

THE INTERNATIONAL JOURNAL OF BUSINESS & MANAGEMENT

Financial Intermediation and Economic Development in Nigeria from 1980-2019

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Abstract:

The study investigates the relationships between financial intermediation and economic development in Nigeria for a period of 39 years ranging from 1980-2019. The analysis utilized a secondary time series data from IMF Global financial development index and World Bank database, while the E-views 10.0 econometric analytical tools were used for analysis of data collected. The results of Augmented Dickey-Fuller (ADF) unit root test conducted uncovers that all the data were stationary at order 1(1). Again, Johansen Co integration test for (PVR) and CUSUM test indicates 1 cointegrating equation with the maximum eigenvalue at 5% levels of significance, thus indicates the presence of short and long-run relationships among the variables used for the study, while the result of Granger Causality test further established a bidirectional causality relationship among the variables. Furthermore, the OLS test result reveals the fitness of the model in making informed decisions. The study utilized data from Global financial development index IMF database which includes financial development index (LFDI), financial institution access index (LFIAI), financial institution depth index (LFIDI), financial institution efficiency index (LFIEI), and financial institution index (LFII) to proxy financial intermediation as independent variables, while economic development is proxied with Poverty rate (PVR) as dependent variable. The study recommends that, the key players in the financial institutions frameworks should concentrate more with policies and programmes that will enhance more rapid actions to drive bank financial access and efficiency so as to propel rapid economic development, as one of the essential vehicles to reduce or even eliminate poverty rate in Nigeria.

Keywords: Economic development, financial intermediation, financial access index, financial efficiency index, financial stability index

1. Background Information

There are overwhelming reports from different scholars showing that financial intermediaries assume a tremendous part in the economic development of any country. This is because it propels economic development through capital accumulation and technological progress by increasing the savings rate, mobilizing and pooling savings, producing information about investment, facilitating and encouraging foreign capital inflows, also as optimizing the allocation of capital, consequently, reduces poverty rate. It is in this perspective that the world's global financial development remarks that countries with better developed financial systems will develop quicker throughout broad time frames (World Bank, 2019).

This means that financial intermediaries broaden access to finance, facilitates risk management by reducing their shortcoming to risk, and increasing investment and productivity that result in higher income generation and diminishes poverty and inequality to the poor and less developed countries like Nigeria. Consequently, this can only be achieved when financial resources are mobilized as savings through banks and channelling these funds in the form of credits to more productive uses for investments; hence, making up one of the principal functions of bank financial intermediation in the savings funds mobilization and investment process.

From the economic viewpoint, the major role of financial intermediaries is to allocate financial assets thereby bridging the gap in the imperfect market conditions between the savers and lenders of financial resources for economic development. They also in addition, provides certain services like risk sharing and management, savings collected from various surplus economic units like the household are thus allocated among deficit economic units like firms for investment thus, stimulates the economy to propel economic development. Therefore, the absent of financial intermediary process in any economy, may plough the household into liquidity conditions for buying or investing in liquid and less profitable assets, while giving up a better investment opportunity (ies). Thus, this mismanagement can be reduced by the financial intermediation process of banks that do assets transformation, undertake savers and investors liquidity risk and invest the collected funds in more productive investment or business. Furthermore, development, on the another hand is a multidimensional process that creates financial, technological, and social institutions to help countries improve their extensive well-being and increase the quality of life of a country or regions whereby an individual is improved according to his designated targets and objectives. While economic development is a process that creates economic, social and technical progress of countries. The principal component includes the improvement of health, the development of wealth, the production of new technologies and innovation, and so on (Coccia, 2018 & 2019).

In this regards, various countries encouraged economic development in a proper social system with high democracy-based system and culture, great economic governance, productive advanced education system and high creative yields. While, in the general sense, the financial intermediaries is tried with economic development by overcoming costs brought about in the financial system such as decreasing the costs of acquiring information, enforcing contracts, making exchanges brought about by the rise of financial agreements, markets, and intermediation interaction of banks. It is in this respect that various scholars have agreed that the five key elements of any financial system are (i) providing information ex ante about further potential ventures and designated capital; (ii) checking investments as well as and applying corporate governance after giving finance; (iii) managing risk and broadening trading, diversification; (iv) Mobilizing and pooling savings; and (v) easing the trading of goods and services.

In the realization of this vital role, various governments, both present and past, have consciously pursued improved policies and programs in the financial sector to achieve greater economic development, especially in the emerging economics like Nigeria. Thus, economic development in the emerging economics must be a function of how efficiently and vibrant the financial intermediation process works, and this efficiency can be determined by banks' ability to facilitate savings and allocate credits to the real sectors optimally for investment drives or purposes in other to contributes to a vibrant economic development, by increasing output levels, creating employment generation which is thus transcended to more income from the household units or agents (Agbada & Osoji, 2013).

Despite the fact that, Nigeria comprises of thirty six (36) states covering about 910,770 square kilometres and with a total population of over 200 million in 2019 (World Bank, 2019); the country have witnessed a period of financial difficulties and steady economic deterioration because of an adverse economic environment, which serves as an essential component worsening in terms of trade, misguided economic policies, and falling investment marked largely by financial repression, characterized with high real interest rates, mandatory credit ceiling, directed credit allocation to real sector, high reserve requirement ratio, hard government ownership structures and misdirection of institutional financial assets as earlier advocated by (Mc Kinmon and Shaw; 1973) since the 1980s to date.

Consequently, this problems has led to various financial sector reforms adopted by the central Bank of Nigeria in response to address the difficulties posed by financial intermediaries both at the state and national levels; thus these reforms includes among others deregulation of the financial sector, liberalization of high interest rate, strengthening the banking system, introduction of new technological innovations, strong price competition as well as addressing financial crisis of 2008. Hence, most of these reforms have adversely affected the banking sector, prompting reduction of the numbers of regulated commercial banks' deposit money institutions needed for expending access to financial services to low-income earners; resulting in low level of domestic savings mobilizations, because of constraints on capital inflow, impaired export volume, weak terms of trade, capital flight, improper high internal and external borrowing classification to the real sector on the ground of political interest rather than merit of commercial bank loan assessment, resulting to huge unpaid loans in the banks, poor monitoring of the loan portfolios, and unpaid little or no interest rate for deposited funds (savings) has become common phenomenon constraining financial intermediation in maintaining financial sector stability, efficiency, and access when compared with other regions of the world. It is against this background that formal financial sector has adversely affected economic development of this region especially in Nigeria, leading to poverty alleviation, poor education, poor road, and poor health centres and much more within the region. Again, the issue of mix reaction on the direction of causality between finance and economic development owing to the facts that different scholars has consistently used different variables such as Gross Domestic Product (GDP), Gross National Income (GNI), Gross National Product (GNP) and Per Capital Income as proxy for economic growth ignoring the development aspect. While, financial intermediation over the years have been proxied with various indicators of financial depth often proxy with the ratio of private sector credit (% of GDP), ratio of credit to the public sector, (% of GDP), Money supply M1, M2, M3; Bank Lending spread (% of GDP), Bank Non-performing Loans (% of GDP). Thus these indicators of financial intermediation do not fully reflect a well-functioning financial system (IMF, 2019; World Bank, 2019). Furthermore, the use of statistical tools like panel data and cross- country data adopted by previous researchers also ignores the rule that different countries uses different methodologies, indices and policies to determine their level of financial development. It is against this background that this study adopts the (IMF, 2019) Global financial development index on Financial Development Index(FDI), Financial Institutions Access Index (FAI), Financial Institutions Depth Index(FIDI), Financial Institutions Efficiency Index (FIEI) and Financial Institutions Index(FII) as independent variables. While economic development is proxy with Poverty Rate as dependent variables so as to investigate the relationship between financial intermediation and

economic development in Nigeria from 1980- 2019. The data is sourced purely from a secondary sourced using IMF database and research World Bank poverty Rate database. While econometric tool like E-views 10.0 version is adopted for the data analysis. Thus, the rest of this paper is structured as: section two contains the theoretical literature and empirical review, section three will provide methodology, section four ensures the empirical analysis and section five provides conclusion and recommendations.

1.1. Objective of the Study

The major objective of this study is to examine the relationship between financial intermediation and economic development in Nigeria.

The study seeks, among others:

- To examine whether the efficiency of financial institutions index has any effects on economic development in Nigeria.
- To determine whether the Access to financial institutions index can affect economic development in Nigeria.

1.2. Research Questions

- To what extent does the efficiency of financial institutions index affect economic development in Nigeria?
- Does the level of Access to financial institutions index have significant relationship with economic development in Nigeria?

1.3. Hypothesis Testing

- H₀₁: There is no significant relationship between the efficiency of financial institutions index and economic development in Nigeria.
- H₀₂: There is no significant relationship between the Access to financial institutions index and economic development in Nigeria.

2. Theoretical literature

2.1. Concepts of Financial Intermediation

The concept of financial intermediaries can be traced back to the evolution of humans as a societal bring, since then money has consistently possessed two main economic characteristics namely: those who holds financial asset in excess as compared to their immediate needs (i.e. surplus economic unit) and those who do not hold excess financial asset to finance their economic needs or activities (i.e. deficit economic unit). Since then, financial intermediary has been seen as a common financial agent, which plays the role of efficient allocation of funds, when conditions make it hard for moneylenders or financial investors of assets to deal directly with borrowers of assets in financial markets. The insurance firms, deposit money institutions, investment banks and pension funds are incorporated into financial intermediaries. They are financial institutions specialized in the activity of purchasing and selling simultaneously assets and financial contracts. As their name proposes, financial intermediaries intercede between suppliers and users of financial assets. Thus, the exchange of assets from surplus-spending unit to deficit spending unit through financial intermediaries is additionally called FINANCIAL INTERMEDIATION. The financial intermediaries are classified into two major forms namely:

- Banking financial institution (BFI)
- Non-bank financial institution (NBFI)

2.1.1. Bank Financial Institution (BFI)

A bank is a financial intermediary that makes credit by loaning money to a borrower, along these lines making a corresponding deposit on the bank's balance sheet. The credit activities are frequently performed either directly or indirectly through capital business sectors. Because of their importance in the financial system and influence on national economies, banks are significantly controlled in many countries. Most nations have coordinated a structure known as fractional reserve banking under which banks hold liquid assets comparable to simply a section of their current liabilities. In developing countries the Central Bank does this obligation. Notwithstanding to other regulations proposed to ensure liquidity, banks are subject to minimum capital requirements reliant upon an international set of capital standards, known as the Basel Accords.

2.1.2. Non-Bank Financial Institution (NBFI)

This is a financial establishment that doesn't have a full banking license or isn't regulated by a public or international banking regulatory agency. NBFIs play major roles with bank-related financial organizations, such as risk pooling, contractual savings, market brokering investment, and investments. Instances of these assurance firms include banks cheques, check cashing services, short term loans, cash exchanges, micro-loan organizations and pawnshops. The significant job of NBFI is that they give 'many choices to change an economy's reserve funds into capital venture, thus acting as reinforcement that they give 'various alternatives to change an economy's reserve funds into capital investment which provides backup speculation should the essential vital of intermediation ends.'

2.1.3. Theory of Financial Intermediation

The financial intermediation theory basically depends on the reason of reducing transaction costs that emerge as results of the problem of information asymmetry. Gurley & Shaw (1960) contend that intermediaries such as banks obtain information's that isn't promptly accessible in the financial market from economic unit and deficit economic units and use it to facilitate both the savings and borrower of financial assets (Mathew & Thompson, 2008). Along these lines, banks depend on the information asymmetry for screening and characterizing its new customers to whom it wishes to extend financial services such as credits (Rau, 2004; Nissanke & Stein, 2003). The expenses brought about by banks in the intermediation process in the market helps to decide the entrance level and arrangement of financial services. Subsequently, banks securely oversee money and help intermediate between the net savers and borrowers of financial assets. Therefore, since banks interface with both surplus and deficit economic units in the financial markets, they become valuable in analyzing and planning the financial markets because they readily have available information between the lenders and borrowers of financial assets, thus prompting them to form a superstructure in which the wealth of the nation is built.

2.1.4. The Information Asymmetry Theory

The information asymmetry theory is specifically concerned with the problematic relationships between the bank/borrower relation are the screening and monitoring function of banks ex-ante generating the so-called problem of adverse selection; credit rationing, the moral hazard problem, while Central themes in the bank/lender relation are bank runs, why they occur, how they can be prevented, and their economic consequences respectively. In the relationship between bank and borrower, the crucial aspect so far analyzed is the function of the selected bank and the tracking of the granted loans, just as the tricky of moral hazard and antagonistic choice. In the relationship between bank and depositors (creditors), they gave special attention to the factors that determine depositors to withdraw their money before the due date (Boot, 2000; Diamond & Rajan, 2001).

However, the major emphasis of the informational asymmetry theory is the creation of imperfect market hypothesis which must serve as cost benefit effect for market and intermediaries, thus results to the shift of perfect markets of hear heaven hypothesis in an Arrow -Debreu sense of neoclassical theory stressed that:

- No one participant can influence the prices of market;
- placement/borrowing conditions are identical for all participants;
- There are no discriminatory fees; the lack of competitive advantages at the level of participants;
- All financial securities are homogeneous, dividable and transactional;
- There are no transaction costs for obtaining information or of insolvency;

All participants have immediate access to the complete information regarding the factors and elements that can influence the current or future value of the financial instruments.

Although, this conditions of the perfect market hypothesis unfortunately may not exist until there is heavens on earth. Otherwise the incomplete information and imperfection must serve as cost benefit effect for market and intermediaries since the neoclassical theory cannot be fulfil on earth. Consequently, most of these imperfections created by informational asymmetry have led to the emergence of certain specific forms of transaction costs. Hence, the existence of financial intermediaries has emerged partially to eliminate these costs to barest minimum.

In supporting this view, (Diamond & Stone 1984) sees financial intermediaries' action as allowed agents of those who save up and that they can achieve scale economies. In this manner, the individuals who set aside trust accessible assets to these intermediaries for investment into whichever projects they consider feasible, investors having the likelihood to pull out their assets under the pre-set up conditions. We can characterize financial intermediaries as an alliance that arranges the circulation of information according to (Leland & Pyle; 1977).

2.1.5. Transaction Cost Theory

This hypothesis was first evolved by (Benston & Smith Jr.; 1976) and later by (Fama; 1980). Be that as it may, doesn't negate the hypothesis of perfect markets, in contrast to the previous approach. They put together this hypothesis with respect to the contrasts between the advancements in technology utilized by members. Hence, financial intermediaries are seen similar to an alliance of individual creditors or borrowers who exploit the economic scale at the degree of transaction technology advancements. The vital idea of transaction cost doesn't contain only expenses in regards to the exchange costs for the sums or of foreign trade, yet in addition those for monitoring, evaluation and research. In this manner, the job of financial intermediaries is to change the attributes, for example, due date, liquidity, and so on of resources, prompting the supposed subjective transformation of monetary resources, offering liquidity and opportunities for broadening of positions.

2.1.6. Agency Theory

The Agency hypothesis is of the view that when playing out quantitative asset changes, the financial intermediaries serve as an agent to the suppliers of funds, they must maintain the liquidity and profitability status of the stakeholders while monitoring them, risk management, insurance services, creating liquidity and transforming durations. Agency costs are the principal economic dead-weight costs to the intermediary for providing remedies in-order to keep assurance of performance of customer's contracts through hedging, capital cushioning, insuring. It is in these characteristics that financial intermediary is an alliance that manages the dissemination of data (Leland & Pyle; 1977).

2.2. Theories of Economic Development

2.2.1. Endogenous Development Theory

This theoretical framework was first developed by (Kenneth 1962; Rebelo; Helpman, 1991; Philippe & Howitt, 1992) that incorporated imperfect markets and Research and Development (R&D) to endogenous growth model. This theory contends that production processes controlled the growth of Gross Domestic Product (GDP) within the economic system, rather than forces outside that system.

This new growth theory attempts to clarify diverse growth rates across countries and factors associated with the rate of growth of GDP that are left unexplained and exogenously determined in the Solow neoclassical model of growth, i.e. residual factor (Solow, 1956) they are:

- Interests in human capital create external economies and efficiency upgrades that offset to clarify the presence of expanding returns to scale.
- Endogenous growth models also explain anomalous international flows of capital that generate wealth inequalities between rich and poor nations.
- Notwithstanding, (Coccia; 2011 & 2018) reports that different economic literatures, shows that high rates of return on investment within developing economies (with low capital-labour ratios) are eroded by low levels of investments in education, infrastructure, and R&D. thus, this new growth theory depends on neoclassical premises that are inappropriate for LCDs. Consequently, empirical examinations offer a restricted help to the expectations of endogenous development hypothesis (Todaro & Smith 2003).

2.2.2. Complementarities Theory

The major emphasis on this theory is that several factors are necessary for successful development of nations; for instance, investments have to be done by many agents to produce results for any individual agent. At the point when complementarities are available, an activity taken by one firm, association, worker, or government will positively increase the motivations for different agents to make comparative moves. Hence, complementarity involves investments whose returns depend on investments by other agents.

- Big Push model: This model recommends that that production decisions by modern sector firms are mutually reinforcing (Todaro & Smith 2003).
- Kremer's O-ring model (1993): This approach focuses on a production function with many assignments, which should be capability completed to have a full value of product. Missteps during the process of production can be incredibly exorbitant. The product's value (O-ring comes from the accident of the space shuttle Challenger that exploded because one component, the O-rings, failed).

Underdevelopment of nations can be additionally because of a coordination failure as results of the inability of the agents to coordinate their behavior (choices), creating frictional elements for patterns of economic growth.

2.3. Empirical Review

Nwauwa; Nzotta; Akujuobi; Ejazube & Ogoke, (2021) investigates empirically the effect of bank performance on financial intermediation in Nigeria from 1980-2019, using a time series data from IMF Global financial development database and World Bank database. The results of the ARDL indicate that LROA has a negative and significant relationship with LROA; LFID has a positive but non-significant relationship with LROA; LFIE has a negative and significant relationship with LROA and LFII has positive and significant relationship with LROA respectively. While, Granger Causality Test result indicates a bidirectional relationship. The variables used in the study includes bank performance proxy with return on asset (LROA) while, financial intermediation is proxy with financial development index (LFDI), financial institutions access index (LFIA), financial institution depth index (LFID), financial institution efficiency index (LFIE), and financial institution index (LFII). Finally, the study recommends among others that the adequate policies should be established in the financial sector to ensure efficiency and improved access to financial services as to drive economic development and its sustainability in Nigeria.

Patrick (1966) examined the financial growth relationship in underdeveloped countries. He identified Bi-direction causality relationship between financial development and economic growth with supply-lending and demand following. He then argued that the supply lending view has a total dominates at the earlier stage of growth. He further maintained that the supply lending view will certainly disappear gradually as the process of real growth occurs and subsequently turns to demand-following. Inclusion he stresses that as the economy grows, they would meet passively the demand for new financial services from the financial side. The implications here is that growth of financial institutions and markets would channel scares resources from savers supply units to investors with higher rate of returns on investment.

Levine (1991) published a paper titled 'Stock Markets, Growth and Tax Policy'. He examined the role of stock market in economic development and adopted the endogenous growth model in which a stock market emerges in allocation of risk and alters investor in a way that shifts steady state growth rate. However, he argued that stock market speeds up economic growth in the following ways: By facilitation of trades of firm's ownership structure without disturbing the productive process and by allowing agents to diversify the portfolios.

King & Levine (1993a) examined finance and growth in their paper titled 'Schumpeter Might Be Right' using a cross-section of about 80 countries from 1960 to 1989. They track down that different proportions of monetary advancement are unequivocally connected with both current and later rates of economic development.

They focused on that regardless of the weaknesses of each measure. The average degree of monetary advancement services gave by financial intermediaries to 1960-1989 is positively related with evaluating projects, managing- growth and savings mobilization for the period. They infer that development of finance goes before finance matters. For instance, in 1960, the proportion of broad money to GDP as a measure of financial depth is positively correlated and significant to real per capita GDP growth throughout the following 30 years even in the wake of controlling for an assortment of country-specific qualities and strategy indicators. Monetary development is both positively fundamentally connected with investment rate and the effectiveness of capital use. The variables utilized in the examination are: credit to the private sector to GDP, the proportion of deposit money bank domestic assets to deposit money bank, the proportion of claims on the nonfinancial private sector to GDP, domestic assets plus central bank domestic assets, the proportion of liquidity liabilities to GDP, and real per capita GDP.

Alimi&Adeoye (2020) investigated the effect of financial intermediation on economic growth in Nigeria utilizing nation total level yearly data sourced from Central Bank of Nigeria from 1983 - 2018. The study utilized the Ordinary Least Square Regression Analysis techniques to accomplish the study speculation with the guide of STATA 12. The aftereffects of the results, uncovered a significant critical effect of financial intermediation activities on the development of Nigeria's economy. This, accordingly, recommends that the presentation of the financial intermediation process of banks impacts positively on economic growth and discovered that credit conveyed to the private sector demonstrates the limit and proficiency of financial intermediaries in allotting funds to finance economic growth. The aftereffect of the unit root test showed that the stationarity of the relative multitude of factors has been proved. The Johansen co-integration test result showed that a long -run relationship exists among the factors and a short-run relationship was proved utilizing the Vector Error Correction Model (VECM).

Benjamin(2019) examines the effects of financial intermediation on financial development of EAC nations made of Burundi, Kenya, Rwanda, Tanzania and Uganda utilizing panel ARDL model for the time ranging from 1985- 2017. The study builds an index of financial intermediation which includes proxies for the improvement of the financial institution sector utilizing principal component analysis. The broad money, domestic credit, and domestic credit to the private sector, were utilized to shape the record through the Principal Component Analysis (PCA). The Kao and Johansen cointegration tests were performed and demonstrated the presence of long- run connections. Considering that the OLS assessment procedure yields one-sided and conflicting evaluations within the sight of long- run relationship for heterogenous panel, the FMOLS and the DOLS were assessed and the investigation discovered that huge positive impact exist between economic growth and financial intermediation in the EAC over the long run. Thus, the study recommends that policies designed to improve the workings of the financial markets should be urgently implemented as to boost the economic growth of East African countries (EAC) in the long-run.

Usman &Onayemi (2018) assessed the effect of bank intermediation process on economic growth in Nigeria utilizing secondary information acquired from Central Bank of Nigeria Statistical Bulletins spinning from 1983-2014. The OLS regression result showed that credit and advances and cash supply have beneficial outcome on economic growth. While, the cointegration result demonstrated the presence of a long -run time connection exist between the variables used for the study. They want ahead to conclude in their study that financial intermediation by banks fundamentally impacts economic growth in Nigeria within the study periods.

Oluwasogo; Princess; Oluwatoyin&Folasade (2017) researched the effect of economic growth on financial intermediation in Nigeria from 1980 to 2014 covering a time of 34years. The study utilized Johansen cointegration test and Error Correction Model. The results indicate that financial intermediation maintains a long- run relationship with economic growth.

Gisanabagabo&Ngalawa (2016) researched the possible cointegration and causal relationship between economic growth and financial intermediation in Rwanda, using quarterly data navigating from 1966Q1 to 2010Q4. A Structural Vector Autoregressive model was utilized to investigate the short-run elements between the variables utilized. The results suggested the presence of a cointegrating relationship between financial intermediation and economic growth. The study further indicates that the shocks to domestic private sector credit represents the biggest piece of changes in real output growth, and was followed by the shock to potential liquidity.

Nwanne (2015) investigated the implications of economic growth and cost of financial intermediation in Nigeria. The study utilized ordinary least square regression investigation. The co-integration test demonstrated a long- run connection between cost of financial intermediation and economic growth in Nigeria. The study further indicates that total advance s (TA) has altogether affected on economic growth in Nigeria, that loan fee has fundamentally affected emphatically on the development of Nigerian economy and that the degree of total deposit over the periods of the years has adversely affected economic growth in Nigeria. The study recommends policy implications that ill-advised administration of financial intermediation cost might have caused a few macroeconomic outcomes in Nigerian economy and the structure for showing its result in the real sector of the economy. Subsequently, the issue of how total credit, loan cost and total deposit link to the degree of economic growth is of an incredible worry in Nigerian financial execution. In conclusion, the study recommends suggested that Nigerian government ought to guarantee that legitimate control and guidelines should direct financial intermediation cost to accomplish a sound monetary framework.

Ogiriki&Andabai (2014) examined, empirically the connection economic growth and financial intermediation in Nigeria using secondary time series data ranging from 1988-2013. The data utilized were sourced from central Bank of Nigeria (CBN) statistical bulletin of various years and national bureau of Statistics (NBS). The vector error correction model and stationarity demonstrates that the variables are integrated in I (1) order, which infers that unit roots don't exist among the variables used. There is additionally a long- run balance relationship between economic growth and financial intermediation with about 96% short-adjustment speed from long- run equilibrium should there be any distortions. The

coefficient of assurance shows that about 89% of the variations in the economic growth are explained by the financial intermediation variables used in Nigeria. Hence, the study recommends among others that the financial authorities ought to have proper controls on the activities as well as its regulation so as to accomplish a sound monetary framework in the country. Thus efforts ought to be made by financial specialists to checkmate banks from having abundance liquidity to forestall inflation in the economy.

Ogwumike&Salisu (2009) investigated the long-run, short-run, and the causal relationship between economic growth and financial intermediation in Nigeria from 1975- 2008. The study utilized the Bound test approach; the result indicates a positive long-run relationship between economic growth and financial development in Nigeria. Financial intermediation-credit to private sector, stock market and financial reforms apply huge positive effect on financial development. Further, investigation of the short-run elements uncovered that around 40% of the subsequent disequilibrium is caught every period showing negligible deviations from the equilibrium. The result further indicates that the consequence of the VAR-Granger causality test will in general promotes the supply-leading hypothesis. Thus, the study advocated that suitable administrative and macroeconomic approaches that will encourage the extension and advancement of the Nigerian financial organizations ought to be sought after by the major authorities.

Emmanuel &Odum (2019).analyzed the effects of financial intermediation on the economic development in Nigeria from 1986-2017. The study utilized secondary data from Central Bank of Nigeria (CBN) Statistical Bulletin, World Bank (World Development Indicators) and International Monetary Fund (World Economic Outlook) and E-views 9 were used for data analysis tool. The variables used include loaning rate, money supply and credit to private sector, as independent variables, while unemployment and rate real GDP growth rate were utilized as dependent variables. The Autoregressive distributed Lag (ARDL) procedure was utilized so as to accomplish the targeted objectives of the study. The overall results shows that the volume of credit to private sector don't actually contribute positively to the improvement of the Nigeria economy for the purpose of upgrading economic growth and diminishing unemployment. The conceivable explanation as clarified in the text is that Money supply and high interest rate helps the nation to achieve a better economic growth.

Alpha; Ding; Abdrahmane&Kargbo (2016) empirically studied the impact of financial intermediation on economic growth. The study adopted a panel data from 1985 to 2013. The result indicates that interest rates spread and inflation rate are high in West African Countries. While the aftereffects of dynamic growth regression panel broad money (M2) and the degree of monetary intermediation (M3) sway growth positively in the area, along these lines, credit supply, interest rate spread and inflation rate impact conversely on growth in the West African region.

Godwin (2017) examined empirically the effect of human capital development on financial intermediation of sub-Saharan African nations from 1980-2012, using time series secondary data from the World Bank and applying the Ordinary Least Square (OLS) techniques.

Basher (2013) analyzed the linkage between open markets, financial sector development and economic development to know whether markets together with financial sector development influence economic growth in Nigeria. The examination utilized Granger causality test, Johansen cointegration test, and vector error correction model. The results indicate that causality between open markets, financial sector development and growth in Nigeria is weak and insignificant; such can't be utilized to gauge economic development in Nigeria. This examination moreover doesn't consider impacts of monetary intermediation on financial improvement utilizing credit to the private area, loaning rate and financing cost edge as free factors in the country.

Michael&Krumah (2013) analyzed the connection between monetary development and monetary advancement in Ghana utilizing period series yearly information crossing from 1971-2010. The econometric investigation instrument utilized Error correction and generalized method of moments (GMM) techniques and incorporates completely Modified Ordinary Least Square (FMOLS), while the factors domestic credit to the private sector as a portion of GDP and broad money supply as a share of GDP. The consequence of the examination uncovers that financial development sabotaged economic development in Ghana.

Nwaeze&Egwu (2013) studied the impact of the total domestic credit of commercial banks on the growth of the Nigerian economy from (1990-2009). The findings of this study using real GDP and commercial bank credit as indicators and ANOVA as an econometric tool for data analysis shows bank credit has a significant impact on the economic growth of the Nigerian economy within the period under study large credit should be channelled to the real sector that stimulate the economy rather than non- contributing sectors.

Adusei&Afrane (2013) observationally inspected how monetary intermediation identifies with economic growth in 12 credit association (CU) nations utilizing board GMM assessment methods. The outcome proposes that monetary intermediation has a huge beneficial outcome on financial development.

Rousseau & Alexandra (2013) used a time series methods to investigate the link between financial development and real activities in the sub-Saharan African region. They used a time series data for 22 countries spinning from 1960 to 2009. The result indicates a uni-directional link from financial development to indices of real activities for about two-third of them. While in most cases the effects come from narrow money rather than more broadly defined financial aggregates. These results confirm that monetization plays a vital role in capital accumulation and growth in many of these sub-Saharan African countries used for the study. The implication of their results was not to say the most countries where they found a link from narrow money balance to real activities have successfully attended a sustainable and desirable level of financial development, but the path to financial development begins with monetization and not with the complex volatile market for financial instruments.

Ogunyiola (2013) researched the short-run and long-run relationship components between economic growth and bank-based financial intermediation in Cape Verde 1980-2011. The examination used Johansen and Juselius' methods of

co-integration. The observational outcomes showed the presence of a long-run connection between financial development and bank-based financial development in Cape Verde. In the short run, they saw no positive critical relationship to exist between economic growth and financial development in the investigation region.

Adu; Marbuah; & Mensah (2013) analysed the long-run growth development impacts of financial development in Ghana. The results indicate that the effect of bank-based financial development on economic growth is proxy-sensitive. The study used total domestic credit as proxies of bank-based financial intermediation and credit to the private sector as an extent to GDP. The outcomes affirmed a positive about economic growth. While, they confirmed a negative effects when broad money stock to GDP ratio was used in the study.

Sahoo (2013) analyzed the contribution of financial intermediation on the improvement of the Indian economy. The result of the granger causality test suggests that causality flows from private sector credit to growth. This result confirms that financial intermediation drives growth. No causality was seen between stock market capitalization and growth. However, the ARDL result shows that bank-based financial development has a greater positive influence when compared to market-based financial intermediation.

Petkovski&Kjosevski (2014) analyzed the effect of bank-based financial development on economic growth in 16 transitional economies from Central and South Eastern Europe using a generalized method of moment's dynamic panel method (GMM). The study results showed that while the proportion of quasi-money is positively related to economic growth, credit to the private sector and interest margin are negatively related to economic growth in these study countries.

Tonye&Andabai (2014) examined the connection between monetary intermediation and economic advancement in Nigeria. The econometric devices used were vector error amendment model. The study found that there is a long run relationship between financial intermediation and financial development. The investigation presumed that about 89% of the variations in economic development in Nigeria are clarified by changes in financial intermediation factors. This investigation doesn't consider effects of financial intermediation on financial development utilizing credit to the private sector, lending rate and interest rate margin as independent variables in the country.

Nwite (2014) investigate the effects of finance and implications on economic growth in Nigeria from 1999-2014. The statistical tools used for data analysis are ordinary least square regression and error correction model. The result indicates that interest rate margin and credit to the private sector has significantly impacted positively on the development of Nigeria economy, while the level of lending rate impacted negatively on economic growth in Nigeria. The study further revealed that a positive and significant relationship exists between financial intermediation and economic growth.

Bouزيد&Radhina (2014) investigated the connection between economic growth and financial intermediation in Tunisia. The result of the vector Auto regression analysis VAR shows that financial intermediation positively impact on economic growth in the study area.

Sulaiman; Migiro&Aluko (2014) test the causality between economic development and monetary intermediation in Nigeria from 1990-2013. The result of the Toda-Yamamoto grander causality technique suggested that causality is not present between financial intermediation and economic growth. They want on to recommend better reforms by government to increase banks' capacity to intermediate funds to the real sectors to enhance economic growth.

Fantessi&Kiprop (2015) examine empirically the relationship between financial development and economic growth in the West African Economics and monetary union (WAEMU) from 1981 to 2010. The econometric tools used is General Moment Method (GMM). The result of the study reveals a bi-directional causality with a positive and statistically significant result between financial development and economic growth. However, variables like primary completion rate, foreign direct investment and real exchange rate contributes positive to completion rate, foreign direct investment and real exchange rate contribute positively to economic growth in the region, while inflation and openness discourages the economic growth in the region. Finally, the researcher noted that in order to maintain a sustainable economic growth in these countries under review, reforms for financial system improvement and education sector should be implemented. The variables used for the study include real GDP (Dependent variable), credit to private sector, inflation rate, primary completion rate, openness and foreign direct investment.

Leyla & Aytan (2015) in their paper titled "Financial development and economic growth" utilized four variables on financial depth, access, efficiency and stability to investigate the impact of financial development and economic growth. The result indicates that the four variables of financial deployment used in the study differ depending on the levels of financial development with an invented S-Shape function.

Sheilla& Nicholas (2015) empirically investigates the effect of bank-based financial development with respect to economic growth in Ghana from 1970-2014 for a period of 44years. The investigation utilized five intermediaries' variables to quantify bank-based financial development, which include a composite index of bank-based financial development derived from various financial development indicators. The outcomes utilizing the autoregressive distributed lag (ARDL) bounds testing approach establish that the effect of bank-based financial development on economic growth in Ghana is sensitive to the proxy used to measure bank-based financial development. The investigation additionally demonstrates that when the proportion of deposit money banks' assets to GDP is used as a proxy, bank-based financial development has a negative impact on economic growth, while when the proportion of deposit money banks' assets to GDP is utilized as indicator, bank-based monetary improvement contrarily affects economic development; when the when the proportion of the claims of deposit money banks on the private sector to broad money was utilized as an indicator for bank-based financial development, the results shows that bank-based financial development is found to have a negative impact on economic growth in the short run, with a positive correlation over a long run, yet when the

proportion of quasi-liquid liabilities to GDP is utilized, the relationship is positive in the short run and consequently negative in the long run. These outcomes are so whether or not the assessment is done in the short run or as time goes on. Eugene (2016) exactly analyzed the connection between financial intermediaries and economic growth in Nigeria Over the period 1981-2011 utilizing the auto-regression distributed lag (ARDL) techniques and cointegration test for the study. The outcome demonstrates that the relationship between economic growth and financial intermediaries in Nigeria is negatively insignificant in the long-run and negatively significant in the short-run. The implication of this study reveals that the oil-sector has the dominate role in the allocation of bank credit in Nigeria economy. Although this activity could be traced to the much dependency of the oil sector as the only sources of economic development without diversifying the economic activities as to provide more link between the financial sector and private sector to absorb external and fiscal Shocks.

Beck &Hesse (2006) studied the high cost of financial intermediation in Uganda. Their study utilized a unique bank level data set on the Uganda banking system from 1999 to 2005. The result uncovers that bank level characteristics like bank size, operating cost and composition of loan portfolio affects financial intermediation cost. The investigation further uncovers that monetary intermediation cost has no robust and economic relationship with market structure, foreign bank proprietorship and bank effectiveness in Uganda. Along these lines, the investigation overlooked the impact of monetary intermediation on economic development utilizing lending rate margin and credits to the private sector, as indicators to measure independent variable for the study.

Hurlin&Venent (2008) studied the financial growth relationship using a sample of 63 countries and developing countries from the period 1960-1995 and 1960-2000, respectively. The Indicators used are private credit by deposit money bank as a proxy for financial development, liquid liabilities of financial system to GDP, and credit by money banks and other financial institutions to private sectors. The result suggested a one-way causality relationship from economic growth to financial development.

Nzotta&Okereke (2009) empirically investigates economic development and financial deepening in Nigeria from 1986- 2007. The study utilized nine (9) explanatory variables which includes; Private Sector Credit/GDP (PSC/GDP), worth of Checks Cleared to GDP proportion (CHQ/GDP), worth of Checks Cleared to Money Supply (CHQ/MS2), the Rate of Inflation (INFLA), Prime loaning rates (PLRA) and Financial Savings/GDP ratio intermediation proportion for example Cash outside Banks to Money Supply (COB/MS2) and the Dummy and GDP as Independent and ward factors. While a two stages least squares, they used analytical techniques in the data analysis. They also conducted an econometric trend analysis for the study. The outcomes show that financial deepening index is low in Nigeria throughout the long term. Besides, the investigation additionally uncovered that the nine illustrative factors utilized were valuable and had a statistical relationship with financial deepening. Just four (4) factors used for study, such as financial savings proportion, checks/GDP proportion, lending rates and deposit money banks/GDP proportion had a positive critical relationship to financial deepening.

Esso (2009) empirically determined the causal relationship between economic advancement and financial development in ECOWAS nations utilizing a time series data from 1960-2005 making a period of 45 years. The econometric tools used for data analysis were autoregressive distributed lag and a test for non-causality proposed by Toda and Yamamoto (1995) were adopted. They used variables like the ratio of M2 to GDP as a proxy for financial development. The outcome uncovers a long run connection between economic growth and financial depth in certain nations like Togo, Guinea, Niger and Cote d' ivories, while a negative long-run connection in Sierra Leone and Cape Verde was found.

3. Model Specification

From the Pagano (1993) AK model framework deduced from the endogenous growth model that established the relationship between finance and growth where the aggregate out (Z_t) is a linear function of aggregate capital stock (Y_t):

$$Z_t = AY_t \text{-----1}$$

But if each firm constant returns faces technology (A) to scale with and increased function of productivity of aggregate capital stock. Y_t . Which has both physical and human capital? The assumption for stationarity population is that one good is produced in an economy which are either invested or consumed. When invested, it can depreciate per period at the rate β . Thus gross investment equals:

$$I_t = Y_t + 1 - (1 - \beta) Y_t \text{-----2}$$

We note that gross savings should be equal to gross investments in a closed economy, which is lost in the model developed by Pagano 1993.

Now, the loss of proportion $1 - \mu$ on the flow of savings that is due to financial intermediation so that at the equilibrium we have:

$$\mu S_t = I_t \text{-----3}$$

From equation (2) steady state growth rate can be written as follows:

$$g = A(1 - \beta) \text{-----4}$$

$$g = A\mu s - \beta \text{-----5}$$

Where, g is the economic growth and s is the saving rate obtained from S over Z .

Consequently, financial intermediation can influence economic growth in three potential ways:

- It can increase μ the amount of savings channelled to investments;
- It can increase A the minimal efficiency of capital and
- It can increase the private saving through s .

If we assume zero depreciation rates ($\beta = 0$) we obtain the Pagano endogenous growth model given by:

$$g = A\mu s \text{-----6}$$

Furthermore, for the purpose of this study, following a detail review of the above model, the study adopts (Oluwasogo et al., 2017; Benjamin KanzeMuhoza; 2019; Emmanuel & Odum; 2019; Nwauwa; Nzotta; Akujuobi; Ejazube & Ogoke, 2021) model and rephrase it as stated below.

In our model, Economic Development is proxy with poverty Rate, depends on Financial Intermediation proxied with financial development index (FDI), financial institutions access index (FIAI), financial institution depth index (FIDI), financial institution efficiency index (FIEI), and financial institution index (FII). Thus, the functional and parametric model is stated below:

The study assumes that Economic Development is a function of Financial Intermediation.

Mathematically:

Economic Development = F (Financial Intermediation)

(Poverty Rate) $t = F$ (FDI, FIAI, FIDI, FIEI, FII)3.1

$PVR_t = \beta_0 + \beta_1 FDI + \beta_2 FIAI + \beta_3 FIDI + \beta_4 FIEI + \beta_5 FII + Z_t$ 3.2

Transformed logarithm in equation 3.2 in order to have the same form for a better result.

$PVR_t = \beta_0 + \beta_1 \text{Log} (FDI) + \beta_2 \text{Log} (FIAI) + \beta_3 \text{Log} (FIDI) + \beta_4 \text{Log} (FIEI) + \beta_5 \text{Log} (FII) + Z_t$ 3.3

Where:

PVR = Poverty Rate: Dependent variable

FDI = Financial Institutions Development Index

FIAI = Financial Institutions Access Index

FIDI = Financial Institutions Depth Index

FIEI = Financial Institutions Efficiency Index

FII = Financial Institutions Index

Z_t = stochastic variables which cannot be quantified.

β_0 = Intercept

$\beta_1 > 0$, or < 0 , $\beta_2 > 0$ $\beta_3 > 0$ $\beta_4 > 0$, $\beta_5 > 0$ are the apriori expectation.

4. Data Analysis Techniques

Table 1 Augmented Dickey-fuller unit root test (ADF) results indicates that the variables used in the study were stationary at order 1(1) first differencing as prove with their likelihood estimations of 0.0000, 0.0000, 0.0003, 0.0000, 0.0000 and 0.0019 respectively. This result pointed out that there is a long-run cointegration relationship among the variables under investigation. Hence we proceed further to establish the long-run relationship (See appendix).

From Table 2 presented above, the results of the linear deterministic trend in the data with the maximum lag interval of 1(1) performed, indicates the presence of at least one (1) cointegrating relationship equation, this is validated by the values of trace statistics and maximum Eigenvalue with the probability of 0.05% level of significance as shown in the table above, thus infers that there exist long-run equilibrium relationship between Economic Development and Financial intermediation. Thus, we proceed to further establish the short-run relationship having proven the long-run (See appendix).

The graph of the CUSUM coefficient short-run dynamic stability test of the Economic Development Model presented in figure 1 is particularly useful for detecting the systematic changes in the regression coefficients. Since rule of thumb here is that, if the blue line lies in between the two red lines, then we can infer that the coefficient parameters are stable. But if the blue line lies outside the two red lines, then the test finds parameter instability. Thus from the result of the graph presented above in figure 1, the regression equation is correctly specified at the 5% critical level of significance, prompting the parameter consistency or stability, hence the null hypothesis is accepted. Consequently, the result further proved that there is a short-run relationship among the variables after establishing the error term (See appendix).

Table 1.3 the study of pairwise granger Causality test is basically used to determine the relationship between 'X' and 'Y' and how much of the current 'Y' can be explained by the past values of 'Y' and then to see whether adding lagged values of 'X' can improve the explanation see (Engle & Granger, 1987)

Therefore, the result of pairwise granger Causality test performed on the lag maximum length of four (4) with order 1(1) of first difference log transformation of variables, suggests that causality runs Bi-directional from LFDI to LPVR, FIAI to LPVR, LFII to PVR, LFIAI to LFIDI and not the other way round. Therefore, the implication of this result is that Economic Development just follows financial intermediation, through the supply of financial services that come from development of financial institution and markets (supply- lending). Thus, this result is in conformity with the economic reality proposed by (King & Levine, 1993) See appendix.

Taking note of the t-values in parentheses for table 1.4 OLS Regression Technique

$PVR_t = 4.426508 + 0.418698 - 0.728058 + 0.082655 - 1.512647 + 1.417526$ 3.3

(8.580483) (3.058856) (-3.533862) (0.663850) (-2.547501) (1.790830)

The result of the OLS regression shows that 8.580483 increases in the Economic Development will attract 3.058856% increase in financial development index, 3.533862 decreases for financial institution access index, 0.663850 increase financial institution development indexes, 2.547501 decrease in financial institution efficiency index and 1.790830 increase in financial institution index respectively. Furthermore, the F-statistics value of 18.47345 and associated probability value of 0.000000 revealed that the variables are jointly significant in explaining financial intermediation and economic development. While the R-squared adjusted value of 0.736773 pointed out that the model explained about 74% variation in the economic development, while the remaining 26% accounted for the independent and stochastic variables.

The F-statistic and R-square adjusted values revealed that the model is reliable in making informed decisions. Although, the relative statistics of the log-linear model shows that both LFIAI and LFIEI is negatively and significant on Economic Development, while LFDI is positive and significant, again LFIDI and LFII is positive and non-significant. The signs of LFIAI and LFIEI are not in line with the apriori expectations. This simply means that 1% increase in LFIAI and LFIEI financial intermediation will conversely reduce economic development.

5. Conclusion and Recommendation

The result of Augmented Dickey- Fuller unit root test conducted using the E-views statistical package 10.0, suggests that both the dependent and independent variables used were stationery at order 1(1) first differencing. Thus, the condition infers that, there is no reason to doubt the stationarity of the variables under the study, confirming the position of (Engle and Granger; 1987). While Johansen Cointegration test for (PVR) indicates 1 cointegrating equation with the maximum eigenvalue at 5% levels of significance. Furthermore, the result reveals the presence of long-run relationship between the variables used and its usefulness, thus we rejected the null hypothesis of no cointegration. This test of was adopted in other to reduce the issue accompanying with the stationarity of the time series data. While, the Vector error correction and custom diagnostic coefficients residual test, for the short-run dynamic stability test of the Economic Development Model indicates that, the behaviour of the residual parameters is consistence and stable over the period of the study. Further analysis of the results, indicate that there is no issue of multicollinearity among the variable used, thus gives credence to the performance of the variables under study. The pairwise granger causality test result in table 1.4 revealed that causality runs Bi-directional from LFDI to LPVR, FIAI to LPVR, LFII to PVR, LFIAI to LFIDI and not the other way round. Hence this result is in conformity with other related works of (Sahoo, 2013; Fantessi&Kiprop, 2015; Nwauwa; Nzotta; Akujuobi; Ejazube&Ogoke; 2021)) and disagrees with (Rousseau & Alexandra, 2013). Finally, the R-squared adjusted value of 0.736773 pointed out that the model explained about 74% variation in the economic development, while the remaining 26% accounted for the independent and stochastic variables. The F-statistic and R-square adjusted values revealed that the model is reliable in making informed decisions.

Therefore, the study recommend that, the key players in the financial institutions frameworks should concentrate more with policies and programmes that will enhance more rapid actions on financial access and efficiency so as to propel rapid economic development as one of the essential vehicles to reduce poverty rate in Nigeria.

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Appendix

Augmented Dickey-Fuller Unit Root Test					
Variable	ADF Test statistics	5% Critical Value	Order Of Integration	Probability Value	Summary
LFDI	-5.903470	-2.941145	1(1)	0.0000	Stationary
LFIA	-6.212504	-2.941145	1(1)	0.0000	Stationary
LFID	-4.967657	-2.951125	1(1)	0.0003	Stationary
LFIE	-5.718128	-2.945842	1(1)	0.0000	Stationary
LFII	-5.966106	-2.945842	1(1)	0.0000	Stationary
LPVR	-4.241017	-2.943427	1(1)	0.0019	Stationary

Table 1: Augmented Dickey-Fullers

Sources: Author's Computation from E-view 10.0

Date: 10/19/21 Time: 07:42 Sample (adjusted): 1983 2019 Included observations: 37 after adjustments Trend assumption: Linear deterministic trend Series: LPVR LFDI LFIAI LFIDI LFIEI LFII Lags interval (in first differences): 1 to 1 Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.650266	105.9903	95.75366	0.0082
At most 1	0.483639	67.11884	69.81889	0.0806
At most 2	0.449877	42.66374	47.85613	0.1410
At most 3	0.248933	20.55203	29.79707	0.3862
At most 4	0.235790	9.960388	15.49471	0.2838
At most 5	0.000287	0.010629	3.841466	0.9176
Trace test indicates 1 cointegratingeqn(s) at the 0.05 level * denotes rejection of the hypothesis at the 0.05 level **MacKinnon-Haug-Michelis (1999) p-values				

Table 2: Johansen Cointegration Test
Sources: Author's Computation

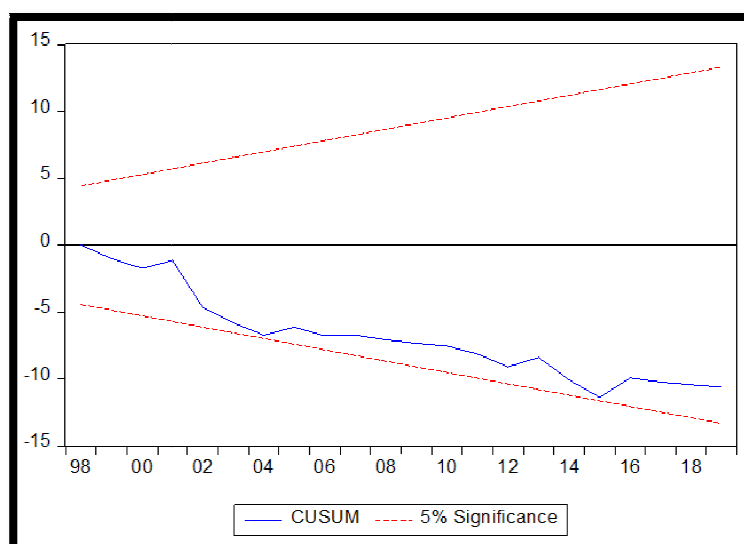


Figure 1: Cusum Coefficients Stability Short-Run Error Test
Sources: Authors Computation

Pairwise Granger Causality Tests			
Date: 10/19/21 Time: 09:19			
Sample: 1980 2019			
Lags: 4			
Null Hypothesis:	Obs	F-Statistic	Prob.
LFDI does not Granger Cause LPVR	35	8.12544	0.0002
LPVR does not Granger Cause LFDI		0.09248	0.9840
LFIAI does not Granger Cause LPVR	35	4.32661	0.0082
LPVR does not Granger Cause LFIAI		0.43645	0.7810
LFIDI does not Granger Cause LPVR	35	2.49305	0.0676
LPVR does not Granger Cause LFIDI		2.38442	0.0772
LFIEI does not Granger Cause LPVR	35	2.07863	0.1126
LPVR does not Granger Cause LFIEI		1.74264	0.1709
LFII does not Granger Cause LPVR	35	2.63701	0.0568
LPVR does not Granger Cause LFII		1.21758	0.3274
LFIAI does not Granger Cause LFDI	36	1.58861	0.2059
LFDI does not Granger Cause LFIAI		2.09743	0.1089
LFIDI does not Granger Cause LFDI	36	0.36309	0.8327
LFDI does not Granger Cause LFIDI		2.46858	0.0687
LFIEI does not Granger Cause LFDI	36	0.79477	0.5390

LFDI does not Granger Cause LFIEI		1.46857	0.2393
LFII does not Granger Cause LFDI	36	1.92960	0.1343
LFDI does not Granger Cause LFII		2.45563	0.0698
LFIDI does not Granger Cause LFIAI	36	0.18371	0.9449
LFIAI does not Granger Cause LFIDI		3.28153	0.0258
LFIEI does not Granger Cause LFIAI	36	0.72105	0.5851
LFIAI does not Granger Cause LFIEI		1.79112	0.1598
LFII does not Granger Cause LFIAI	36	0.94666	0.4523
LFIAI does not Granger Cause LFII		1.21775	0.3264
LFIEI does not Granger Cause LFIDI	36	0.98271	0.4335
LFIDI does not Granger Cause LFIEI		1.25321	0.3125
LFII does not Granger Cause LFIDI	36	1.33323	0.2831
LFIDI does not Granger Cause LFII		0.55950	0.6940
LFII does not Granger Cause LFIEI	36	1.36374	0.2726
LFIEI does not Granger Cause LFII		0.78777	0.5432

Table 3: Pairwise Granger Causality Test

Sources: Authors Computation

Dependent Variable: LPVR				
Method: Least Squares				
Date: 10/19/21 Time: 07:38				
Sample (adjusted): 1981 2019				
Included observations: 39 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LFDI	0.418698	0.136881	3.058856	0.0044
LFIAI	-0.728058	0.206023	-3.533862	0.0012
LFIDI	0.082655	0.124509	0.663850	0.5114
LFIEI	-1.512647	0.593777	-2.547501	0.0157
LFII	1.417526	0.791547	1.790830	0.0825
C	4.426508	0.515881	8.580483	0.0000
R-squared	0.736773	Mean dependent var		3.992409
Adjusted R-squared	0.696891	S.D. dependent var		0.157614
S.E. of regression	0.086775	Akaike info criterion		-1.910356
Sum squared resid	0.248487	Schwarz criterion		-1.654424
Log likelihood	43.25194	Hannan-Quinn criter.		-1.818530
F-statistic	18.47345	Durbin-Watson stat		0.721331
Prob(F-statistic)	0.000000			

Table 4: Ols Multiple Regression Test

Sources: Authors Computation