



FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH: A CAUSAL ANALYSIS

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ABSTRACT

This study sought to analyze the nature of the causal relationship that prevails in the two largest economies in Sub-Saharan Africa- Nigeria and South Africa between 1996 and 2020. The study follows the recommendations of the World Bank Global Financial Development index, to measure financial development from its four dimensions, by institutions and markets. These include depth (money supply and stock market capitalization), access (bank branches and value of stocks outside top ten), efficiency (interest rate spread and stock turnover), and stability (capital to asset ratio and stock price volatility). These served as the explanatory variables. The explained variable is gross domestic product growth rate as a measure of economic growth. The Granger causality test is employed for analysis. The results reveal that only in South Africa did a unidirectional causal relationship exist, flowing from economic growth to financial stability (stock price volatility). In the case of Nigeria, no causal relationship was found. The study concluded that demand-following financial development was what prevailed in South Africa, while the Independent stage hypothesis holds in Nigeria. The study recommended that more financial instruments and products such as mobile banking schemes be created and made available to help mop more cash in circulation into the formal financial system. Also, growth board schemes initiated to encourage the listing of companies with high growth potential on the exchange must be enhanced.

KEYWORDS

Financial development, Causality, Economic growth.



1. INTRODUCTION

McKinnon (1973) and Shaw (1973) proposed that changes in the operations of intermediation in finance can bring about changes in aggregate output of a society. Schumpeter (1934) contributed to this view, opining that growth can be spurred by active funding provided by the institutions to achieve innovative production. Samuelson (1951), disagreed with this view, as intermediating operations were perceived as a mere link between prior savings and investments, that had little or nothing to do with growth process of the economy. Like any other factor of production, it is a necessary ingredient, but does not possess the ability to independently grow output. These postulations were tested by Patrick (1966), and the study findings gave rise to the first two hypotheses on finance-growth nexus. These were the supply leading financial development hypothesis (changes in financial system operations caused enhancement in the economy) and demand following financial development hypothesis (changes in the financial system operations were caused by changes in economic growth). Demetrides and Hussein (1996) tested Patrick (1966) postulations, and had a different outcome. This study finding gave rise to the symbiotic – relationship hypothesis. Both systems seemed to influence each other symbiotically, as a bidirectional causal relationship was found. Lucas (1988) also testing Patrick (1966) hypothesis had a very different outcome. The independence hypothesis was established through this study. It was found that in some countries, finance and growth were not causally related. The debate on the relationship between these two factors is still in contest to date with various finding.

The World Bank (2013) adopted Cihak, Demirguc-Kunt, Feyen and Levine (2013) definition and measurement of financial development based on four major characteristics of a well-functioning system. This definition holds that the functioning of financial markets, instruments and institutions change and enhance to advance the system's level of efficiency, depth, stability and access (inclusiveness and usage). These are also called the dimensions of financial development. Therefore, advancements in these aspects are considered, to determine if they are in any way related to changes in aggregate output of the economy.

This study adopts to contribute to the body of knowledge on the finance-growth nexus, by considering the dimension of financial efficiency (by institution and market) in the two largest economies Sub-Saharan Africa – Nigeria and South Africa between 1996 and 2020.

2. Theoretical Framework and Review of Previous Studies

Theoretical Framework

Economic growth: Advancement in the value of products (tangible and intangible) by a nation over time is considered as economic growth. This is most often measured by the annual growth rate of the total volume of output or income. It is sometimes referred to as advancement or expansion in productivity or aggregate output.

The classical school of thought hold that advancement in output is a function of an increase in a factor of production (labour/ capital) with all other factors held constant (Corporate Finance Institute - CFI, 2021). However, increase is expected at a decreasing rate; hence this theory was criticized for neglecting the effect of technology and the factor of economies of scale. The Neoclassical school in contract came up with a theory that gave credence to technology, efficiency, and increase in capital as the main sources of growth in aggregate output (Lucas, 1988). The endogenous school proposed the growth model, which showed that human capital development and technological advancements are

critical for sustainable economic growth (CFI, 2021). The new endogenous growth school theorized that finance plays a major role in the growth process. It holds that financial intermediation limits market imperfections that obstruct flow of funds necessary for investments which grow output (Cihak et. al, 2013). Goldsmith (1969) formalized the concept of financial intermediation, and its role in the growth process. Thereafter, authorities like McKinnon (1973), Shawn (1973) among others advocated for improvements in the intermediation process as a major tool for enhanced growth of aggregate output. These improvements or changes, McKinnon described were later termed as financial development. This has given rise to several hypothesis suggesting a direct (or no) relationship between financial development and economic growth.

Financial development: was defined by Nasr (2008) through a description of the roles expected of each part of a financial system- instruments, market and institution. According to this definition a system can only be said to be developed or developing if each part of the system, successfully carries out its primary duty efficiently on a wider scale. For examples, it holds that a system is said to be developing or so, if the banks allocate resources, provide deposit and payment services and monitor investments. The list goes on to expressly state the role of equity market, domestic bond market, housing finance, leasing, among others in a developed or developing system. Cihak et al (2013) faulted this definition, as it appeared quite cumbersome attempting to cover every single institution, market and instrument. Theil (2001) defined it rather as an enhancement in the intermediation process reflected in- capital allocation efficiency, savings ratio increment, and increase in capital productivity. Cihak et al (2013) also faulted this definition. According to them, the definition did not take into cognizance that changes in these factors they listed such as savings ratio, may not necessarily translate to the fact that financial intermediation is spread out evenly. For example, in developing countries where wealth may be concentrated in the hands of a few, an increase in savings ratio does not necessarily translate to increase in financial inclusion. Cihak et al (2013) in their thesis gave a broader definition which was later adopted by the World Bank in 2013. They defined expansion of the financial system or its development as the deliberate and evident operation of an entire system towards reducing cost of market imperfections associated with contract enforcement, information asymmetry and carrying out transactions. They insisted and provided that these advancements in the system are measurable through four characteristics of a well-functioning financial system. These include increase in financial depth, access, stability, and efficiency of the entire system. For these dimensions, a matrix of measures was developed by Cihak et al (2013). The matrix specified factors that could be used to determine the extent of development of any system by each of these dimensions. This matrix was later adopted by the World Bank (2013) to form the Global Financial Development Index (GFDI) for various countries. According to Cihak, et al (2013), where financial development as a whole is measured, all four aspects should be considered.

Financial Depth: according to them describes the magnitude of activities by the system in relation to the size of the economy. The most prevalent measure of depth for institutions as stated by Čihák et al. (2013), is private credit ratio to GDP (for banks). This is followed by total institutions assets ratio to GDP (for banks and non-bank financial institutions (NBFIs), and money supply ratio to GDP. They also identified capitalization of the stock market as a ratio of GDP, outstanding volume of debt securities, or bond market capitalization (private and public) ratio to GDP, as the most popular indicators for financial market size.

Financial Access was viewed as the wide availability of relevant financial instruments or and services at the least cost. Cihak et al (2013) suggested some measures of access to include Bank accounts per population, bank branches per population or distance, automated teller machines per population or distance for institutions. The most popular metric for markets according to them, is percent of market capitalization or traded value, outside the top ten (10) biggest companies.

Financial Stability in the system is associated with proper functioning of institutions and markets, avoiding disruptions or shocks which can adversely affect output or lead to economic damage beyond a limited size of customers. Čihák et al (2013) suggested the most popular measure of institutional stability is the bank Z- Score and capital risk-weighted asset ratio and the non-performing loans to total gross loan ratio. For financial market stability it suggests stock price volatility as the most popular among others.

Financial Efficiency is described in terms of cost and allocation. An efficient system should allocate scarce resources (finance) at lowest costs to yield maximum output. The expenses to revenue ratio includes cost to income, cost to asset, interest margin or lending –deposit spread, are the most common financial institution indicators according to Cihak et al., (2013).

The Finance-Growth Hypotheses first proposed by Patrick (1966) suggested two possible causal relationships. The first proposition was a demand-following relationship, in which advancement in aggregate productivity gives rise to expansion of the financial system. The other proposition is the supply-leading relationship, in which changes in operations of intermediation result in changes in level of aggregate productivity. These hypotheses were contested by several other authorities, and the likes of Demetrides and Hussein (1996) and Lucas (1988) had findings that varied greatly. Demetrides and Hussein from their established that in some countries the relationship was not unidirectional as suggested by Patrick (1966). They found that in most countries the relationship was symbiotic (bidirectional). Both economic expansion and advances in the intermediation system, both influenced each other simultaneously. In the case of Lucaz (1988), no relationship between both factors was found in some countries, therefore establishing the independent-stage hypothesis. The study explained that at this point operations or changes in the intermediation system were of no consequence for growth of aggregate output. Empirical investigation of this subject matter still ensues till date, with some providing support for one or more of these four hypothesis developed so far on the finance growth –nexus.

Review of Empirical Literature

Dinabandhu, and Debashis, (2018) examined financial inclusion and economic growth linkage with some cross-country evidence. Their objective was to assess the dynamic quantitative influence of financial inclusion policies from across the world on economic growth for a large number of developed and developing countries (31 countries). The study used Panel data models such as country-fixed effect, random effect and fixed effect regressions, panel cointegration, and panel causality tests to examine the linkage between financial inclusion and economic growth. Panel cointegration was used to test the long run relationship between financial inclusion and economic growth, whereas panel causality test was used to find the direction of causality between financial inclusion and economic growth. The data on financial inclusion (independent variable) were sourced from Sarma (2012) for the period 2004-2010. The Sarma index was based on three dimensions of

banking services (availability -expansion in credit to private sector; increase in bank deposit services and other financial services; and increase in financial infrastructure - ATM and bank branches/ usage-increase in deposits). Other control variables introduced into the model include- human capital index and trade openness (ratio of sum of the exports and imports to GDP). Real per capita GDP was proxy for economic growth which was the explained variable. The results showed that in all cases there existed a significant and positive relationship between financial inclusion and economic growth, as well as human capital and economic growth. The test results also confirmed the cointegration (equilibrium long run relationship) between financial inclusion and growth across the panel countries after controlling the effect of human capital and openness. In other words, bank led financial inclusion significantly drives economic growth in the long run. Further analysis revealed that a larger number of developing countries showed higher elasticity (high responsiveness of per capita GDP toward an increase in the financial inclusion) compared to developed countries. The causality test also showed that there was a bi-directional causality running between financial inclusion and economic growth. They stated that the under lying reason for this finding is that as increase in access to banking services encourages people to deposit their money in formal financial institutions, which results in high growth through the multiplier effect.

In South Africa, Owusu (2018) investigated the relationship between stock market development and economic growth. The study employed the auto-regressive distributed lags (ARDL)-bounds testing approach and multidimensional stock market development proxies to examine this relationship. The dependent variable was Real GDP at Constant Local Currency as proxy for economic growth. Financial market development proxies included- Stock Market Capitalization and Stock Value Traded as ratios of GDP, Stock Market Turnover, and Stock Market Development Index. Other macroeconomic variables included were- Gross National Expenditures, Foreign Direct Investments, and real credit to the private sector. Time series data from 1975 to 2016 were sourced from the World Bank, World Development Indicators (2018). From the results, the composite index for stock market development had neither short nor long-run impact on the economic growth in South Africa. The study stated that this may suggest that although South Africa is acclaimed to have one of the largest capital markets in the world, the possible lack of liquidity and lack of efficiency, as well as the ownership structures of the stock market may have prevented the expected benefits of stock market development from accruing to the real economy. The results also showed that increase in credit to the private sector and increase in gross national expenditure rather than the stock market development, had positive impacts on economic growth in South Africa. The study like others provided evidence of finance-growth nexus, but focused on markets, although the model still reflected a measure of institutional depth, it did not take cognizance of the need to add a measure of financial market stability to the model. Perhaps this might have helped to better explain the outcome of the nature of relationship.

Kabiru, Wan, Ali and Umar, (2019) studied the causal link between financial developments, financial inclusion and economic growth in Nigeria over the period 1970 to 2018. The study employed Ng Perron, Zivot Andrew unit root test; Gregory and Hansen cointegration test; and Non-Granger causality Toda and Yamamoto tests to arrive at their conclusions. The study variables were financial development, financial inclusion, trade openness, foreign direct investment and economic growth. A financial development index constructed by IMF was used to proxy financial development. The index was constructed using nine indices which include variables for depth, access and efficiency both from financial institutions and financial market. Financial inclusion was proxied by a financial inclusion

index constructed using principal component analysis, with four variables. These include ATM per 100,000 people, commercial bank branches per 100,000 people, depositors with commercial banks per 1000 people and borrowers from commercial banks per 1000 people. The financial inclusion data was sourced from World Development Indicators database. Trade openness variable was proxied by import-export data divided by GDP at current USD multiplied by 100. Proxy for foreign direct investment was foreign direct investment inflows; and for economic growth its proxy was real GDP growth. These were sourced from the World Bank Database and Central Bank of Nigeria's Statistical Bulletin of various issues. The study results revealed that all the variables were stationary and cointegrated in the long run. Similarly, the results showed a unidirectional causal relationship flowing from the financial inclusion index to economic growth. The results also showed a bidirectional causal relationship between the financial development index and economic growth. It also showed that there is no significant causal relationship between trade openness and economic growth. Therefore, the study concludes that financial development and financial inclusion are important determinants of economic growth. Thus, the impact on growth is even more pronounced when more people have access to formal financial services. The study provided evidence in support of the supply leading finance-growth nexus with respect to financial access; as well as a symbiotic relationship when financial development was used as a whole. The study used dimensions of financial access, depth and efficiency, leaving out stability which should have been necessary to get a more balanced interpretation of the relationship. Also, the use of a composite index in analyzing the influence of financial development or access on economic growth, impeded the possibility of identifying which actual dimension or variable gave a stronger influence on growth.

Hoi, Hoang and Thuy (2019) studied the association between financial depth and output in ASEAN+3 countries from 2000 to 2014. The countries included Malaysia, Singapore, Indonesia, Thailand, Japan, China, Vietnam, and Korea. Output was measured by real GDP per capita, as the dependent variable. For the independent variable, 4 indicators representing depth and efficiency of financial institutions and markets were adopted. They include ratio of domestic credit-to-private-sector to GDP, ratio of broad money to GDP, stock market capitalization to GDP, and net interest margin. Other conditions introduced into the model to assist explain growth were- ratio of gross-capital-formation to GDP, ratio of labour-force to population, and private sector development; The data were drawn from World Bank. The results showed that financial depths measured by domestic credit to private sector, money supply and stock market capitalization all had significant effects on economic growth. Stock market capitalization significantly had positive effects, while domestic credit to private enterprises and money supply positively boosted growth rate after 1-year lag but their immediate impacts was negative. Labour recorded no effect, while capital formation had a significant, positive influence. They concluded that what was in existence in the region within that period was a finance-led relationship (supply leading).

In Asia, comparing India and the Republic of Korea, Chuaha, and Sikarwar (2020) analyzed the causation amongst financial sector enhancement and development of economy. A causality test was employed with the aid of the Vector Auto regression- VAR. Secondary data was sourced from the official website of World Bank. Their dependent variable, growth of economy had as proxy growth rate of GDP per capita. The independent factor was financial sector development which was divided into three groups- financial sector deepening (ratio of bank deposits, broad money, claims on private sector by banks on deposits, market capitalization), efficiency (bank overdraft and bank non-interest) and stability (Z-Score and liquid liability). The causality test results showed that in India all variables

of financial deepening had a unidirectional causal relationship flowing from them to growth. This meant that deepening of India's financial sector through increase in bank deposits, money supply and market capitalization would lead to growth in the economy. In the case of South Korea, only Market capitalization caused growth. In India, the results indicated a bi-directional causality between financial stability and growth through the Z-score; there was no causality between the measure - liquid liability and growth. For South Korea, only liquid liability causes growth. For financial efficiency, none of the measures had a causal relationship with growth in India. In South Korea, bank non-interest had a bidirectional relationship with growth, while bank over draft caused growth (unidirectional causality). The study summarized that financial sector efficiency led to no causality and financial sector stability led to partial causal relationship with pecuniary growth in Indian context. While on the other hand, in case of republic of Korea almost no causality was found in financial sector deepening. Bidirectional and unidirectional causality were found in case of financial sector efficiency, and partial causality was found in financial efficiency with pecuniary growth. The study provided evidence to support the various hypotheses of finance-growth nexus on what held in India and Korea, leaving out the dimension of financial access in its analysis.

Odo, Ogbonna, Agbi and Anoke (2020) carried out a comparative study between two African countries, through investigation of the causal relationship between financial development and economic growth in Nigeria and South Africa". They sought to investigate the causal relationship between financial development and economic growth in Nigeria and South Africa through employment of Co integration, VECM and Granger causality tests. The study used annual time series data for the period 1980 – 2014. Their aim was to examine the applicability or otherwise of stage of development hypothesis of financial development in accordance with Patrick (1966) in both countries. The hypothesis states that the direction of causality between financial development and economic growth changes over the course of development. The data used for the study were the time series covering the periods obtained from online service data.worldbank.org/indicators and world development indicators 2014. The econometric model developed for the study had vector of variables consisting of GDP per capita (growth) and financial development- the ratio of money supply- M2 to GDP, the ratio of domestic credit to private sector to GDP, as well as real interest rate. The Johansen multivariate co integration test indicated 2 co integrating vectors in Nigeria and South Africa. This indicated a long run relationship between money supply, domestic credit, real interest rate and economic growth in both countries. The VECM results showed that money supply had no significant influence on economic growth in Nigeria and South Africa. However, domestic credit had a significant effect on economic growth in both countries. The results of Granger causality indicate a unidirectional causality running from financial development domestic credit to economic growth in Nigeria. A bidirectional causality was found between financial development domestic credit and economic growth in South Africa, thereby validating the Supply - leading hypothesis of financial development by Patrick (1966). The study therefore concludes that supply – leading phenomena (Finance – led growth) is evident in both Nigeria and South Africa economies. The study recommended that priority should be given to the development of the financial sector in Nigeria and South Africa. The outcome indeed turned out quite differently from previous studies involving both countries, perhaps due to timing and variables considered.

Chu (2020) assesses the relationship between financial structure and economic growth with evidence from 99 countries. Specifically, the study examined whether the effect of financial structure on economic growth was influenced by the occurrence of banking crisis and economic volatility, the level

of financial development, and the financial structure disproportion. The study employed the generalized method of moment's estimation to a panel of 99 countries over the period 1971- 2015. The variables in their model were stock market capitalization to GDP ratio, deposit money banks assets to GDP ratio. The financial structure size indicator was the logarithm of stock market capitalization to GDP divided by the deposit money banks assets to GDP. A higher financial structure size implied a more market-based financial system. The financial structure activity is the logarithm of stock market turnover ratio divided by the private credit by deposit money banks and other financial institutions. A higher value of financial structure activity means that the financial system is a more market-based one. The financial structure efficiency is the logarithm of the stock market turnover ratio times overhead costs. A larger value of financial structure efficiency implies a more market-based financial system. The dependent variable is the annual growth rate of real GDP per capita. They controlled for other potential determinants of economic growth by using- government final consumption expenditure over GDP (to measure fiscal policy), total export and import of goods and services over GDP (to measure trade openness), average year of schooling (to measure education level), and inflation rate (to measure economic stability or the distortions in financial intermediation). The study results revealed that a more market-based financial system, in terms of activity and efficiency, helps a country grow faster; while a more market-based financial system in terms of size does not. Secondly, although banking crises and macro-economic volatility negatively affect economic growth, they do not affect the relationship between the financial structure and economic growth. Thirdly they found that, the role of stock market over banks strengthens with the development of financial sector. Fourthly, although the results obtained were in favor of market-based view, the dominating role of stock markets over banks deteriorates if the financial structure is unbalanced toward stock market. In other words, in a country with under-developed banks but well-developed stock markets (increasing the development of the stock markets relative to banks) does not significantly promote economic growth.

Migap, Ngutsav, and Andohol, (2020) executed a causal analysis of financial inclusion, encompassing capital market and economic growth. The study purposed to use the Toda and Yamamoto causality test technique, which is a vector autoregressive (VAR) model to explore the possibility of a causal relation between financial inclusion and capital market growth as well as between capital market and economic growth in Nigeria, for the period 1986 to 2017. Quarterly time series data were used in the study. The variables included – market capitalization as proxy for capital market; Penetration Index by PENN World as proxy for financial inclusion (supply of financial services). Value of bank loans to SMEs (the credit component in the economy and indication of demand for financial services); prime lending rate (represents the interest rate component in the economy); Dollar/Naira exchange rate, an indirect quotation of the exchange rate component in the economy (these are non-policy variables with no lags, which ensure the completeness of the model); and gross domestic product as proxy for economic growth. The result indicated the absence of a causal relationship between financial inclusion and capital market development. It however reported a unidirectional causality from capital market to economic growth in Nigeria. The study recommended that the long-term lending capacity of Nigerian banks should be enhanced by legislation via debentures of not less than 5 years' maturity, packaged as individual savings account with attractive interest rates and tax incentives. The banks should also be encouraged to set-up small Cooperative Financial Institutions in rural areas that would specialize in taking small deposits and lending to SMEs within the vicinity.

Nyamweya, and Obuya (2020) investigated, the role of financial efficiency and income distribution on the relationship between economic growths on poverty levels in East Africa Community Countries. The study's objective was to establish the effect of economic growth on poverty levels in EAC countries and examining the moderating effect of income distribution on the relationship between economic growth and poverty levels in EAC countries. The study adopted both comparative and descriptive research designs. The study population was made up of the five countries of EAC countries which included Kenya, Rwanda, Uganda, Burundi, and Tanzania. Annual data for 30 years beginning 1989 to 2018 was gathered for the study purpose. Secondary data, which consisted of annual data acquired from the World Bank and African Development Bank website, was utilized. The study employed normality, heteroscedasticity, multi-collinearity, serial correlation, Optimal lag test, unit root diagnostic tests, cointegration test and cross-sectional correlation test. The data was analyzed using both descriptive and inferential statistics with the help of excel and STATA version 14. Feasible Generalized Least Squares (FGLS) panel data regression models were used for hypotheses testing. The dependent variable was poverty measured by poverty head count ratio. The independent variable was economic growth (real GDP), and the control or mediating variable was income distribution (Gini index) and financial efficiency (operational cost efficiency). The study results revealed that economic growth had a significant effect on poverty levels in East African Community countries. In addition, the study revealed that income distribution has a significant mediating effect on the link between economic growth and poverty levels in East African Community countries. The results also showed that economic growth had a direct significant effect on poverty even in the presence of financial efficiency; but financial efficiency had a weaker effect on poverty levels in EAC countries. Therefore, financial efficiency had no significant effect on the link between economic growth and poverty levels in East African Community member countries. This finding provides support for the independent hypothesis on finance-growth nexus.

Okonkwo and Nwanna(2021) investigated the effects of financial inclusion on Nigeria's economic growth from 1992 to 2018. Selected variables for the independent variable (financial inclusion) included- currency outside banking, currency in circulation, microfinance banks' deposits, number of commercial bank branches, commercial banks' credit to private sector, loans of rural branches of commercial banks and deposits of rural branches of commercial banks. On the other hand, their dependent variable - nominal GDP was the selected measure of economic growth. The research design used was the ex-post facto as secondary data was sourced from Central Bank of Nigeria's Bank Reports and Statistical Bulletins. The ordinary least square regression method was employed, as well as the Granger Causality test. The results of the tests revealed that currency in circulation had an insignificantly positive relationship with economic growth, yet a causal effect on growth in Nigeria. Likewise, loans extended by rural branches of commercial banks also had a positive and significant relationship and a bidirectional causal relationship. This indicates a symbiotic relationship. According to the study, this implies that loans granted by rural branches of commercial banks caused a development in the Nigerian economy which in turn led to further granting of loans by the rural branches of commercial banks. Deposits of rural branches of commercial banks had bidirectional causal relationship growth in Nigeria and a positive relationship though not significant. The authors argued that their results indicate that improvement in economic growth was attributable to the increase in deposits accumulated in the rural areas; and this improvement in turn led to further increase in the deposits of rural branches of commercial banks in Nigeria. Number of commercial bank branches was found to have a negative and insignificant relationship with economic growth,

and no causal effect on economic growth in Nigeria. Similarly, currency outside banking was found to have positive and insignificant relationship with economic growth in Nigeria, and no causal effect on economic growth, rather economic growth affected it. According to the study, this suggests that as the economy of Nigeria grows, there is likely to be more and more currency outside the banking sector. Commercial banks' credit to private sector had positive insignificant relationship with economic growth; however, the causal effect found between both flowed from economic growth to commercial banks' credit to private sector. They explained that this implies that as the Nigerian economy grows, the rate at which the commercial banks grant loans to private sector will also increase indicating a demand following relationship. The study also revealed that microfinance banks' deposits had negative and insignificant relationship with economic growth, but without causality. That meant that microfinance banks' deposits had no effect on the economic growth of Nigeria supporting the independent stage hypothesis. They concluded that the positive relationships found in majority of the variables showed that financial inclusion contributes positively to economic growth in Nigeria. The study only considered one aspect of financial development – access with a bit of financial depth, but yielded mixed results with findings quite different from similar studies within the region.

3. Methodology

This study follows the quasi- experimental design in order to allow for evaluation of all implied inter-relationships between finance and growth. The study covers a period of 26 years (1996 – 2020) for which secondary data were obtained from the World Bank Global Financial Development Database. In analyzing data, E-views econometric program was used to run the descriptive statistics, and granger causality tests.

The study variables include:

Economic Growth: Gross domestic product growth rate (GDPRN) in Nigeria, and (GDPRS) in South Africa;

Financial development – market depth: Stock market capitalization to GDP (SMGDN) in Nigeria, and (SMGDN) in South Africa;

Financial development - institution depth: Broad Money supply (MSGN) in Nigeria, and (MSGS) South Africa;

Financial development - institution access: Bank branch per 100,000 adults (BKBN) in Nigeria, and (BKBS) in South Africa;

Financial development – market access: Value traded excluding top 10 traded companies to total value traded (%) (VT10N) in Nigeria, and (VT10S) in South Africa;

Financial development - institution efficiency: interest rate spread (DLSN) in Nigeria, and (DLSS) in South Africa;

Financial development – market efficiency: Stock Market Turnover ratio (STON) in Nigeria, and (STOS) in South Africa;

Financial development - institution stability: Capital- Asset ratio (CTAN) in Nigeria and (CTAS) in South Africa;

Financial development – market stability: Stock price volatility (SPVN) in Nigeria, and (SPVN) in South Africa.

According to Gujarati (2004), although regression analysis as a statistical tool deals with the dependence of one variable on other variables, it does not necessarily imply causation. This means, though there exist a relationship between variables, it does not prove causality or the direction of influence. Given the fact that there exist persons who believe something causes another, the test of causality was developed, one of which is the Granger causality test. The test uses past or lagged values of a variable (X) and other variables (Y) to try to predict present and future values of the variable (X). It seeks to determine how much of present X can be explained by previous values of Y, and to ascertain if adding lagged values of Y would improve the explanation of X. Where lagged values of Y are seen to improve prediction of X, it is stated that Y Granger causes (leads) X.

Decision Rule: this study will accept and define causal link between variables considered in the light of the following results:

a. A *Unidirectional causality* [$X (X \rightarrow Y)$]: from X (*the dimension of financial development tested- MSG, BKB, DLS, CTA for institutions; and SMGDP, VT10, STO, SPV for markets*) to Y (*economic growth (GDPR)*) is indicated if the estimated coefficients on the lagged X (*the dimension of FD being tested*) in (3.2), are statistically different from zero as a group (i.e., $\beta_j \neq 0$); and the set of estimated coefficients on the lagged Y (*economic growth- GDPR*) in (5.3) is not statistically different from zero (i.e., $\delta_j = 0$).

b. A *Unidirectional causality* [$Y (Y \rightarrow X)$]: from Y (*economic growth (GDPR)*) to X (*the dimension of financial development tested- MSG, BKB, DLS, CTA for institutions; and SMGDP, VT10, STO, SPV for markets*) is indicated, when the set of lagged X (*the dimension of FD being tested*) coefficients in (3.2) is not statistically different from zero (i.e., $\beta_j = 0$) and the set of the lagged Y (*economic growth- GDPR*) coefficients in (3.3) is statistically different from zero (i.e., $\delta_j \neq 0$).

c. A *Bidirectional causality* [$Y (Y \rightarrow X)$ and $X (X \rightarrow Y)$]: is indicated when the sets of X (*the dimension of financial development- MSG, BKB, DLS, CTA for institutions; and SMGDP, VT10, STO, SPV for markets*) and Y (*economic growth- GDPR*) coefficients are statistically significantly different from zero in both regressions (i.e., $\beta_j \neq 0$ in (3.2); and $\delta_j \neq 0$ in (3.3) respectively).

d. An *Independence* is suggested when the sets of X (*the dimension of financial development- MSG, BKB, DLS, CTA for institutions; and SMGDP, VT10, STO, SPV for markets*) and Y (*economic growth- GDPR*) coefficients are not statistically significant in both regressions (i.e., $\beta_j = 0$ in (3.2); and $\delta_j = 0$ in (3.3) respectively).

4. Data Analysis, Results and Discussions:

Data is presented, analyzed, results interpreted and findings discussed here. Study Data are presented in Appendix 1 and 2. The results of the analyzes are presented in Tables below.

Table1: Descriptive statistics Nigeria:

	GDPRN	MSGN	BKBN	DLSN	CTAN	SMGDN	VT10N	STON	SPVN
Mean	4.870110	18.73649	4.862400	7.793086	11.47253	12.22187	1.244768	8.986967	16.54621
Median	5.307924	21.35585	4.500000	7.700833	11.87368	11.48144	0.932500	8.174050	15.40600
Maximum	15.32916	27.37879	6.560000	11.06417	17.95485	30.80067	6.298354	34.78530	27.52800
Minimum	-1.794253	9.063329	3.780000	3.268333	1.904068	2.488777	0.189650	2.474498	8.570380
Std. Dev.	3.671617	6.227289	0.909209	1.707920	4.350341	6.655909	1.382906	6.542316	4.831689
Skewness	0.466956	-0.206904	0.678633	-0.268746	-0.610061	1.057360	2.821575	2.715803	0.763054
Kurtosis	4.098469	1.384036	2.063782	3.601995	2.372768	4.049588	10.05215	11.02951	2.953579
Jarque-Bera	2.165446	2.898517	2.831952	0.678433	1.725274	5.805908	84.97704	97.89109	2.136895
Probability	0.338672	0.234744	0.242689	0.712328	0.422048	0.054861	0.000000	0.000000	0.343541
Sum	121.7527	468.4121	121.5600	194.8271	252.3957	305.5468	31.11920	224.6742	364.0167
Sum Sq. Dev.	323.5386	930.6990	19.83986	70.00780	397.4348	1063.227	45.89828	1027.246	490.2497
Observations	25	25	25	25	22	25	25	25	22

Table2: Descriptive statistics South Africa:

	GDPRS	MSGS	BKBS	DLSS	CTAS	SMGDS	VT10S	STOS	SPVS
Mean	2.193414	69.86243	7.797727	3.798978	6.666562	233.0865	67.32799	28.23078	18.03707
Median	2.592598	72.59044	9.145000	3.357915	6.913637	233.3324	66.98899	27.58289	16.96885
Maximum	5.603798	82.80305	10.83000	5.759170	8.796157	352.1564	135.7951	41.98000	34.37600
Minimum	-6.959604	52.71050	3.290000	2.825000	4.389400	121.3611	27.99245	18.81459	13.37940
Std. Dev.	2.722828	8.489768	2.708271	0.793078	1.390974	64.66186	26.61037	5.870004	5.186434
Skewness	-1.710503	-0.595893	-0.539547	0.975914	-0.131446	0.163577	0.767854	0.456107	1.641366
Kurtosis	6.923006	2.278822	1.684029	2.981050	1.691514	2.223879	3.533912	2.945636	5.547208
Jarque-Bera	24.83548	1.778748	2.654870	3.492496	1.632810	0.650278	2.423170	0.765500	15.82589
Probability	0.000004	0.410913	0.265157	0.174427	0.442018	0.722427	0.297725	0.681983	0.000366
Sum	48.25511	1536.973	171.5500	83.57751	146.6644	5127.904	1481.216	621.0771	396.8155
Sum Sq. Dev.	155.6897	1513.599	154.0294	13.20842	40.63100	87804.29	14870.34	723.5959	564.8811
Observations	22	22	22	22	22	22	22	22	22

From Table 1 on Nigeria, financial market depth represented by stock market capitalization (SMGDN), recorded the highest volatility with standard deviation of 6.66. This was followed by financial efficiency of the market proxied by stock market turnover (STON), and financial institution depth proxied by money supply (MSGN). The least volatile variable was financial institution access – bank branch per 100,000 people, with a standard deviation of 0.9. For South Africa, Table 2 above shows that, financial market depth represented by stock market capitalization (SMGDS), recorded the highest volatility with standard deviation of 64.7. This was followed by financial market access proxied by value of traded stocks outside to ten stocks (STOS). The least volatile variable was financial institution depth – money supply (MSGDS), with a standard deviation of 0.8.5.

Table 4 Granger Causality - (Model 1 - Nigeria)

Pairwise Granger Causality Tests

Date: 10/05/21 Time: 19:11

Sample: 1996 2020

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
MSGN does not Granger Cause GDPRN	23	1.93682	0.1730
GDPRN does not Granger Cause MSGN		0.27263	0.7645
BKBN does not Granger Cause GDPRN	23	0.54548	0.5888
GDPRN does not Granger Cause BKBN		0.02103	0.9792
DLSN does not Granger Cause GDPRN	23	0.20423	0.8171
GDPRN does not Granger Cause DLSN		0.54169	0.5910
CTAN does not Granger Cause GDPRN	20	1.34681	0.2898
GDPRN does not Granger Cause CTAN		1.28726	0.3048
SMGDN does not Granger Cause GDPRN	23	0.30047	0.7441
GDPRN does not Granger Cause SMGDN		0.70555	0.5070
VT10N does not Granger Cause GDPRN	23	0.27729	0.7610
GDPRN does not Granger Cause VT10N		0.38427	0.6864
STON does not Granger Cause GDPRN	23	0.09576	0.9091
GDPRN does not Granger Cause STON		0.46463	0.6357
SPVN does not Granger Cause GDPRN	20	0.83350	0.4537
GDPRN does not Granger Cause SPVN		1.80782	0.1980

Source: Author's computation from E-views 9.

Table 5 Granger Causality - (Model 2 –South Africa)

Pairwise Granger Causality Tests

Date: 10/05/21 Time: 19:48

Sample: 1996 2020

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
MSGS does not Granger Cause GDPRS	23	0.97680	0.3956
GDPRS does not Granger Cause MSGS		0.44236	0.6493
BKBS does not Granger Cause GDPRS	20	0.61241	0.5551
GDPRS does not Granger Cause BKBS		0.12787	0.8809
DLSS does not Granger Cause GDPRS	23	1.36282	0.2811
GDPRS does not Granger Cause DLSS		1.82155	0.1904
CTAS does not Granger Cause GDPRS	20	0.15254	0.8598
GDPRS does not Granger Cause CTAS		0.57183	0.5763
SMGDS does not Granger Cause GDPRS	23	2.34304	0.1246
GDPRS does not Granger Cause SMGDS		1.78535	0.1962
VT10S does not Granger Cause GDPRS	23	1.30903	0.2946
GDPRS does not Granger Cause VT10S		1.30331	0.2961
STOS does not Granger Cause GDPRS	23	2.39811	0.1193
GDPRS does not Granger Cause STOS		0.10271	0.9029
SPVS does not Granger Cause GDPRS	23	0.18116	0.8358
GDPRS does not Granger Cause SPVS		4.33481	0.0291

Source: Author's computation from E-views 9.

The Granger causality test employed indicates the nature of causal relationship between variables of the study. Above are summaries of the test from the study's Model 1 for Nigeria and

Model 2 for South Africa. The summaries indicate the results of causal relationship test between the dependent variable and independent variables excluding other relationships.

Table 4 above indicates outcome of the test for Nigeria. The prob. values are statistically insignificant at the study's critical level of 0.5. It indicates that there is no significant causal relationship running from the explanatory variables (MSGN, BKBN, DLSN, CTAN, SMGDN, VT10N, STON, and SPVN) to explained variable (GDPRN) at 5% level of significance. This is contrary to our a priori expectation. This rather provides support for Lucas (1988) hypothesis of no causal relationship, otherwise known as the Schumpeterian Independence stage hypothesis. At this stage, the variables operate independently thereby not significantly supporting or promoting each other.

In the case of South Africa, as indicated in Table 5 above, only one unidirectional causal relationship was found. It indicated that GDPRS (economic growth) caused SPVS (stock price volatility). SPVS is the indicator for financial market stability. This means changes in South Africa's output lead to changes in its stock price volatility. This finding provides support for the demand following FD hypothesis projected by Shaw (1973) and Robinson (1952). These causality results although contrary to the study's expectation of a supply leading causality, indicates that most efforts of FD in both countries is yet to directly cause economic progression as anticipated.

Discussion of Findings

The study results show that no causal link between the measures of financial depth by institution - Money supply to output (gross domestic product growth) or by market- stock market capitalization in Nigeria and South Africa within the period was found. This is contrary to our expectation, and do not confirm the propositions of McKinnon (1973), and Čihák, et al (2013). Kenza and Mohamed (2015) explained that this finding prevails where the financial system in place is "less developed". It was also found that neither economic progression nor financial access proxied by bank branches caused a change in each other in Nigeria and South Africa. Considering access by market, neither economic expansion nor financial market access proxied by value traded excluding top 10 traded companies caused a change in each other. These findings of non-causality rather confirmed that of Migap, Ngutsav, and Andohol, (2020). This means entrepreneurial activities are predominantly independent of the all expansion efforts of the financial system within both economies. Migap, Ngutsav, and Andohol (2020) explain that this could be attributed to over concentration of financial institutions in the urban centers, which is the trend in most African countries. For financial efficiency in institutions, the results revealed an independent relationship (no causality). The study also indicated that between interest rate spread (financial efficiency by institution) and economic growth, no causality. The result was no different for the financial efficiency by market – stock market turnover and economic growth. These conformed to the findings of Ajayi, Oladipo, Ajayi, and Nwanji (2017), Owusu (2018), Chu (2020), and Nyamweya, and Obuya, (2020). In explaining the dismal effect of a widening interest rate spread on economic progression, Rateiwa (2018), explained that the average African business man could be described as having an inelastic demand for bank credit. Hence the positive insignificant sign in the short run analysis. Rateiwa (2018) further explained that the average African business man's attitude of failure to repay loan, raises the risk quotient of the banks in the lending process. This in turn influences costs associated with bad debts, and therefore transferred to hikes in lending rates. On the other hand, in a place like Nigeria, the most popular source of business credit has been the Deposit money Banks, hence it appears the populace are at their mercy. From analysis on financial

stability by institution, an independent relationship (no causal relationship) was found between bank capital to assets and economic progression in both countries. Cheang (2004) explained that, this could be as a result of the non-significant role played by the financial institutions in growing the economy that has given rise to its stability being of no consequence in economic progression process. The same result was found in Nigeria concerning financial stability by market- stock price volatility. For South Africa, economic progression was found to cause stock price volatility (stability of financial markets). This finding also shows that changes in the economy lead to changes in the level of stock price volatility in South Africa. Otherwise explained, this indicates that increase in productivity, enhances activities in South African stock market, leading to increased activities in the market and therefore price volatility.

5. Conclusion And Recommendations

From the study findings, this study concludes that:

- In the case of Nigeria, none of the study's explanatory variables (money supply, bank branches, interest rate spread, capital to asset ratio, stock market capitalization, value traded excluding top 10 traded companies to total value traded, Stock Market Turnover, and stock price volatility), valuably promotes or supports Nigeria's economic growth.
- For South Africa, only stock price volatility among all the study variables (money supply, bank branches, interest rate spread, capital to asset ratio, stock market capitalization, value traded excluding top 10 traded companies to total value traded, Stock Market Turnover, and stock price volatility), is valuably promoted by South Africa's economy.

The study therefore recommends thus:

1. More Point of Sale (POS) machines and other allied financial services and products must be created. They must also be made massively available to help mop more cash in circulation into the formal financial system. This would also ensure effectiveness of monetary policies in the economies.
2. More rural bank branching schemes, the recent mobile banking products and kiosks must be further enhanced. This would intensify bank density and increase banking habit which should increase deposit mobilization and credit allocation in Nigeria and South Africa respectively.
3. The current scheme run for MSMEs (Micro, Small and Medium Scale Enterprise) in both stock markets (Alternative Securities Market - ASeM board- Nigeria and Johannesburg Stock Exchange Alternative Market- AJSE AltX- South Africa) have to be enhanced. Further advertisement with the goal of enhancing public financial literacy be embarked on from the cities to the sub-urban regions to create awareness of these opportunities for these MSMEs as well as investors. This gives a greater chance for these businesses to thrive and expand, which should reflect positively in aggregate production.
4. In South Africa where Stock price volatility had a positive yet insignificant relationship, and was found to be caused rather by changes in economic growth, further market liberalization must be encouraged to ensure that market forces keep the volatility in check
5. The government of both countries (Nigeria and South Africa) must invest reasonably in infrastructure, to encourage entrepreneurial survival and growth. This will further enhance the effect of FD efforts on the nation's output.

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Appendix 1: Nigerian Data

YEAR	GDPRN	MSGN	BKBN	DLSN	CTAN	SMGDN	VT10N	STON	SPVN
1996	4.195924	9.063329	3.87	6.7775	-	24.89339	0.615986	2.474498	-
1997	2.937099	9.725269	3.99	10.62583	-	23.06197	0.91636	3.973469	-
1998	2.581254	10.93903	4.01	8.075833	-	18.90276	1.116254	5.905246	-
1999	0.584127	12.76339	4.01	7.479167	14.8765	4.951071	0.18965	3.830479	8.57038
2000	5.015935	14.66963	4	9.583333	14.05689	4.7328	0.9325	4.2345	12.139
2001	5.917685	15.90097	4.1	8.1825	14.0934	3.6107	0.228555	5.34598	12.9668
2002	15.32916	13.527	4.3	8.100833	15.01789	2.488777	0.4567	7.3245	12.7797
2003	7.347195	13.02659	4.5	6.496667	15.2054	6.993	0.93889	8.54509	14.048
2004	9.250558	11.75879	4.7	5.482494	15.39845	11.63312	1.23226	10.59269	24.18
2005	6.438517	11.30051	4.18	7.415833	15.45687	12.62901	1.109251	8.783357	18.645
2006	6.059428	11.72897	3.78	7.141667	15.343	13.90511	1.523731	10.95807	14.6085
2007	6.59113	19.29109	5.21	6.650833	15.66348	30.80067	6.298354	20.44875	15.7599
2008	6.764473	23.81187	6.27	3.268333	17.95485	14.2603	4.960489	34.7853	15.0521
2009	8.036925	25.14416	6.48	6.0325	4.079681	11.03994	1.539238	13.94245	26.0195
2010	8.005656	21.35585	6.56	11.06417	1.904068	13.98408	1.412385	10.09995	27.528
2011	5.307924	22.47905	6.41	10.3275	10.61782	9.636792	0.956047	9.920804	17.7042
2012	4.230061	24.92823	5.82	8.386667	10.82064	12.33919	0.898526	9.1	11.8921
2013	6.671335	25.44805	5.9	8.7775	10.39229	15.84647	1.224295	8.0532	12.3282
2014	6.309719	22.68961	5.61	7.210833	10.42327	11.48144	0.93893	8.177811	12.9917
2015	2.652693	22.36683	4.98	7.700833	12.37568	10.26572	0.839125	8.17405	19.117
2016	-1.61687	27.37879	4.74	9.372815	11.37169	7.362519	0.373074	5.358713	20.5805
2017	0.805887	24.78142	4.44	7.998847	5.679811	9.904982	0.587126	5.867925	16.9689
2018	1.922757	25.36246	4.3	7.203185	8.107747	7.935877	0.651124	8.204812	17.3481
2019	2.208429	23.92961	4.5	6.47607	7.294229	9.801294	0.606223	6.1851	19.3241
2020	-1.79425	25.04167	4.9	8.995394	6.262093	13.08578	0.57413	4.387436	13.465

Appendix 2: South African Data

YEAR	GDPRS	MSGS	BKBS	DLSS	CTAS	SMGDS	VT10S	STOS	SPVS
1996	4.299999	49.36725	-	4.6125	-	163.6572	18.05234	11.03058	11.1388
1997	2.600002	52.49439	-	4.625	-	150.7606	27.57068	18.28772	12.3961
1998	0.500001	55.07585	-	5.29583	-	122.3272	39.3998	32.20853	23.9464
1999	2.399996	55.73438	3.45	5.75917	4.7234	190.1014	53.29561	28.03535	26.2248
2000	4.200003	52.7105	3.45	5.30417	4.896787	149.8225	51.70203	34.50885	19.5357
2001	2.699995	57.30775	3.29	4.4	46789	121.3611	29.10128	23.97908	19.8934
2002	3.700382	58.25776	4.5	4.13	4.3894	157.5984	41.2932	26.20153	17.1333
2003	2.949079	60.63115	4.56	4.55	5.456789	148.7806	27.99245	18.81459	13.7772
2004	4.554553	61.59694	4.69	4.73833	5.59048	193.5866	36.64568	18.92986	17.7434
2005	5.277056	66.97005	7	4.5825	5.6098	213.0987	43.18271	20.26418	20.4779
2006	5.603798	73.1851	7.23	4.02833	6.789036	261.8305	63.9599	24.42798	23.5825
2007	5.360476	79.08595	5.88	4.01417	5.7892	276.6007	86.07587	31.11918	34.376
2008	3.191047	80.79989	7.68	3.5125	5.679644	168.3231	70.66205	41.98	23.9153
2009	-1.53809	77.67791	9.07	3.17167	6.654652	269.9984	73.50014	27.22244	17.1075
2010	3.039731	75.79961	9.77	3.36833	7.046002	246.4389	73.85752	29.96991	16.8302
2011	3.284168	74.63563	10.24	3.3275	7.226878	189.4816	54.23169	28.62109	13.3794
2012	2.213355	72.94244	9.92	3.31333	7.789356	229.0306	57.24081	24.99265	13.5433
2013	2.485201	71.01361	10.07	3.3475	7.920265	257.0165	63.31293	24.6338	14.4063
2014	1.846992	70.87028	10.83	3.32417	7.577384	266.1495	70.01807	26.3078	17.9375
2015	1.193733	73.46572	10.42	3.26333	7.038238	231.7058	73.66917	31.79427	14.8816
2016	0.399088	72.40453	10.13	3.28667	8.198022	321.0045	135.7951	38.36802	14.9767
2017	1.414513	72.18008	10.4	3.12917	8.796157	352.1564	117.2114	25.73785	15.0789
2018	0.787056	72.77634	10.16	3.085	8.421543	234.9589	80.10353	34.09257	13.436
2019	0.152583	74.12479	9.59	3.116667	8.505467	300.5823	81.04467	33.1328	14.555
2020	-6.9596	82.80305	9.22	2.825	7.886975	348.2763	97.32002	27.94333	14.0236