigeria over the study period. Analysis further showed that market capitalisation lagged by 1 and 2 had a significant positive effect on economic growth in the study area. Also, the turnover ratio of domestic shares lagged by 1 had a significant negative effect on economic growth in Nigeria over the study period, which suggests poor market liquidity and inefficiency. Furthermore, the VEC Granger causality test confirmed a unidirectional causality running from capital market development to economic growth in the study area, which supports the Finance-led Growth Hypothesis. The study also revealed that investment had an insignificant effect on economic growth. Finally, the study recommended that the Securities and Exchange Commission and the Nigerian Stock Exchange should sensitize firms and the entire public on the investment opportunities available in the capital market, design a framework for improving capital market liquidity and efficiency, while the government should ensure sound project management practices and effective deployment of investment into productive uses with a view to accelerating economic growth in Nigeria.

Keywords: Capital Market Development, Cointegration, Economic Growth, Unit Root, Vector Error Correction Model, Nigeria

Date of Submission: 07-06-2022

Date of Acceptance: 23-06-2022

I. Introduction

The increased awareness of the role of capital market in developing countries and the recent improved patronage of that segment of the financial market has rekindled researchers' interest in the debate on the causal relationship between capital market development and economic growth in Sub-Saharan Africa. The importance of the capital market was further accentuated by the lessons learned from the spillover effect of the 2007 global financial crisis, which culminated in global economic meltdown. For instance, the aforementioned global financial crisis caused the capital market meltdown in Nigeria, which led to over 60% crash in market capitalisation within one year (Central Bank of Nigeria [CBN], 2007).

By way of definition, capital market development can be defined as a consistent increase in the size, liquidity and efficiency of that segment of the financial market that mobilises and allocates long-term funds over a reasonably long period of time. The capital market serves as a bridge that connects the long-term funds from the surplus sectors with the deficit sectors of the economy (Nyong, 1997). Meanwhile, long-term finance through the capital market is essential for a sustained economic growth (Iyola, 2004). On the other hand, economic growth is defined as a consistent increase in the value of goods and services produced in an economy over a long period of time (Jhingan, 1997).

With the promulgation of the Lagos Stock Exchange Act of 1961, the capital market operations commenced in Nigeria on 5th June, 1961. The Lagos Stock Exchange later metamorphosed into the Nigerian Stock Exchange in December 1977 following a review of the Nigerian financial system (CBN, 2007). To take charge of the regulatory oversight, the Securities and Exchange Commission (SEC) was established in 1979 through the

SEC Act 1979, to take over regulatory functions from Capital Issues Commission that was established in 1973. Since the effective commencement of operations in 1980, the SEC had regulated various forms of financial instruments traded in the capital market. For effective regulation of the market, the SEC applies various regulatory/supervisory tools such as registration of market facilities, operators and securities to be traded in the market, monitoring/inspection, investigation, enforcement and rule-making, among others (CBN, 2007).

In an attempt to resolve serious financial challenges facing Nigeria in the mid-1980's, the Federal Government approached the International Monetary Fund (IMF) for a loan during the tenure of General Ibrahim Badamasi Babangida. As part of the conditions precedent to the loan, the IMF recommended that Nigeria should adopt the Structural Adjustment Programme (SAP). After series of debates, SAP was introduced in the country in 1986 and one of the policies that instantly accompanied the programme was the interest rate deregulation. The policy gave the financial institutions the leeway to dictate their rates thereby resulting in high interest rates in the money market. In view of the unprecedented surge in rates in the money market, many enterprises in the private sector began to seek for equity capital from the Nigerian capital market. This exerted an appreciable pressure on the market as an alternative source of funds. The capital market also presented greater opportunities for private investors who wanted to borrow long term funds (Babalola & Adegbite, 1999). The deregulation policy that accompanied SAP is believed to have resulted in appreciable development of the capital market, while the Federal Government of Nigeria's privatisation of public enterprises promoted the capital market to investors and companies (Soyode, 1990; Alile, 1996).

Meanwhile, some challenges facing capital market development in Nigeria as identified by CBN (2007) include poor technology and market infrastructure, poor liquidity, high cost of transactions, low operational capacity, poor development of the bond market and poor corporate governance, among others. These challenges are believed to have militated against the contribution of capital market to economic growth in Nigeria. Furthermore, the empirical findings on the relationship between capital market development and economic growth in Nigeria have been inconsistent. Some researchers such as Briggs (2015) as well as Ugbogbo and Aisien (2019), among others, empirically suggest that capital market development exerts a positive and significant effect on economic growth in Nigeria, while another category of researchers such as Ariyo and Adelegan (2005) and Nwaolisa *et al.* (2013) contend that the effect of capital market development on the economic growth is negligible.

In light of the above background, the question that readily comes to mind is: What is the relationship between capital market development and economic growth in Nigeria since deregulation in 1986 up to 2020. Hence, the main objective of the study was to investigate the causal relationship between capital market development and economic growth in Nigeria. The specific objectives were to: analyse the trends of capital market development and economic growth in the study area; examine the long run relationship between capital market development and economic growth; investigate the causal relationship between capital market development and economic growth; and establish the direction of causality between capital market development and economic growth in the study area.

Findings from the study would provide further insights to the federal government of Nigeria, the SEC and the Nigeria stock exchange as major stakeholders on how they can contribute their quota towards accelerating capital market development and economic growth in Nigeria. The empirical evidence generated from this study would also add to the extant literature on capital market development-economic growth nexus. This study used data covering the period 1986 – 2020, while the base year represents the commencement of deregulation in Nigeria. The study is organised as follows: Following this introduction is literature review in section two, while the methodology of the study is contained in section three. Section four presents the results and discusses the findings, while section five covers conclusion and recommendations.

II. Literature Review

A number of studies suggest that financial reforms play a critical role in both developed and developing economies as the financial sector is known to provide fundamental services required for achieving sustainable economic growth (Levine, 1996; Hermes & Lensink, 2000). Several studies have been conducted on financial reforms and financial system development in developed and developing economies. Some of the related literature are reviewed in this section.

Levine (1991) opines that a developed capital market reduces the fear of risk of investors to invest their funds thereby fostering economic growth. Also, Demurgic-Kunt and Levine (1996) in an analysis of a pooled cross-country time series data from 44 countries covering the period of 1986 to 1993 report that different performance parameters of stock market are strongly related to other indicators of activity levels in the financial system such as in banking and non-banking financial institutions. They conclude that countries with well-developed stock markets have well-developed financial intermediaries.

In a study conducted on 41 countries using data from 1976 to 1993 by Levine and Zervos (1996), they establish a strong association between stock market development and economic growth. Using time series data

from five advanced economies, Arestis, Demetriades and Luintel (2001) used vector autoregression (VAR) to investigate the relationship between stock market development and economic growth. The study used banking system development and stock volatility as control variables. In this study, output was proxied by the logarithm of real GDP and stock market development by the ratio of stock market capitalisation to GDP, banking system development by the ratio of domestic credit to nominal GDP, stock market volatility by the eight quarter moving standard deviation of the end of quarter change of stock market prices. The results from the study suggest that both banking system development and stock market capitalisation promote economic growth. However, the effect of banking system development is stronger than that of stock market capitalisation thereby suggesting that bank-driven financial system exerts a stronger influence on growth than capital market-driven system. Osinubi and Amaghionyeodiwe (2003) also investigated the association between the Nigerian stock market and economic growth over a period spanning 1980-2000. The study used the ordinary least squares regression (OLS). The result indicates that there is a positive association between the stock market and economic growth in the country.

In a study conducted by Fase and Abma (2003) on the relationship between financial development and economic growth for developing countries in Asia, adopting the error correction framework, the result indicates that financial development influences economic growth, while the level of financial intermediation and sophistication Granger-causes economic growth.

In a related study conducted by Khan, Qayyum and Sheikh (2005) over a period spanning 1971-2004 in Pakistan, using autoregressive distributed lag (ARDL) approach, analysis of the results show that financial depth and real deposit rate have significant positive effect on economic growth in the country in the long run.

In an investigation of the effect of stock market development on economic growth in Nigeria, using the error correction technique, Abu (2009) finds that market capitalisation as a ratio of GDP (stock market development) increases economic growth in the country. The recommendations therein include - removal of impediments to stock market development which include tax, legal, and regulatory barriers, and development of the nation's infrastructure to create an enabling environment for where business can thrive, among others.

Using the ordinary least square technique on a data from 1981 to 2008, Donwa and Odia (2011) investigated the effect of the Nigerian capital market on socio-economic development. They report that the capital market has not significantly influenced socio-economic development. Furthermore, Olawoye (2011) used the multiple regression analysis to test whether the capital market indices impacted on economic growth (proxied by the GDP) in Nigeria. He reports that the capital market has a strong and significant impact on economic growth. Nwaolisa *et al.* (2013) examined the impact of capital market on the growth of the Nigerian economy under a democratic rule. They find that democracy does not promote investment-friendly environment. Using a multivariate regression method to analyse the data covering 1999 – 2011, the result shows that while total market capitalisation and all share indices exert positive influence on economic growth, the total value of stock has a negative effect on the GDP growth rate, and none is significant. The study, therefore, recommends that government should put in place a more serious initiative towards capital market development.

Briggs (2015) carried out a study on capital market and economic growth in Nigeria over a period from 1981 -2011. He reports a long run relationship between capital market and economic growth, and establishes that capital market exerts a significant positive effect on economic growth in Nigeria. He recommends that all the tiers of government should be encouraged to fund realistic development programmes through the capital market for it to serve as a leeway for freeing resources of the economy. He also suggests the need for more investment instruments such as derivatives, convertibles, futures and swaps options in the market, among others.

Ugbogbo and Aisien (2019) investigated the impact of capital market development on economic growth using time series data from Nigeria for the period 1981-2016. The result reveals that capital market development has a significant positive impact on economic growth in Nigeria both in the short run and in the long run. Other significant variables in the result are interest rate, money supply and investment level. The study, therefore, recommends that the government should inject more funds into the capital market and implement appropriate reforms aimed at ensuring reliable, efficient and stable stock market in Nigeria.

Using descriptive statistics, Autoregressive Distributed Lag model, granger causality and Ordinary Least Squares (OLS) for a comparative single country regression analysis in a study covering 1990 to 2018, Adoms *et al.* (2020) examined the relationship between capital market and economic development in emerging African economies of Nigeria, South Africa and Kenya. The study used Human Development Index (HDI) as the dependent variable, stock market capitalization (SMC); value of stock traded (VST); and stock market turnover ratio (TR) as independent variables. The study empirically establishes that capital market has a significant relationship with economic development in the selected emerging African economies of Nigeria and South Africa except for Kenya which conforms with the Finance-Led Growth Hypothesis. The researchers recommend that governments of Sub-Saharan African economies should formulate and implement policies that will ensure relative stability in the stock market to foster capital formation, increase investment and ensure stability in the financial system.

Nathaniel *et al.* (2021) examined the effect of capital market development on economic growth in Nigeria using secondary data for a period covering 1983-2016 on real gross domestic product as a proxy for economic

growth while capital market variables constitute the independent variables. While the Augmented Dickey-Fuller unit root test was used for preliminary analysis, the Autoregressive Distributed Lag (ARDL) model was used for the model estimation. Findings from the study indicate that, the number of listed Securities and all share index maintained a significant relationship with economic growth in Nigeria both in the short and long run. Based on the findings from the study, they recommend that government should help to remove all impediments to stock market development in the form of tax, legal and regulatory barriers as they act as disincentives to investments in the capital market.

III. Methodology

This study was anchored on the Harrod-Domar growth theory, which states that the rate of growth of Gross Domestic Product (GDP) is determined jointly by the net national savings ratio, and the national capital-output ratio. More specifically, it says that in the absence of government, the growth rate of national income will be directly or positively related to the savings ratio, and inversely related to the economy's capital-output ratio (Todaro & Smith, 2011). That is:

$$\frac{\Delta Y}{Y} = \frac{s}{c} \quad \dots (1)$$

Where:

$\Delta Y/Y$ = Rate of growth of GDP;

s = Net national savings ratio; and,

c = National capital-output ratio.

$$c = \frac{C}{Y} \quad \dots (2)$$

In this study, capital market development is represented by market capitalisation (MCAP) as a percentage of Gross Domestic Product (GDP), and turnover ratio of domestic shares (TURN) measured as a percentage of market capitalisation.

But $S=I$... (3)

Hence, $s=i$... (4)

Where;

S = Net national savings

s = Net national savings ratio

I = Net national investment

i = Net national investment ratio

Therefore, savings ratio is equal to investment ratio. The latter can be represented by gross capital formation as a percentage of GDP (GCAF).

Hence, the model can be presented as follows:

$$GRGDP = f(MCAP, TURN, GCAF) \dots (5)$$

Meanwhile, we need to control for the effect of money market on economic growth, which is proxied in this study by broad money supply (M2) measured as a percentage of GDP. Furthermore, we do know that macroeconomic stability is a major factor that needs to be controlled for. Hence, we introduce inflation rate (INF) as a proxy for macroeconomic stability.

Adding the above two control variables, the model becomes:

$$GRGDP = f(MCAP, TURN, GCAF, M2, INF) \dots (6)$$

To investigate the effect of capital market development on economic growth in Nigeria, we explicitly specify the model as follows:

$$GRGDP_t = \beta_0 + \beta_1 MCAP_t + \beta_2 TURN_t + \beta_3 GCAF_t + \beta_4 M2_t + \beta_5 INF_t + \epsilon_t \dots (7)$$

Where;

$GRGDP_t$ = Growth rate of Real GDP (proxy for economic growth) in period t.

$MCAP_t$ = Market capitalisation of listed domestic companies as a percentage of GDP in period t.

$TURN_t$ = Turnover ratio, which is the value of domestic shares traded as a percentage of market capitalisation in period t.

$GCAF_t$ = Gross capital formation as a proxy for investment in period t.

$M2_t$ = Broad money supply as a percentage of GDP in period t.

INF_t = Inflation rate in period t.

“ β_0 ” signifies the intercept term, that is, the influence of all the variables excluded from the model on the dependent variable, or when all the explanatory variables are set at zero values.

“ $\beta_1 \dots \beta_5$ ” are the parameters to be estimated in the model.

“ ϵ_t ” is the stochastic disturbance term which is assumed to be normally and randomly distributed with zero mean and constant variance.

Since the direction of causality is not clear, we also specify the following additional models:

$$MCAP_t = \beta_0 + \beta_1 GRGDP_t + \beta_2 TURN_t + \beta_3 GCAF_t + \beta_4 M2_t + \beta_5 INF_t + \epsilon_t \dots (8)$$

and;

$$TURN_t = \beta_0 + \beta_1 GRGDP_t + \beta_2 MCAP_t + \beta_3 GCAF_t + \beta_4 M2_t + \beta_5 INF_t + \epsilon_t \dots (9)$$

The three models [(7) - (9)] where the target variables are the dependent variables are to be considered as long run equilibrium relations even though we may have more cointegrating relations involving gross capital formation, broad money supply or inflation as the dependent variable. It is worthy of note that valid economic inferences can be drawn as long as all variables involved are I(1), failing which invalid inferences would be drawn (Christopoulos & Tsionas, 2004).

In estimating models (7) – (9), the study adopts a Vector Error Correction Model (VECM) which is an unrestricted Vector Autoregression (VAR) designed for estimating cointegrated non-stationary series. The VECM representation of models (7) – (9) can be explicitly stated as follows:

$$\Delta GRGDP_t = \beta_0 + \sum_{i=1}^n \beta_1 \Delta GRGDP_{t-i} + \sum_{i=1}^n \beta_2 \Delta MCAP_{t-i} + \sum_{i=1}^n \beta_3 \Delta TURN_{t-i} + \sum_{i=1}^n \beta_4 \Delta GCAF_{t-i} + \sum_{i=1}^n \beta_5 \Delta M2_{t-i} + \sum_{i=1}^n \beta_6 \Delta INF_{t-i} + \Omega ECT_{t-1} + \mu_t \dots (10)$$

$$\Delta MCAP_t = \delta_0 + \sum_{i=1}^n \delta_1 \Delta MCAP_{t-i} + \sum_{i=1}^n \delta_2 \Delta GRGDP_{t-i} + \sum_{i=1}^n \delta_3 \Delta TURN_{t-i} + \sum_{i=1}^n \delta_4 \Delta GCAF_{t-i} + \sum_{i=1}^n \delta_5 \Delta M2_{t-i} + \sum_{i=1}^n \delta_6 \Delta INF_{t-i} + \Omega ECT_{t-1} + \mu_t \dots (11)$$

$$\Delta TURN_t = \alpha_0 + \sum_{i=1}^n \alpha_1 \Delta TURN_{t-i} + \sum_{i=1}^n \alpha_2 \Delta GRGDP_{t-i} + \sum_{i=1}^n \alpha_3 \Delta MCAP_{t-i} + \sum_{i=1}^n \alpha_4 \Delta GCAF_{t-i} + \sum_{i=1}^n \alpha_5 \Delta M2_{t-i} + \sum_{i=1}^n \alpha_6 \Delta INF_{t-i} + \Omega ECT_{t-1} + \mu_t \dots (12)$$

Where ECT_{t-1} is the error correction term, while μ_t is the mutually uncorrelated white noise residual or shock. The size and significance of coefficient of the ECT variable indicates information on the extent to which the previous values of variables influence the current values of same variables under investigation. The short run dynamics are captured through the individual coefficients of the difference terms. Hence, with respect to model (10), for instance, capital market development (proxied by MCAP and TURN) does not Granger-cause economic growth (GRGDP) if all $\beta_2=0$ and all $\beta_3=0$. Also, economic growth (GRGDP) does not Granger-cause capital market development if all $\delta_2=0$ and all $\alpha_2=0$ in models (11) and (12) respectively. These hypotheses can be tested by using the F-statistic (Mehra, 1994).

It is worthy of note that two preliminary tests were carried out before adopting the VECM in order to avoid the spurious regression problem. The first one was the unit root test which was used to investigate the order of integration of the time series. To achieve this, the study adopted the Augmented Dickey Fuller (ADF) test of the null hypothesis of non-stationarity at the 5% level (Dickey & Fuller, 1981). The unit root test of a time series to be tested $[y_t]_t^T = 1$ is usually represented as follows:

$$\Delta Y_t = a + \rho Y_t + \sum_{i=1}^n \delta \Delta Y_{t-1} + \epsilon_t \dots (13)$$

Where Y_t is the level of the dependent variable considered, t represents time trend, and ϵ_t is the error term which is assumed to be normally and randomly distributed with zero mean and constant variance. The Akaike information criterion (AIC) was used to select the optimal lag length using Eviews 10. The test was to ensure that the series were I(1) to be amenable to Johansen Cointegration test; otherwise, the bounds test of cointegration would be used. The cointegration test was necessary to confirm long run relationship before they could be amenable to VECM. According to Johansen (1988), the multivariate cointegration model is based on the error correction representation given as follows:

$$\Delta Y_t = \mu + \sum_{i=1}^{p-1} \alpha_i \Delta Y_{t-i} + \beta Y_{t-1} + \varepsilon_t \dots (14)$$

Where Y_t is an $(n \times 1)$ column vector of p variables, μ is an $(n \times 1)$ vector of constant terms, α and β captured coefficient matrices. Also, Δ is a difference operator, and $\varepsilon_t \sim \text{IID}(0, \sigma^2)$. The coefficient matrix β is known as the impact matrix, and it contains information about the long run relationships (Adefeso, *et al.*, 2013). Johansen's framework requires the estimation of the VAR equation (14) and the residuals are then used to compute two likelihood ratio (LR) test statistics that can be used in the determination of the unique cointegrating vectors of Y_t . The cointegrating vectors can be tested with two statistics namely, the trace test and the maximum eigenvalue test. The VECM approach should be adopted only if the variables are cointegrated, otherwise, unrestricted VAR should be estimated.

The sources of data as well as the measurement of variables used in this study are as detailed in Table 1.

Table 1: Data Sources and Measurement of Variables

Variables	Indicator	Variable Description	Measurement	Source
GRGDP	Growth rate of real gross domestic product	This is the annual change in the value of all goods and services produced in Nigeria within the period under review adjusted for price changes, that is, inflation or deflation. GRGDP used as proxy for economic growth.	Growth rate of real gross domestic product in percentage	World Development Indicators, 2021
MCAP	Total market capitalisation	This is the total capital of the listed companies multiplied by the value of shares at the market. It refers to the total Naira market value of a company's outstanding shares of stock commonly referred to as market cap. MCAP used as proxy for capital market development.	Measured as a percentage of GDP	World Development Indicators, 2021 and CBN Annual Accounts (various issues)
TURN	Turnover ratio of domestic Shares	Turnover ratio is the value of domestic shares traded divided by their market capitalisation. TURN used as proxy for capital market development.	Measured as a percentage of market capitalisation.	World Development Indicators, 2021 and CBN Annual Accounts (various issues)
GCAF	Gross capital formation	Gross capital formation consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. GCAF used as a proxy for investment.	Measured as a percentage of GDP	World Development Indicators, 2021
M2	Broad money Supply	Broad money supply is the sum of currency outside banks; demand deposits other than those of the central government; the time deposit, savings, and foreign currency.	Measured as a percentage of GDP	World Development Indicators, 2021
INF	Inflation rate	Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. .	Year-on-year inflation rate measured in percentage.	World Development Indicators, 2021

IV. Results and Discussion

Trend Analysis

A review of Figure 1 shows that the growth rate of Real GDP (an indicator of economic growth) was 3.2% in 1987 and 7.3% in 1988 before nose-diving to 1.9% in 1989. The real GDP rose sharply in 1990 by 11.7% and fell drastically to about 0.4% in 1991 before it rose again by 4.3% in 1992. This growth rate was followed by a recession in 1993/1994. The growth rate began on a recovery trajectory from 1995 up to 1996 with a growth

rate of 1.1% and 4.1% respectively. Subsequently, the growth rate of Real GDP experienced a consistent decline until 1999 with about 0.6%. The growth rate of Real GDP was back on a growth trajectory from 2000 until it peaked in 2002 at 15.3%. It fluctuated gradually thereafter before it fell sharply from 6.3% in 2014 to 2.65% in 2015 and -1.6% in 2016. As at 2020, the growth rate of Real GDP stood at -1.79%.

The market capitalisation as a percentage of GDP (MCAP) and turnover ratio of domestic shares as a percentage of market capitalisation (TURN) followed a linear trajectory from 1986 to 1992. However, the MCAP increased dramatically from 1993 up to 1996 with about 24.9%. This was due to the increased number of public enterprises that were privatized during the period as well as the improved performances of the companies which led to increase in share prices, against the back drop of falling or slowly growing real GDP, as the case may be. The MCAP peaked in 2007 at 30.8% but fell drastically in 2008 and 2009 due to the fallout of the global financial crisis, which adversely affected the performance of listed companies on one hand, and caused the capital market crash on the other. Furthermore, TURN peaked in 2008 at about 34.8% due to the fallout of the global financial crisis, which undesirably affected investor confidence thereby causing the dumping of shares in the market. The capital market has since been influenced by macroeconomic dictates as well as the performance of listed companies. Since 2019, while MCAP has been on an upward trajectory, TURN has faced a downward trajectory.

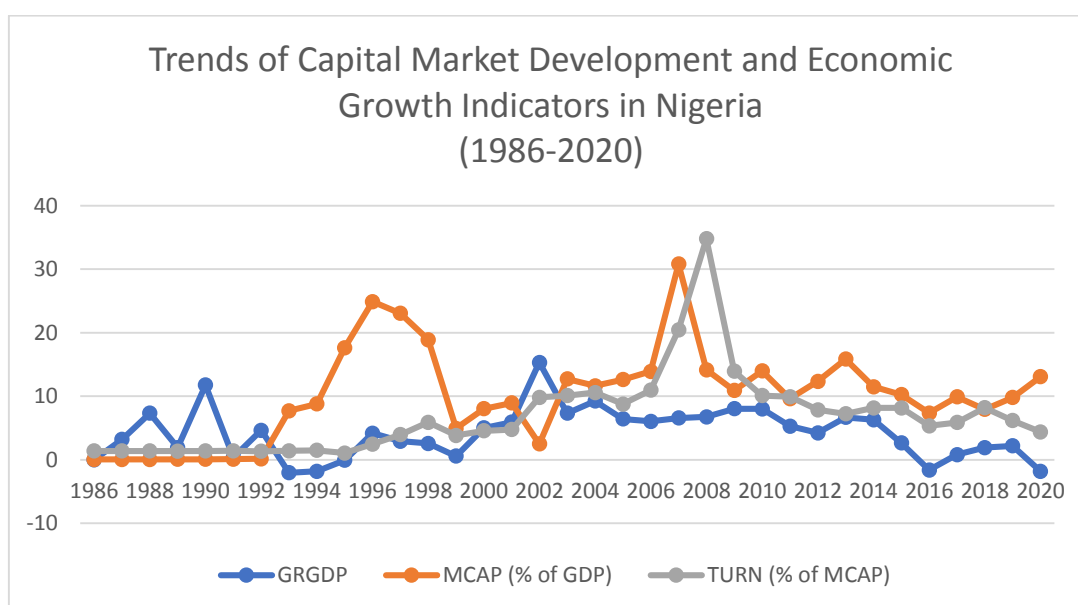


Figure 1: Trends of Capital Market Development and Economic Growth Indicators in Nigeria (1986-2020)
Source: Authors' Computation, 2022

Unit Root Test Results

Table 2 shows the results of the unit root test. The table reveals that all the variables are stationary at first difference. That is they are I(1). Hence, they are amenable to Johansen Cointegration Test.

Table 2: The result of the Augmented Dickey-Fuller (ADF) unit root tests

Series	ADF Statistic at Level	Prob.	ADF Statistic at 1 st Difference	Prob.	Order of Integration
GRGDP	-1.383266	0.1515	-4.086904**	0.0002	I(1)
MCAP	-2.759511	0.0748	-6.767013**	0.000	I(1)
TURN	-2.375328	0.1559	-6.020153**	0.0000	I(1)
GCAF	-1.977489	0.2948	-4.811013**	0.0005	I(1)
M2	-0.930645	0.7660	-4.708276**	0.0006	I(1)
INF	-2.556912	0.1145	-4.509644**	0.0014	I(1)

** indicates significance at 1% level

Source: Authors' Computation, 2022

Examination of the Long Run Relationship between Capital Market Development and Economic Growth in Nigeria

The second objective of this study was to examine the long run relationship between capital market development and economic growth in Nigeria. The study employed the Johansen Cointegration Test to achieve this objective and the results are as presented in Table 3.

Table 3: Results of the Johansen Cointegration Test

Hypothesised No. of CE(s)	Max. Eigen Statistic	Critical value @ 5%	Prob.	Trace Statistic	Critical value @ 5%	Prob.
None*	67.53500	40.07757	0.0000	143.5091	95.75366	0.0000
At most 1 *	44.33537	33.87687	0.0020	75.97411	69.81889	0.0148
At most 2	17.68841	27.58434	0.5212	31.63874	47.85613	0.6320
At most 3	7.401450	21.13162	0.9364	13.95033	29.79707	0.8434
At most 4	5.910963	14.26460	0.6247	6.548882	15.49471	0.6306
At most 5	0.637919	3.841466	0.4245	0.637919	3.841466	0.4245

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Source: Authors' Computation, 2022

Both the trace statistics and maximum eigenvalue statistics indicate that there are two cointegrating equations at the 5% level. Hence, there exists long run relationship among the variables in the models.

Causal Relationship between Capital Market Development and Economic Growth in Nigeria

Using the Akaike information criterion (AIC), lag 2 was selected as the optimal lag length for the models. The VECM estimates are presented in Table 4.

Table 4: VECM Estimates

Economic Growth (GRGDP) Equation		Market Capitalisation (MCAP) Equation		Turnover Ratio of Domestic Shares (TURN) Equation	
ECT(-1)	-0.538841* [-2.23215]	ECT(-1)	-0.2661* [-2.54266]	ECT(-1)	-0.244554* [-1.96496]
D(GRGDP(-1),2)	-0.094906 [-0.30021]	D(MCAP(-1))	-0.265941 [-1.20215]	D(TURN(-1),2)	-0.393843 [-1.84741]
D(GRGDP(-2),2)	0.345104 [1.61820]	D(MCAP(-2))	-0.333898 [-1.12831]	D(TURN(-2),2)	-0.158189 [-0.73356]
D(MCAP(-1),2)	0.782815* [2.31456]	D(GRGDP(-1),2)	-0.133078 [-0.37780]	D(MCAP(-1))	0.209644 [0.94233]
D(MCAP(-2),2)	0.587701** [2.98378]	D(GRGDP(-2),2)	-0.101072 [-0.30942]	D(MCAP(-2))	-0.347136 [-1.57310]
D(TURN(-1))	-0.444532* [-2.48086]	D(TURN(-1))	-0.465477 [-1.30107]	D(GRGDP(-1),2)	0.057197 [0.18368]
D(TURN(-2))	0.397914 [1.90534]	D(TURN(-2))	-0.16329 [-0.58676]	D(GRGDP(-2),2)	0.135484 [0.47586]
D(GCAF(-1),2)	-0.012202 [-0.05160]	D(GCAF(-1),2)	-0.035939 [-0.08423]	D(GCAF(-1),2)	-0.297196 [-0.77229]
D(GCAF(-2),2)	-0.146964 [-0.71988]	D(GCAF(-2),2)	-0.288346 [-0.77704]	D(GCAF(-2),2)	0.219904 [0.65363]
D(M2(-1),2)	1.367431**	D(M2(-1),2)	2.027672	D(M2(-1),2)	1.325659

	[2.75093]		[1.94229]		[1.83062]
D(M2(-2),2)	1.088622**	D(M2(-2),2)	1.249157	D(M2(-2),2)	0.339310
	[3.46841]		[1.79021]		[0.66888]
D(INF(-1))	0.041950	D(INF(-1))	-0.049048	D(INF(-1))	0.104201
	[0.59694]		[-0.40635]		[0.87951]
D(INF(-2))	-0.070788	D(INF(-2))	0.078552	D(INF(-2))	0.049664
	[-0.86557]		[0.67555]		[0.46877]
C	-0.004533	C	0.008518	C	0.000322
	[-0.68916]		[0.73034]		[0.03115]
R-Squared	0.882	R-Squared	0.49	R-Squared	0.722
Adjusted R-Squared	0.787	Adjusted R-Squared	0.076	Adjusted R-Squared	0.497
F-Statistic	9.276	F-Statistic	1.183	F-Statistic	3.208
Direction of Causality		Direction of Causality		Direction of Causality	
Multivariate VEC Granger Causality		Multivariate VEC Granger Causality		Multivariate VEC Granger Causality	
H₀₁ :D(MCAP) does not Granger-cause D(GRGDP)		H₀₃ : D(GRGDP) does not Granger-cause D(MCAP)		H₀₄ : D(GRGDP) does not Granger-cause D(TURN)	
X ² = 9.21**		X ² = 2.59		X ² = 0.82	
H₀₂ : TURN does not Granger-cause GRGDP					
X ² = 9.39**					

** , * denote 1% and 5% Levels of Significance [t-Statistic in Parenthesis]

Source: Authors' Computation, 2022

The third objective of the study was to investigate the causal relationship between capital market development and economic growth in the study area. We have the VECM estimates for the three equations of interest in Table 4. The first is the economic growth equation. With an adjusted R-Squared of 0.787, it implies that 78.7% of the variation in economic growth over the period of study is explained by the independent variables. With an F-Statistic of 9.276 which is greater the critical value [F (4, 34)] of 2.65, it shows that the overall model is significant at the 5% level. The ECT(-1) is negative and statistically significant at the 5% level, while its significance indicates that there is a long run causal effect in the economic growth equation. The value of ECT(-1) at -0.538 is an indication that a departure from long run equilibrium in the previous year converges in the current year at an adjustment speed of 53.8%. This speed of adjustment is moderately high. The result shows that market capitalisation lagged by 1 and 2 had a significant positive effect on economic growth at the 5% and 1% levels respectively. It means a 1% increase in market capitalisation lagged by 1 and 2 would cause 0.78% and 0.59% increases in economic growth respectively in the short run, *ceteris paribus*. This finding is in consonance with those of Arestis, Demetriades and Luintel (2001), Briggs (2015), and Ugbogbo and Aisien (2019). The implication of this finding is that as the size of the capital market increases (measured by number of listed shares and market values of listed companies), it tends to enhance its contribution to economic growth. It also suggests that the long term funds obtained by the listed companies not only strengthens their productive capacities but also enhances capital market development thereby increasing economic growth in the country.

However, the turnover ratio of domestic shares (TURN) lagged by 1 had a significant negative effect on economic growth at the 5% level. One percent increase in turnover ratio lagged by 1 tends to cause 0.44% decrease in economic growth in the short run, *ceteris paribus*. This implies that the capital market was not liquid enough and thereby tend to adversely affect its efficiency by disincentivising more companies from enlisting on the stock exchange on one hand, and reducing propensity to invest in company shares by potential investors on the other. This situation tends to ultimately retard economic growth in the country. This finding agrees with that of CBN (2007) which identified poor liquidity as one of the challenges militating against the Nigerian capital market. Hence, the Security and Exchange Commission and the Nigerian Stock Exchange might need to design a framework for improving capital market liquidity and efficiency. The result also reveals that investment (proxied by gross capital formation) had an insignificant effect on economic growth in Nigeria at the 5% level. This implies that investment has not been effectively utilised to drive economic growth in the study area. This might be due to the high percentage of abandoned projects in the country. Hence, the Central Bank of Nigeria might need to

review the structure of investment in the country with a view to maximising its effectiveness. Also, the government might need to institute sound project management practices in public projects across the country.

The result also shows that broad money supply had a positive and significant effect on economic growth at the 1% level in the study area. This implies that the money supplied by the CBN had been effectively deployed by firms and other economic agents into productive activities during the period. The result also reveals that inflation lagged by 1 and 2 exerted an insignificant positive and an insignificant negative effect on economic growth respectively in the country at the 5% level.

In the market capitalisation (MCAP) equation, the adjusted R-Squared stands at 0.076, which implies that 7.6% of the variation in MCAP equation in the study area is explained by the independent variables. With an F-Statistic of 1.183 which is less than the critical value [F (4, 34)] of 2.65, it shows that the overall model is not significant at the 5% level. The model's ECT(-1) of -0.2661 is negative and statistically significant at the 5% level. The significance of the ECT(-1) indicates that there is a long run causal effect in the MCAP equation. The aforementioned value of ECT(-1) indicates that a departure from long run equilibrium in the previous year converges in the current year at an adjustment speed of 26.6%. This speed of adjustment is considered low. In the turnover ratio of domestic shares (TURN) equation, the result shows that the ECT(-1) is -0.244 and it is significant at the 5% level. This indicates that the speed of adjustment is 24.4%, which is also low. With an F-Statistic of this equation at 3.208, which is greater than the critical value [F (4, 34)] of 2.65, it shows that the overall model is significant at the 5% level.

A comparative analysis of the three equations shows that the economic growth equation has an adjusted R-Squared of 0.787, while the MCAP equation and the TURN equation have adjusted R-Squared values of 0.076 and 0.497 respectively. Aside ECT(-1), five independent variables are significant in the economic growth equation whereas none is significant in the other two equations. Also, the economic growth equation generated an F-Statistic of 9.276, which is significant at the 5% level whereas the MCAP equation produced F-Statistic of 1.183, which is insignificant at the 5% level, although the TURN equation with an F-Statistic of 3.208 is significant at the 5% level. On the whole, therefore, the economic growth equation has the greatest explanatory power than the other two equations. In view of the above analysis, the economic growth equation best explains the causal relationship between capital market development and economic growth in Nigeria during the deregulation era (1986-2020).

The final objective of the study was to examine the direction of causality between capital market development and economic growth in the study area. The result of the VEC Granger causality test in Table 4 indicates a unidirectional causality running from market capitalisation to economic growth on one hand, and from turnover ratio of domestic shares to economic growth on the other, both at the 1% level. These imply that a strong unidirectional causality runs from capital market development to economic growth in Nigeria over the study period. This finding supports the Finance-led Growth Hypothesis.

Diagnostic Test Results

Table 5 shows the diagnostic tests results.

Table 5: Results of Diagnostic Tests

Test	Test Statistic	Estimate	Prob.
Normality Test	Jarque-Bera	5.922602	0.9199
VEC Residual Serial Correlation LM Tests	Rao F-Statistic	9387.501	0.1501
VEC Residual Heteroscedasticity Test	X ² -Statistic	559.5075	0.3352

Source: Authors' Computation, 2022

With a Jarque-Bera Statistic of 5.92 (p-value = 0.92 > 0.05), it shows that we cannot reject the null hypothesis that the data used in the study were obtained from a normal distribution. The VEC Residual Serial Correlation LM Test was also carried out in the study. The Rao F-Statistic of 9387.5 (p-value = 0.15 > 0.05) indicates that we cannot reject the null hypothesis that there was no autocorrelation among the variables. Furthermore, the models passed the VEC Residual Heteroscedasticity Test. With a X²-Statistic of 559.5 (p-value = 0.33 > 0.05), it shows there was no heteroscedasticity in the models. Finally, Appendix 1 shows the correlation coefficients among the variables. Since none of the correlation coefficients is greater than 0.80, it implies that there was no multicollinearity among the variables. Hence, the estimates obtained from the diagnostic tests further validate the results of the study.

V. Conclusion and Recommendations

This study examined the relationship between capital market development and economic growth in Nigeria during the deregulation era (1986 – 2020). The study found that out of the three equations estimated, the economic growth equation best explained the causal relationship between capital market development and economic growth in Nigeria. The study also established that market capitalisation lagged by 1 and 2 had a significant positive effect on economic growth in the study area during the deregulation era, whereas the turnover ratio of domestic shares lagged by 1 exerted a significant negative effect on economic growth in the study area. This suggests that the capital market was not liquid enough thereby adversely affecting its efficiency by disincorporating more companies from enlisting on the stock exchange on one hand, and reducing the propensity to invest in company shares by potential investors on the other hand. The turnover ratio of domestic shares ultimately had a dampening effect on economic growth in the country. This study concludes that capital market development matters in economic growth in the study area. Hence, the Securities and Exchange Commission and the Nigerian Stock Exchange need to pay close attention to and deal with the issue of poor liquidity and inefficiency in the capital market in order to accelerate economic growth in the country. Furthermore, the VEC Granger causality test further confirmed that capital market development Granger-causes economic growth in Nigeria over the study period. This suggests that economic growth in Nigeria over the study period was finance-led thereby supporting the Finance-led Growth Hypothesis. The lesson here is that the government and the regulatory authorities should note that capital market development can be used as a trigger for economic growth in Nigeria. The study also revealed that investment exerted an insignificant effect on economic growth in Nigeria during the period covered by the study, which implies that investment has not been effectively utilised to drive economic growth in the country.

In view of the findings from this study, it is hereby recommended as follows:

- i. The Securities and Exchange Commission and the Nigerian Stock Exchange should design a framework for improving capital market liquidity and efficiency with a view to accelerating economic growth in the country.
- ii. The Securities and Exchange Commission and the Nigerian Stock Exchange should sensitize firms and the entire public on investment opportunities available in the capital market in order to enhance patronage and market capitalisation with a view to accelerating economic growth in the country.
- iii. The Central Bank of Nigeria should review the structure of investment in the country with a view to designing and ensuring the implementation of a framework for maximising its effect on economic growth in the country.
- iv. The Federal Government of Nigeria should also institute sound project management practices with a view to minimising the rate of abandoned projects in the country.

References

- [1]. Abu, N. (2009). Does Stock Market Development Raise Economic Growth? Evidence from Nigeria. *The Review of Finance and Banking*, 1(1), 15-26.
- [2]. Adefeso, H.A., Egbetunde, T. & Alley, I. (2013). Stock Market Development and Economic Growth in Nigeria: A causal Analysis. *Arabian Journal of Business and Management Review (OMAN Chapter)*, 2(6):78-94.
- [3]. Adoms, F. U., Yua, H., Okaro, C. S., & Ogbonna, K. S. (2020). Capital Market and Economic Development: A Comparative Study of Three Sub-Saharan African Emerging Economies. *American Journal of Industrial and Business Management*, 10, 963-987.
- [4]. Alile, H. i. (1996): "The role of the Capital Market in Africa's Economic Development in S. Mensah (Ed.) (Rector Press Limited, Massachusetts), 180 - 195.
- [5]. Arestis, P., Demetriades, P.O. & Luintel, K.B. (2001). "Financial Development and Economics Growth: The Role of the Stock Markets". *Journal of Money, Credit and Banking*, 33(1): 16-41.
- [6]. Ariyo, A. & Adelegan, O. (2005). Assessing the impact of capital market reforms in Nigeria: An incremental approach. A paper presented at the 46th annual conference of the Nigeria Economic Society in Lagos in August.
- [7]. Babalola, J.A. & Adegbite, M.A. (1999). The Performance of the Nigerian Capital Market since Deregulation in 1986. *CBN Economic and Financial Review*, 39(1), 1-19.
- [8]. Briggs A.P. (2015). Capital Market and Economic Growth in Nigeria. *Research Journal of Finance and Accounting*, 6(9): 82-93.
- [9]. CBN (2007). Capital Market Presentation. Being a Paper Delivered at the FSS 2020 International Conference on Financial System Strategy Organised from 18th -20th June by the Central Bank of Nigeria. Retrieved on 19th May, 2022 from <https://www.cbn.gov.ng>.
- [10]. Christopoulos, D.R. & Tsianos, E.G. (2004) Financial Development and Economic Growth: Evidence from Panel Unit Root and Cointegration Test, *Journal of Economic Development*, Vol. 73, 55-76.
- [11]. Dermirguc-Kunt, A. & Levine, R. (1996). Stock Market Development and Financial Intermediaries: Stylized Facts. *The World Bank Economic Review*, 10(2), 241-265.
- [12]. Dickey, D.A. & Fuller, W.A. (1981). Likelihood Ratio Statistic for Autoregressive Time Series with Unit Root. *Journal of the American Statistical Association*, Vol. 74, 427-431.

- [13]. Donwa, P. & Odia, J. (2010). An Empirical Analysis of the Impact of the Nigerian Capital Market on Her Socio-economic Development. *Journal of Social Sciences*, 24(2), 135-142.
- [14]. Fase, M.M.G. & Abma, R.C.N. (2003). "Financial Environment and Economic Growth in Selected Asian Countries". *Journal of Asian Economies*, 14: 11-21.
- [15]. Hermes, N. & R. Lensink (2000), 'Financial System Development in Transition Economies', *Journal of Banking and Finance*, 24 (4): 507-524.
- [16]. Iyola, M.A. (2004) *Macroeconomics: Theory and Policy*. Revised edition. Mindex Publishing.
- [17]. Jhingan, M.L. (1997). *The Economics of Development and Planning* Delhi: Vrinda Publications (P) Delhi, India.
- [18]. Johansen, S. (1988). Statistical Analysis of Cointegration Vector. *Journal of Economic Dynamics and Control*, Vol. 12, 231-254.
- [19]. Khan, M.A., Qayyum, A. & Sheikh, S.A. (2003). "Financial Development and Economic Growth: The Case of Pakistan". *Pakistan Development Review*, 44(4): 819-837.
- [20]. Levine, R. (1991). Stock Markets, Growth and Tax Policy. *Journal of Finance*, XLVI, 1445-1465.
- [21]. Levine, R. (1996). Financial Development and Economic Growth. Views and Agenda. *Policy Research Working Paper* 1678. World Bank Policy Research Department Finance and Private Sector Development Division.
- [22]. Levine, R. & Zervos, S. (1996). Stock Market Development and Long Run Growth. *The World Bank Economic Review*, 10(3), 323-339.
- [23]. Mehra, P.Y. (1994). Wage Growth and the Inflation Process: An Empirical Approach in B.B. Rao 9ed.), *Cointegration for the Applied Economist*, pp. 147-159, St. Martin's Press, New York.
- [24]. Nathaniel, C.N., Udo, G.C. & Kanu, S.I. (2021). Effects of Capital Market Development on the Economic Growth of Nigeria. *International Journal of Innovation and Economic Development*, 7(2): 30-46.
- [25]. Nwaolisa, E.F., Kasie, E.G., Egbunike, C.F. (2013). The Impact of Capital Market on the Growth of the Nigerian Economy under Democratic Rule. *Arabian Journal of Business and Management Review (OMAN Chapter)*, 3(2): 53-62.
- [26]. Nyong, M. O. (1997). Capital Market Development and Long run Economic Growth: Theory, Evidence and Analysis. *First Bank Review*, 4:13-38.
- [27]. Olawoye, L. (2011). Impact of capital market growth in Nigeria. *Lakanolawoye.blogspot.com*, 2(1), 23-33.
- [28]. Osinubi, T.S and Amaghionyeodiwe, L.A (2003) Stock Market Development and Long run growth in Nigeria. *Journal of African Business*, 4(3), 103-129.
- [29]. Soyode, A. (1990). The role of capital market in economic development in Nigeria. *Security Market Journal*, 6(2).
- [30]. Todaro, M.P. and Smith, S.C. (2011). *Economic Development*. England: Addison-Wesley, 11th Edition
- [31]. Ugbogbo, S.N. & Aisien, L.N. (2019). Capital Market Development and Economic Growth in Nigeria. *International Journal of Development and Management Review*, 14(1), 14-24.

Appendix 1: Correlation Matrix of the Variables

	D(GRGDP)	D(MCAP)	D(TURN)	D(GCAF)	D(M2)	D(INF)
D(GRGDP)	1	-0.09442	0.476953	-0.23064	-0.09863	-0.16022
D(MCAP)	-0.094424	1	0.299696	-0.37651	0.079859	0.50732
D(TURN)	0.4769534	0.299696	1	-0.18162	0.517449	-0.39447
D(GCAF)	-0.230643	-0.37651	-0.18162	1	-0.12617	-0.28493
D(M2)	-0.098629	0.079859	0.517449	-0.12617	1	-0.32063
D(INF)	-0.160224	0.50732	-0.39447	-0.28493	-0.32063	1

Source: Authors' Computation, 2022

Abayomi, M.A. & Egbetunde, T. (2022). Capital Market Development and Economic Growth in Nigeria's Post-Deregulation Era: Evidence from Vector Error Correction Model." *IOSR Journal of Economics and Finance (IOSR-JEF)*, 13(03), Ser. v: 41-52.