



Gusau Journal of Accounting and Finance (GUJAF)

Vol. 4 Issue 2, October, 2023 ISSN: 2756-665X

A Publication of
Department of Accounting and Finance,
Faculty of Management and Social Sciences,
Federal University Gusau, Zamfara State -Nigeria

© Department of Accounting and Finance, 2023

Vol. 4 Issue 2
October, 2023
ISSN: 2756-665X

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Published and printed by:
Ahmadu Bello University Press Limited, Zaria
Kaduna State, Nigeria.
Tel: 08065949711, 069-879121
e-mail: abupress2013@gmail.com
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Website: www.abupress.com.ng

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RELATIVE EFFICACY OF THE CAPITAL MARKET OVER THE MONEY MARKET IN A GROWTH-FINANCING ECONOMY

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Abstract

This study investigates if the Nigerian capital market is more effective in impacting economic growth compared with the money market. The paper uses a growth model that depend on usual labour and capital, as well as incorporates the money and capital market variables to produce outputs. The study uses data from the Central Bank of Nigerian and Securities and Exchange Commission Bulletins between from 1981 and 2020. The paper finds the existence of a long-run link amidst the money market, capital market and growth. In the short- and long run, the capital market (new issue) shows positive and significant effects on growth, whilst the money market indicator (treasury bills) has a negative and significant effects. The growth elasticity with respect to the new issue of 0.27% is highly significant at 1%. The growth elasticity with respect to the traded shares of 0.06% is significant at 5%. The growth elasticity with respect to treasury bill of 0.08% is only significant at 10%. The positive impact of the capital market was found to outweigh that of money market. This supports the efficiency of capital market over the money market for growth financing. The paper recommends that the government should ensure it extends the on-going market reforms to increase the sophistication of the financial market and make it more globally competitive.

Keywords: Capital market financing, Money market financing, Economic growth, Cointegration.

1. Introduction

The immediate aim of this paper is to demonstrate whether the effect of the capital markets more growth enhancing relative to the money market. For decades, economists have attempted to explain what factors accounts for growth. They offer different theories that involve factors such as macroeconomic, human capital development and financial markets as main determinants of economic growth. The efficient market hypothesis, from Fama (1970), which has continuously been tested for the connection between the financial markets and economic growth. Some authors suppose that the financial market drives growth by promoting efficiency in the mobilization of savings and investments such that the flow of fund aids the formation and accumulation of capital needed to produce goods (Haruna, 2019).

A thriving financial market support private sector development by increasing the volume of investment volume and output and lead to stronger growth process. The availability of fund will motivate productivity and in turn drives economic growth (Pan & Mishra, 2018). The markets encourage growth by diversifying and

facilitating access to finance by firms (Bayar et al., 2014). The size of the financial markets, in terms of higher trading volumes, may have impact on the outcomes. Odunga and Ayoyi (2016) observe that more developed financial markets generate more volume and liquidity, and these may translate into larger capital accumulation, production, consumption and, eventually, economic growth. While other categories of the financial markets are more inclined to focus on trading of financial securities or assets, the money (capital) market facilitates the transmission of short (long) term financing. The transmission of funds from surplus to deficit areas of an economy is essential to stimulate growth in the developing economies (Stosic-Mihajlovic, 2016).

In Nigeria, with a financial sector that is small, dualistic, underdeveloped, the capital and money markets are shallow and characterized by spatial fragmentation and market segmentation. Records show that new issues of debt and equity stocks in the capital market rose from ₦0.245 billion in 1980 to ₦1508.51 billion in 2012. This performance was far below that of the banking sector who's lending to the private sector rose from ₦6.349 billion in 1980 to ₦7782.6 billion in 2010. The stock market experiences a bull run with all share index steadily rising in billion, from USD20.7 in 2011 to USD51.2 in 2022. Likewise, the total market capitalization remarkable increased from USD53.9 to USD62.2 billion during same periods. The considerable growth achieved follows series of economic reform in the financial sectors, including privatization, banking and insurance consolidation, mortgages, which creating relative firmness and market assurance, and increased shareholders consciousness.

Previous investigations explore the pivotal role financial market plays in stimulating growth in Nigeria. Ubesie et al. (2020) show that capital markets significantly and positively explain growth, while Araoye et al. (2018) show stock market development insignificantly impact economic growth in short run, but significantly influence it in the long run. For money market, Okikiola (2021) finds a significant and negative influence of money market on growth. Akpotor (2021) reveals that money market instruments as commercial papers, commercial bank deposit, credit to the private sector, certificate of deposit, and treasury bills had negative but insignificant effects on growth. Etale and Ayunku (2017) finds strong evidence that commercial papers and treasury bills have positive and significant influence on GDP, while banker acceptance has positive but insignificant influence on GDP.

These studies made attempts but separately examined the impact of the markets on economic growth. The question of whether the capital market is more effective than the money market in financing growth in Nigeria remains unanswered. There is the need to demonstrate how both markets affect growth under a single framework since both markets are found to interact. Okoyan and Eze (2021) observe that traded money market instruments exert significant effect on the capital market activities. Ogbuji et al. (2021) confirm the existence of a stable long-run connection between the capital market, money market and economic growth but not able to demonstrate the relative importance of each financial market on growth. This paper aims to verify how each market contributes to the growth. The paper examines the relative importance by showing the effect of each market on growth using a multivariate equation.

The paper finds the existence of a long-run connection for the money market, capital market and economic growth. In both short- and long run, the money market indicators have a negative and significant effects on growth, while capital market indicators show positive and significant effects on growth. The growth elasticity with respect to the new issue of 0.27% is highly significant at 1%. The growth elasticity with respect to the traded shares of 0.06% is significant at 5%. The growth elasticity with respect to treasury bill of 0.08% is only significant at 10%. The significant positive impact of capital market-financing was found to outweigh that of money market-financing. The paper recommends, amongst others, that the government should ensure it extends the on-going market reforms to increase the sophistication of the financial market. Following the introduction, section 2 reviews the literature, including comparing the capital market development in Nigeria with the experience in developed and emerging peers. The methodology and empirical analysis are presented in section 3 and 4, respectively, while section 5 presents the conclusions.

2. Materials and Theoretical Reviews

The financial markets are markets for the exchange of financial securities (Haruna, 2019). The market involves complexities of instruments, procedures, and institutions through which economic units with surpluses and deficit economic units are brought together for transaction of traded assets. Such mobilization of funds may go through either the capital or money markets. The financial markets are categorized according to the types of assets traded or based on the duration for the financing option offered by the traded instruments. For instance, while money markets offer short term investment or debt financing, the capital market provide long-term funds. The traded securities can be transacted on spot or future exchange.

The futures markets provide consistent forward contracts and options for the trading of financial products associated with money or capital markets, at some future date. Other type of financial markets includes the foreign exchange markets that trades foreign exchange (countries' currencies); the derivatives markets, which facilitate the management of financial risk; commodity markets which offers instruments and assets for the trading of commodities, like natural resources, and agricultural products and lastly, the insurance markets that mobilises the redistribution of various risks.

The capital market provides platform for participants such as individuals, corporations, industrialists, and government with excess funds to lend as long-term credits. The market provides fixed capital for long-term productive and secure investments. It motivates capital creation by ensuring that merchants and purchasers deal in financial securities as debentures, bonds, stocks. Capital markets assist flow of excess funds from savers (surplus owners) to deficit economic units, firms or organizations, which then utilise them for expansion of production thus, leading to socio-economic improvement. The capital market is made up of the primary and secondary markets. The primary markets are concerned with the trading of new issues of financial assets or securities, whilst the secondary markets are the markets in which exchange of existing issued securities are made. The accessibility of the secondary, for instance is a significant feature of the capital market, since investors are much willing to employing funds in so primary market if their properties are easily exchangeable into cash.

The money market offers participants, including individual investors, corporations, and government, with surplus funds to lend as credit in short-term through varieties of financial instruments made available to lenders and borrowers. The corporate bodies and government that require funds creates short-term financial instruments or securities and use to source such funds (Okoyan & Peter, 2021). Since the funds cater for short-term credit shortages, thus plays the role of liquidity adjustment for investment or expansion purposes the short-term funds are channeled through the issuance of treasury bills by government, commercial papers by corporate bodies. The market several functions for the government, including been medium for funding infrastructural development and coordination of monetary policies, as such helps in improving economic conditions. Because both markets financing coincide with investment and growth cycles, they play critical roles for growth (Ogbuji et al., 2021; Ying et al., 2019).

The arguments on finance-growth relationship remain nonstop for empirical investigations. For the capital markets, Alam and Hussein (2019) documented that the capital market has positive significant influence on growth in Oman. Sabariah and Norhafiza (2016) confirmed cointegration amongst real GDP, stock market and debt market and that when compared with the debt market, the stock market has positive and greater effect on growth in Malaysia. Khetsi and Mongale (2015) found evidence of a direct positive effect between capital market and growth in South African data from 1971 to 2013. Some others reveal negative or insignificant relationships (Pan & Mishra, 2018). Pan and Mishra (2018) used structural breaks and ARDL to analyses interplay between the stock market and real growth in China, during the financial crisis from 2007 to 2012. The result suggests that the Shanghai A share market has only a long-run negative and significant association with the real sector.

There is also evidence on mixed effects of capital market variables. Algaeed (2021) revealed the number of shares traded and share price index exert positive effect, while liquidity and market capitalization exert negative effects on growth in Saudi Arabia for the period 1985 to 2018. Tan and Mohamad Shafi (2021) explored capital market effects using the sukuk (Islamic investment certificates) on economic growth in Malaysia during 1998 to 2018. According to the ARDL bound test, there exists equilibrium link between capital market and growth. The stock market, regardless of used indicator, shows a positive effect on growth, although the effect of both conventional bonds and sukuk are clearly insignificant. Coşkun et al. (2017) establish cointegrating relationship between capital market and economic growth in Turkey, based on monthly series, from 2006:M1 and 2016:M6. Although the evidence establishes unidirectional causality from capital market to growth, it discloses mixed effects of capital market on growth, such that the government bond market is negatively associated with growth, whilst the aggregated index of other sub-components positively influence growth.

Bello et al. (2022), Torbira and Joshua (2017) and Levine and Zervos (1996) explored the relationship for cross-country evidence. Torbira and Joshua (2017) assessed how capital market influences economic growth of MINT's countries and finds that only Indonesia reflects a positive link between capital market and growth for the period 2000 to 2012. The authors discloses that the number of traded assets is the most influencing indicators of capital market that affects growth. Bello et al. (2022) investigate selected developing countries during 2012 to 2022. Using descriptive synthesis, the authors reveal that about 30% of evidence on the capital market-growth relations in developing nations are inconsistent with predictive

expectation. Levine and Zervos (1996) construct a conglomerated index of stock market development for 41 countries and find evidence of a strong correlation between overall stock market and long-run growth during 1976 to 1993.

According to prior evidence for Nigeria, Ubesie et al. (2020) found that except labour force, all capital market variables significantly and positively explain growth. Akintola and Cole (2020) find that that capital market variables - market capitalization, value of transactions, number of deals, number of listing - have significant impact on economic growth during 1984 to 2015. Briggs (2015) identified cointegration between capital market and growth and that capital market, via the new issues and market capitalization, have significant positive effect on growth from 1981 to 2011. Adam and Sanni (2005) examined existence of a two-way causality between growth and market turnover, but a unidirectional causality between GDP growth and market capitalization.

Udo et al. (2021) explore the ARDL bounds cointegration and associated short and long run models during 1983–2016 and find that the capital market indicators (number of listed securities and share index) exert significant relationship on growth both in the short and long runs. Adesina-Uthman (2020) use the Autoregressive Distributive lag on series from 1981 to 2016 and find that accumulated effect of stock values and market capitalization inversely associate with growth. Oluwatosin et al. (2013) investigate capital market impact on economic growth between 1999 and 2012, and the result shows that capital market has no significant impact on growth during the periods.

For the impact of money market on growth, some reviewed studies identify positive impact growth (Ehigiamusoe, 2013), while others observed negative and/or insignificant effects (Okikiola, 2021; Ibrahim et al., 2013). Okikiola (2021) finds a significant and negative influence of money market on economic growth, showing that as the money market dynamics rise by 1%, GDP growth decline by 4.5%. The saving deposit rate employed as a proxy for saving activities has a significant positive impact on growth and shows that economic growth increases by 3.8% as deposit growth rise by 1%. Akpotor (2021) use the ARDL and VECM techniques to analyse the effect of money market instruments on economic growth in Nigeria during 1986 to 2019 and finds that money market instrument as commercial papers, commercial bank deposit, credit to the private sector, certificate of deposit, and treasury bills had negative but insignificant effects on economic growth.

Uruakpa (2019) examined how three money market measures (treasury bill rate, treasury bill issued and money market value) affect growth in Nigeria during 1990–2017 and find that mixed outcomes – the treasury bill rate has negative and significant effect, the money market value has positive and significant effects, treasury bill outstanding has positive but insignificant. Furthermore, the variance decomposition identities that the GDP has a decreasing variance with money market value and treasury bill rate but an increasing variance with treasury bill issued (outstanding). Akarara and Eniekezimene (2018) found no convergence between money markets instruments and growth. Also, both certificate of deposit and commercial paper have inverse relationship with economic growth in the long run, while treasury certificate has a positive and significant (insignificant) effect on GDP in the short (long) run. Etale and Ayunku (2017) found strong evidence that commercial papers and treasury bills have positive and significant impact on GDP, while banker acceptance has insignificant influence on GDP in the period 1989-2014. Causality test identifies no evidence of directional causality between treasury bills, commercial paper, and GDP, but a bi-directional evidence run from commercial papers to treasury bills and banker acceptance at 5% significance.

Eze and Mansi (2017) examined a causality analysis of money market and economic growth in Nigeria during 1990 to 2014 using. The parsimonious results shows that money market instruments, including certificates of deposits and bankers' acceptances have significant impact on growth. Pavtar (2016) used ex-post-facto design and show that commercial papers, treasury certificates, and treasury bills are not significant determinant of GDP, while certificate of deposits significantly impact GDP of Nigeria from 1985 to 2014. Igbinosa and Aigbovo (2015) examined effects of commercial papers, treasury bills and bankers' acceptances as measures of money market on the real GDP per capita from 1986 to 2013. The authors find that treasury bills and commercial papers have significant impact on growth only in the long run, but banker acceptances significantly affect growth in both the short run and long-run. Ibrahim et al. (2013) document a significant positive relationship between growth and lending activities, but deposit had an insignificant positive relationship with GDP.

3. Methods and Models

The traditional theories, including the classicalists, neo-classicalists' and new growth theories emphasize on the role of savings, capital, labour, and investment for growth. Amongst these, the commonly extended for empirical research is the Solow-Swan (exogenous growth) model due to its flexibility for improvement to include residuals factors. The model identifies capital stock (K), labour (L), total

factor productivity (A) and residuals (other factors) as sources of growth in output (Y). The model makes assumption such as the existence of constant returns to scale, substitutability of capital and labour, as well as the existence of diminishing marginal productivity. Equation (1) is the production function:

$$Y_t = F(K_t, A_t L_t) \quad (1)$$

$$\dot{Y}_t = \dot{K}_t(\partial Y/\partial K) + \dot{L}_t(\partial Y/\partial L) + \dot{A}_t(\partial Y/\partial A) \quad (2)$$

$$\frac{\dot{Y}_t}{Y_t} = \left(F_A \frac{A_t}{Y_t}\right) * \frac{\dot{A}}{A_t} + \left(F_K \frac{K_t}{Y_t}\right) * \frac{\dot{K}_t}{K_t} + \left(F_L \frac{L_t}{Y_t}\right) * \frac{\dot{L}}{L_t} \quad (3)$$

$$\frac{\dot{Y}_t}{Y_t} = \frac{\dot{A}_t}{A_t} + \left(F_K \frac{K_t}{Y_t}\right) * \frac{\dot{K}_t}{K_t} + \left(F_L \frac{L_t}{Y_t}\right) * \frac{\dot{L}_t}{L_t} \quad (4)$$

(1) is aggregate-type, continuous and homogenous of degree one function. Since (1) is differentiable and subject to Hicks-neutral's technical change, further assumptions complete the derivations for model's critical equations (2)–(4). From (1), assume $\partial Y/\partial t = \dot{Y}_t$, $\partial K/\partial t = \dot{K}_t$, $\partial L/\partial t = \dot{L}_t$ and $\partial A/\partial t = \dot{A}_t$, then (2) is derived. From (2), replace $K_t K_t^{-1} = L_t L_t^{-1} = A_t A_t^{-1} = 1$ and $F_K = \partial Y/\partial K$, $F_L = \partial Y/\partial L$, $F_A = \partial Y/\partial A$, then (3) and (4) are derived. \dot{Y}_t/Y_t , \dot{K}_t/K_t , \dot{L}_t/L_t and \dot{A}_t/A_t , respectively, are rate of growth of output growth, capital stock, labour force and technology, and F_L and F_K are the marginal products of labour and capital.

Recent models, including the finance-led growth models that emphasis on the critical role of financial markets in promoting growth. The argument behind the hypothesis is that although labour and capital are known to be critical determinants of national output, these resources can only be deployed in the production process when there are effective financing mechanisms. Thus, they hinge on the argument that financing is a necessary condition for growth, and thus, extend the derivations to include financial variables.

The estimation tests the finance-led growth models based on utilised information for Nigerian economy to confirm the relative importance of the capital and money markets' on growth. Like extant research, the economic growth was proxy using the real GDP (Araoye et al., 2018). Unlike previous studies that focus on the impact of the overall market based on market capitalisation (Araoye et al., 2018), the paper aimed to consider how the fluctuations in the traded instruments in this market affect growth.

For the aim, the paper uses two variables to capture the capital market - the new issues to GFCF to capture the total fixed investment financed by the new issues in the capital market, as well as the value of traded shares in the capital market, which measures indication the capital market liquidity. Moreso, the money market is proxy using the treasure bill rates. According to previous studies, the paper involves the saving deposit rate to indicate saving activities. The paper incorporates the capital and money markets' variables on the growth model and present estimates of the error correction model (ECM) and long run model for policy examination.

Equation (5) and (6) show the theoretical and specific models:

$$RGDP_t = f(GFCF_t, LITR_t, NIGF_t, VTS_t, TBR_t, SADR_t) \quad (5)$$

$$RGDP_t = \alpha_0 + \alpha_1 GFCF_t + \alpha_2 LITR_t + \alpha_3 NIGF_t + \alpha_4 VTS_t + \alpha_5 TBR_t + \alpha_6 SADR_t + \mu_t \quad (6)$$

The variables are defined in Table 1, and μ_t defines the model's random (white) disturbances based on an initial static (OLS)'s estimation for (6).

Table 1: Variable definitions

Variable	Definition	Indicate
$RGDP_t$	Real GDP.	Output
$GFCF_t$	Gross fixed capital formation.	Capital
$LITR_t$	Literacy rate.	Labour
$NIGF_t$	Ratio of capital market's new issues to GFCF.	Capital market
VTS_t	Capital market value of traded shares.	Capital market
TBR_t	Average three-months treasury bill rate.	Money market
$SADR_t$	Banker Saving deposit rate indicates saving activities.	Liquidity

Source: Author (2023)

Before the estimation, all variables (dependent and independent) represented as z_t , in (6): ($RGDP_t, GFCF_t, LITR_t, NIGF_t, VTS_t, TBR_t, SADR_t$), are assessed for stationarity. The ADF test confirms the stochastic properties of the data generating process for each considered variable. The ADF, based on the non-stationarity null, tests unit root of the differenced form of the variable, Δz_t , assuming the variable is drifted and trended. The procedure is based on the significance of coefficient, ϕ_1 , of the lag of z_t .

$$\Delta z_t = \phi_0 + \phi_1 z_{t-1} + \phi_2 t + \sum_{i=1}^m \phi_1 \Delta z_{t-i} + \Omega_t \quad (7)$$

In (7), ϕ_0 (t) is the drift (trend) component and Ω_t is the residual of (7).

Afterward, the paper consider the cointegration test, which examines whether the linear combination of these variables produces a stationary series irrespective of their stationarity state. The outcome ascertains whether or not a long-run connection exists among the variables. The Engle and Granger (1987)'s cointegration approach is appropriate to reflect the likely equilibrium (long-run) links between $RGDP_t$ and attendant variables for the multivariate but single equation model employed in the study. The method follows the ADF procedure, based on the stationarity test for the generated residuals (μ_t) of the static long run regression from $RGDP_t$ of (6). The residual (8) and the ADF model for residual (9) are defined:

$$\mu_t = RGDP_t - RGDP_t^e \quad (8)$$

$$\Delta\mu_t = \phi_0 + \phi_1\mu_{t-i} + \phi_2t + \sum_{i=1}^m \phi_1\Delta\mu_{t-i} + \Omega_t \quad (9)$$

Where $RGDP_t^e$ is the estimated $RGDP_t$, from the static regression. The null is non-stationarity of μ_t or the differenced form $\Delta\mu_t$. If the estimated residual (μ_t) is stationary, then ϕ_1 in (9) is significant, the variables in (6) are cointegrated, then we estimate the error correction model (i.e., the estimate the cointegrating equation) and the long run estimates. The cointegration approach mitigates certain short comings, including likely spurious regression result.

The ECM uses the residuals in the long run static regression of (6) to reparametrize a short run specification. Engle and Granger (1987) show, based on the Granger representation theorem, that the cointegration of nonstationary variables corresponds to the cointegrating equation and error-correction model. The model integrates the short run dynamics with the long run equilibrium without losing the information. To obtain the cointegrating regression (ECM), the OLS is transformed to include the error correction mechanism, ecm_t . Equation 10 (11 depicts the general (specific) specification for the study.

$$\Delta y_t = \beta + \sum_{i=1}^m \beta_i \Delta y_{t-i} + \sum_{j=0}^p \varphi_j x_{k,t-i} + \sum_{j=0}^p \gamma_{j,i} \Delta x_{j,t-i} - \pi ECM_{t-1} + \varepsilon_t \quad (10)$$

$$\begin{aligned} \Delta RGDP_t = & \beta + \sum_{i=1}^m \beta_i \Delta RGDP_{t-i} + \sum_{i=0}^n \varphi_{1,i} GFCF_{t-i} + \sum_{i=0}^n \varphi_{2,i} LITR_{t-i} \\ & + \sum_{i=0}^n \varphi_{3,i} NIGF_{2t-i} + \sum_{i=0}^n \varphi_{4,i} VTS_{t-i} + \sum_{i=0}^n \varphi_{5,i} TBR_{2t-i} \\ & + \sum_{i=0}^n \varphi_{6,i} SADR_{t-i} + \sum_{i=0}^n \gamma_{1,i} \Delta GFCF_{t-i} + \sum_{i=0}^n \gamma_{2,i} \Delta LITR_{t-i} \\ & + \sum_{i=0}^n \gamma_{3,i} \Delta NIGF_{2t-i} + \sum_{i=0}^n \gamma_{4,i} \Delta VTS_{t-i} + \sum_{i=0}^n \gamma_{5,i} \Delta TBR_{2t-i} \\ & + \sum_{i=0}^n \gamma_{6,i} \Delta SADR_{t-i} + \pi ECM_{t-1} + \varepsilon_t \end{aligned} \quad (11)$$

Where $\pi < 0$, and is the estimate of the lag of the error correction term. In (10), the part $(\beta + \sum_{i=1}^m \beta_i \Delta y_{t-i} + \sum_{j=0}^p \gamma_{j,i} \Delta x_{j,t-i} - \pi ECM_{t-1})$ shows the cointegrating equation and error-correction model, and depict the short run dynamics. The apriori expectation, according to establishing theories, is that $\beta; \varphi_{j,i}; \gamma_{ki} > 0$, supposing the slope coefficients of explanatory variables $\varphi_{j,i} (i = j \text{ to } 6)$ and the constant term (β) would be expectedly positively signed.

The cointegrating model (10 and 11) combines estimates for both short- and long runs. For instance, the model (10) expresses the current change in the endogenous variable, Δy_t as a linear function of the current change in the exogenous variable Δx_t and a proportion of the previous error from the long-run equilibrium, ECM_{t-1} . The β_j 's denote the long-run coefficients which represent the equilibrium effects of the explanatory variables, x_t on the change in the dependent variable, Δy_t . The $\gamma_{j,i}$'s are the short-run coefficients which account for fluctuations that are not determined by deviations from the long-run equilibrium.

The ECM is obtained and the various tests are evaluated. The (sign and) absolute value of μ – the coefficient of one lagged ECM – indicates the speed of adjustment. The t-statistic test on coefficients of the short run, $\gamma_{j,i}$ shows the impact of each variable on the dependent variable in the short run. But the t-test on a properly (negative) signed μ indicates the existence of a long run equilibrium. The existence of long-run or cointegration relationship between the variables indicates Granger-causality in at least one direction. The ECM equation can be adopted to test for existence of the long run (Granger type) and short run causality. Importantly, the F-test on the joint significance of independent variables of the cointegrating estimation shows the existence of short-run causal effect while a significance t-statistic test on the coefficient of the lagged error-correction term, shows the existence long-run causal effect. The cointegration and ECM results can stand the test of time in the face of increasing dynamic economic environment.

This study adopts annual data from CBN, and SEC, and World Bank during 1980 to 2021. The periods are selected due to availability of complete data for the considered series. To ensure the estimators are less likely sensitive to individual measurement unit, the variables are scaled using the log-normalized procedure (Mills, 2019, Gbadebo 2023). The log-scaling often smoothen spikes relative to the observed series and minimizes possible inherent heteroscedasticity due to outliers. The estimation replicates a double-log process, thus, the coefficients reflected are growth elasticities. Lastly, because most variables are usually nonstationary, it is

required to complete some diagnostics check, including the heteroscedasticity, serial correlation, and normality tests.

4. Results and Implications

Table 2 and 3 documents the outcomes of the pre-test evaluations of the log normalised data for stationarity and cointegration confirmations, respectively. The unit roots are completed for the level and differenced forms for each log transform series for the sample periods. The evidence supports that all the series are trended upward and nonstationary. The ADF implemented identifies each series as non-stationary in $I(0)$ (level form) but stationary in $I(1)$ (first differenced form), thus suggest shows they are differenced stationary and integrated at 5% critical value for the ADF test with included intercept and trends.

Table 2: Unit root tests

Variables	Level ^a	Cr.V.	$\Delta Diff$ ^a	Cr.V.	Order	Remarks
$RGDP_t$	2.2189	-2.9604	-32.544**	-2.9604	I(1)	Integrated
$GFCF_t$	-1.8105	-2.9571	-6.7085**	-2.9604	I(1)	Integrated
$LITR_t$	0.6899	-2.9571	-5.9327**	-2.9604	I(1)	Integrated
$NIGF_t$	-1.1437	-2.9571	-5.0843**	-2.9604	I(1)	Integrated
VTS_t	-0.9784	-2.9639	-5.7995**	-2.9604	I(1)	Integrated
TBR_t	0.0701	-2.9571	-3.1349*	-2.9604	I(1)	Integrated
$SADR_t$	-1.1283	-2.9571	-7.6739**	-2.9604	I(1)	Integrated

Note:Cr.V. (reported critical value at 5% levels); Level/ $\Delta Diff$ (ADF test statistic at level/first difference form; Order is the order of integration.^aThe test implemented for the ADF models includes drift, and trend components.

*,** supposes the test is significant/highly significant at 5%/1% level.

Source: Author/R-Output (2023)

The study tests for the cointegration between real GDP and the other variables. The test provides valuable information on the existence of a long run relationship between the model's variables. In doing this, the paper established optimal lag for the parameterization of the cointegration parsimony. Three considered criteria – Akaike information criterion (AIC), Schwarz Bayesian Criterion (SBC), Hanman-Quim Criterion (HQC) – unanimously support lag 2 to be maintained for the residual unit (cointegration) test. The cointegration test outcome reveal supposes that the residuals are $I(0)$ and stationary at levels since ADF statistic (-8.7196) is greater than the 95% critical value (-3.998). Therefore, economic growth $RGDP_t$ is cointegrated with the associated regressor $GFCF_t, LITR_t, NIGF_t, VTS_t, TBR_t$ and

$SADR_t$. This confirms the existence of a stable long-run connection amidst the money market, capital market and growth. This corresponds with prior research that confirms cointegration for capital market, money market and economic growth, based on alternative methods. Based on the Johanson method Sabariah and Norhafiza (2016) confirm cointegration amongst in MINT countries, Queen (2015) shows cointegration for South Africa, and Coşkun et al. (2017) for Turkey. Based on the ARDL bound test, Udo et al. (2021) shows long run evidence for Nigeria from 1983 to 2016. Since cointegration exist, the convergence property is satisfied, and thus, the error correction model is presented to show the long-run and short-run dynamics.

Table 3: Cointegration test

$ADF[Level]^a$	$Cr.V.$	Lag	Criteria			Remark
			AIC	SBC	HQC	
-8.7196	-2.998	3	294.28	294.13	294.05	Stationary

Note: Lag selection criterion for the test includes: Akaike information criterion (AIC), schwarz Bayesian Criterion (SBC) and the Hanman Quim Criterion (HQC); Cr.V (reported critical value at 5% levels); Lag (Lag length)

Source: Author/R-Output (2023)

Table 3 and 4, respectively, report the outcomes for the ECM and long run regressions that depict estimates for the multivariate equation employed to make inference for on the relative relevance of financial market instruments on economic growth. Only the parsimonious estimation that excludes likely redundancy are reported. The Gross fixed capital formation and Literacy rate, respectively representing the capital (K) and Labour (L) in the output model, shows positive impact on the real GDP deviation as expected. However, the positive influence of the literacy ratio is insignificant to drive the growth, like finding from Ubesie et al. (2020) that the labour force has no significant impact on growth in Nigeria. The insignificance may be attributed to low labour absorption and capacity underutilization in the periods.

The capital market variables – the new issues to fixed investment ($\Delta NIGF_t$) and value of traded shares (ΔVTS_t) - exert positive and significant impact on the GDP, and by implication economic growth. The multivariate equation supposes that growth elasticity with respect to the new issue is 0.27% in the current period and is highly significant at 1% with p-value of 0.0003. The growth elasticity with respect to the traded shares is 0.06% in the current period and is significant at 5% with p-

value of 0.0122. In the first lag period, the deviation in traded shares positively affect growth with an elasticity of 0.19% which was insignificant.

For the money market, the short run evidence recovers that growth sensitivity to treasury bill rate in the current period (ΔTBR_t) and first lag period (ΔTBR_{t-1}) are significantly negative and insignificantly positive, respectively. This supposes that the money market via exerts negative influence on growth with an elasticity of 0.08%, which was significant at 10%. This is consistent with prior studies, for instance, Okikiola (2021) finds a negative and significant impact of treasury bills on GDP growth. In addition, the saving deposit rate – which measure of liquidity – exerts negative influence on the deviation in the GDP, with an elasticity of 0.26%, which was significant at 10%, with a p-value of 0.0914. This could be attributed to the fact that investment productivity, for which the saving is applied, may be abysmally low as high-capacity under-utilization. Policy efforts that would reverse the low productivity of investments including the mitigation infrastructural deficit would enhance growth.

The evidence supposes that the capital market has greater impact on the GDP than the money market. Aside the capital market has positive impact on growth, the evidence identifies that it significance on real GDP is higher relative to the significance of money market variable. The impact of the deviations in the traded shares (ΔVTS_t) and new issues as a percentage of investment ($\Delta NIGF_t$) on growth are more significant than that of the deviations in current treasury bills (ΔTBR_t) and saving deposit ($\Delta SADR_t$), even though the banking sector dominates the intermediation process in Nigeria. This lends credence to our earlier argument that capital market financing supports more growth than money market financing. This suggests that in line with global trends, policy efforts to promote capital market development and reverse the dominance of the banking system would be growth-enhancing.

The significance of the variables is an indication that the short-run dynamics are sustained to the cointegrating equation and that the long-run estimates would be stable. The estimation identifies that the equilibrium and convergence cointegrating relationship has a reversal perturbation effect. Excessive deviations in real GDP beyond the convergence limit in prior period are adjusted by the error correction to return the ensure the model equilibrium. This infers that any shocks to the equilibrium due to perturbations of the variables would be minimized and corrected. The coefficient of ECM_{t-1} supposes that any 1% deviation would be minimized and corrected by 16.69% in the next year. With anadjusted R-squared

(\bar{R}^2) of 0.968, the short run model is well fit, suggesting 96.8% of the systematic variation in real GDP is explained by capital, labour, money market and capital markets. The F-statistic of 216 is highly significant, suggesting joint effects on the model variables in affecting growth in the short run.

Table 4: Parsimonious ECM the estimates

Regressors	Coeff	s.e.	t-stat.[coeff]	p-value
<i>INPT</i>	9.2356*	0.6153	15.009	0.0000
$\Delta GFCF_t$	0.0834*	0.2215	3.7618	0.0063
$\Delta LITR_t$	0.1738	0.1266	1.3624	0.2851
$\Delta NIGF_t$	0.2743*	0.0459	5.1952	0.0003
ΔVTS_t	0.0628**	0.0213	2.7304	0.0122
ΔVTS_{t-1}	0.1862	0.1613	1.1554	0.3919
ΔTBR_t	-0.0826***	0.0397	-2.1887	0.0645
ΔTBR_{t-1}	0.1198	0.0838	1.4295	0.2038
$\Delta SADR_t$	-0.2583***	0.0142	-1.9948	0.0914
ECM_{t-1}	-0.1669*	0.0381	-4.3921	0.0006
\bar{R}^2	0.9681			
F-statistics	216.58			
p-value (F)	0.0000			

Note: s.e. – Standard error; t-stat.[coeff] – t statistics of coefficient (coeff); p-value – probability value of t-statistics.

*, **, *** indicates significance at 1%, 5% or 10%.

Source: Author/R-Output (2023)

Consistent with the short run coefficient and previous studies, the convergence growth model indicates that gross fixed capital formation ($GFCF_t$), ratio of new issues to national investment ($NIGF_t$) and treasury bills (TBR_t) significantly support growth in the long run, whilst the literacy rate ($LITR_t$) insignificant drives growth. The value of traded shares (VTS_t) supposes to cause insignificant decline in growth, whereas the saving deposit rate ($SADR_t$) causes significant decline in the real GDP growth in the long run. Regarding the relative relevance of the financial market instrument in the long run, the evidence shows that both money market instruments significantly support growth, whereas one of the capital market instruments - the new equity new issues - significantly impact growth. The magnitudes of the effects of the money market instrument appears higher relative to the capital market. The long run estimate identifies that, ceteris paribus, a 1% increase in new issues (traded shares) would result in around 0.09% (0.15%)

increase in real GDP. A 1% increase in treasury bill rate (saving deposit rate) would result in 0.19% (0.17%) decrease in the real growth.

Table 4: Long run estimates

Regressors	<i>coeff</i>	<i>s. e.</i>	<i>t-[coeff]</i>	<i>p-value</i>
$GFCF_t$	0.5827**	0.2158	2.7002	0.0251
$LITR_t$	0.0634	0.2375	0.2649	0.6812
$NIGF_t$	0.0917*	0.0245	3.7428	0.0028
VTS_t	0.1498	0.0782	1.8937	0.2591
TBR_t	-0.1925***	0.0890	-2.1629	0.0845
$SADR_t$	-0.1682*	0.1391	-1.2107	0.52926

Note: Based on equation (11), the long run estimates, from the estimator, $\hat{\theta}_j [= \hat{\beta}_{ji} / (1 - \sum_{i=1}^n \hat{\phi}_i)]$, for $i = 0$ provides the coefficient (*Coeff*) of long-run relations. *s. e.* – Standard error of estimate, *t-[coeff]* is the *t* statistics of the estimates, *p – value* – Probability value of *t* statistics.

*, **, *** indicates statistical significance at 1%, 5% or 10%.

The parsimonious model is examined for post estimation diagnostic tests, implemented at 5% level, and the result is provided in Table 5. The diagnostic confirms adequacy of the model. Since the model's variables are integrated, the residuals from the estimated ECM equation are checked for likely heteroscedasticity, according to the Breusch-Pagan-Godfrey test and serial correlation, using the Breusch-Godfrey, both based on the model's generated residuals. All three tests confirm that the model is robust for policy considerations. With a *p-value* of 0.5 for the observed R^2 , the heteroscedasticity test strongly maintains the null of no ARCH effects for the residuals. Similarly, since the serial correlation test shows a *p-value* of 0.28 for the observed R^2 , the null of no serial correlation is not rejected. The residual passes the normality test as indicated by non-significance of the Jarque-Bera statistic of 2.1186.

Table 5: Robustness tests

Heteroskedasticity	Serial Correlation	Normality
Obs. [R^2]	Obs. [R^2]	JB-stat.
0.325	0.5067	2.1186
(0.461)	(0.289)	(0.1988)

Note: Obs. [R^2] indicates observed R-Squares; JB-stat is the Jarque-Bera statistic. The Breusch-Pagan-Godfrey's heteroskedasticity test, with *p-value* of 0.461, is insignificant and unable to reject the null of heteroskedastic residuals. The Breusch-

Godfrey's serial correlation test, with p-value of 0.289, is insignificant and unable to reject the null of serially correlation residuals. Jarque-Bera's Normality test shows that the residual is normally distributed.

Source: Author/R-Output (2023)

5. Conclusions

This study investigates the relative effectiveness of the capital market and money market in driving economic growth funds in Nigeria. The evidence confirms the existence of a stable long-run connection for the money market, capital market and economic growth. The indicator for money market – the treasury bills have a negative and significant effects on growth in both short run and long run. Both capital market indicators – the national investment finance by new issues and value of traded shares – have positive and significant effects on growth in the short run, but only the value of traded shares was positive and significant in the long run. the measure of liquidity – the savings deposit – exert negatively linked with economic growth. In particularly, the significant positive impact of capital market-financing was found to outweigh that of money market-financing. Consequently, the study recommends measures that would facilitate the development of both financial market to further support growth.

The paper offer that more efforts should be channeled to promote capital market development with special focus on the bond market which remains shallow. A deep bond market would serve as a veritable option for infrastructural financing which is critical to the achievement financial development. The governments should take more advantage of the market to ensure the bondification of the domestic debt especially now that the fiscal viability of many states are sky rocking due to inflation and mounting short-term debts amidst dwindling revenues. The bondification would shield the economy from the trap of short-termism that led to the 1990s' Asian crisis due to over-reliance on the banking sector.

In addition, there should be continuity and sustenance of on-going market reforms to increase the depth, breadth and sophistication of the market and make it more competitive among its global peers. The government should ensure continuous market liberalization and more efforts to strengthen regulatory oversight and ensure good corporate governance practices at both firm-level, market-level and regulatory level. In addition, there should be removal of impediments to capital and stock market development, such as legal and regulatory barriers, high taxes.

Finally, since banks are dominant players in the market, the government should develop a proactive approach (including an early warning system) that would enable the bank to detect and resolve problems in the banking sub-sector without generating sentiments that would harm the entire financial system. Also, government should continue to offer infrastructure development that will ensure an enabling environment for business to thrive, and by implications, cause increase in employment, productivity, and overall growth, in order to rip the benefit of funds from the two financial markets.

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