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Financial intermediation and Economic growth in Nigeria (1970-2013)

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Abstract
The paper examines the effect of financial intermediation and economic growth in Nigeria. Annual time series data covering 1970 to 2013 were used to analyze the long run and short run relationships between the development of financial intermediaries and economic growth along with the direction of causality between the indicators. The results of the unit root test show that the variables are integrated at I(0) and I(1). Using bound testing technique for cointegration, a stable long-run relationship was found between the indicators of financial intermediation and the economic growth. Error correction coefficient was statistically significant. It was concluded that credit to private sector and financial savings have positive impacts on economic growth in both short runs and long-run. However, money supply has a negative influence on economic growth. The causality test reveals a bi-directional relationship between inflation and economic growth while a unidirectional causality moves from financial savings to economic growth. It is recommended that: Financial institutions, either promoted by government or the private sector, should offer more credits to the private sector with bearable interest rates; the government should adopt inflation reduction policies and also intensify export diversification policies and incentives; and the government should ensure stable political and economic climate conducive to investment as well as finance its budget deficit from real resources.

Keywords: economic growth, financial intermediaries, unit root test, ARDL cointegration, bounds testing approach, toda yamamoto causality

1. Introduction: Background

Financial intermediation refers to the art of mobilizing savings from the surplus units and channeling them into deficit units of the economy for productive investment. It is the art of channeling funds from savers to investors by mobilizing funds and ensuring efficient transformation of funds into productive capital formation. Economic growth of a country is mainly driven by accumulation of capital. It occurs when financial institutions make the savings of households, cooperate bodies and institutions whose income exceed their spending, available to investors or other agents that wish to spend more on consumer goods than their incomes allow (Okon, 2008:31).

As noted by Onyido (1998:29) [83], the commercial banks constitute the cost important intermediaries in the financial system by virtue of their control of the largest proportion of the assets of the financial system and their dominant position in the intermediation of short term funds". Other forms of depository institutions whose liabilities possess relatively low degree of money-ness also play the financial intermediation in the monetary (banking) sector. In the non-monetary financial sector, the financial intermediaries include insurance companies, Pension and provident funds, saving and loan associations, lending companies, venture capital companies, finance institutions and discount houses. While complementing the banking institutions in financial intermediation, their operations are aimed at bridging the gap in term structure of credit by providing long term investible funds for the growth and development of the economy.

Finance has been identified as the underlying requirement for input factors in the development process and also regarded as an engine of growth in any economy (Onoh, 2002; in Ogiriki and Andabai 2014) [82, 14]. In an economy like ours which is in hurry to develop in the face of serious constraints, using the words of Onyido (2004), much attention is placed on the financial system and its components for the mobilization of funds for economic growth.

The economic agents responsible for such transfers are called financial intermediaries and the process through which it is done is called financial intermediation (Umoh, 2014). In the words of Shittu (2012 :166) [94], King and Livine (1993), citing Schumpeter (1911), posited that the services provided by financial intermediaries: mobilizing savings, evaluating projects, managing risks, monitoring managers, and facilitating transactions are essential for technological innovations and economic development.

Notably, financial intermediation influences economic growth by affecting the extent to which savings become available and allocated to investment opportunities that bring the highest return (Olomola, 1977:51) [81]. Moreso, the importance of financial intermediation results from the special role it plays in making contractual arrangements that link borrowers and lenders more efficiently than if these agents had to trade directly (Williamson, 1987) [98]. Therefore, financial intermediation which is "The purchase of primary securities from ultimate borrowers and the issue of indirect debt for the portfolio of ultimate lenders" (Gurley and Shaw, 1967) [48] is necessary for economic growth in Nigeria since it promote investment, without which economic growth and development is impossible (Orebiyi, 2000:75) [2000].

A body of theoretical and empirical literature suggests a strong and positive link between financial development and economic growth. This is mainly explained in the endogenous growth literature, and it is in line with the argument that financial development has a positive impact on the steady state growth (See Bencivenga and Smith, 1991, Levine 1993, and Greenwood and Jovanovic, 1990 [46];

among others) [14]. These researchers have highlighted, at the theoretical as well as empirical level, the significance of having a developed financial system to support economic growth.

The paper is arranged in sections thus:

Section 1 – Background
Section 2 – Problem Statement
Section 3 – Objectives of the Paper
Section 4 – Literature Review
Section 5 – Stylized Characterization of Financial Intermediation in Nigeria
Section 6 – Methodology
Section 7 – Results and Discussions
Section 7 – Conclusion and Recommendations

2. Problem Statement

Given the main objective of financial reform in developing countries, which is to enhance financial deepening and intermediation by increasing savings mobilization and credit allocation for investment and growth purposes (Adam, 1998:26; Olomola, 1997:51) [81], the Central Bank of Nigeria (CBN) has been working to ensure that the financial sector in Nigeria plays it roles in the achievement of growth and development in Nigeria.

In an under banked economy like Nigeria where the financial markets are rudimentary, with a large size of financial intermediation taking place in the informal sector, savings seems not to be sensitive to the real interest rates, (Adebiyi, 2004: 340) [3]. The empirical evidence on the ground seems to support the above statement that substantial savings had not been mobilized and efficiently channeled for productive investment and sustained growth and development (Ekpo *et al.* 2004: 51) [33]. They posit that the formulation of policies to arrest the poor savings record in Nigeria must be based not only on sound theories of saving behavior, but also on their rigorous testing and validation for the Nigerian economy.

Again, it has been variously reported and concluded by many that the business environment in Nigeria is very risky and uncertain. The reported high level of corruption at all levels in the country, the rampaging insurgency in the North Eastern Nigeria, the activities of the militants in the Niger Delta, which involves economic sabotage (blowing up oil and gas pipelines), piracy and kidnappings, the South Western and Eastern parts of the country's armed robbery and kidnapping menaces, constitutes the breaches that exacerbate distortions which encourages the very high, risky and uncertain business environment of Nigeria. Besides, the judicial system is reportedly inefficient and banks cannot easily enforce contracts. Consequently, banks charge high interest rates, demand high levels of collateral and make few loans of more than a years' maturity. Moreso, the manner in which commercial banks restrict the expansion of credit to public investors, business, and individual customers also constitutes problems in the activities of financial intermediation. Most of them prefer to give loans to rent seeking businesses and states governments.

There is also the problem of high lending rates which makes loan usually unattractive with a high tendency for subjectivity and biases in gaining easy access to funds, crowding out private credit seekers. The problem of inadequate mobilization of funds is also evident, as the surplus saving units may not be able to save sufficient fund for deficit spending units to borrow. All these give room for inadequate financial intermediation in the country. Again, despite the Central Bank of Nigeria (CBN) efforts to ensure that financial sector in Nigeria maintain a considerable depth and remain liquid with a view to competing effectively globally; the fear of systemic risk lingers, the supply of credit to investors is still questionable, while economic growth is relatively stable.

An in-depth assessment of extant literature on financial intermediation cum growth nexus, in order to address the credit conundrum yields no unique conclusion. This is evident as some studies concluded that financial intermediation drives economic growth (see Odedokun, 1998; Okon, 2008; Nieh *et al.* 2009; Islam and Osman 2011; Shittu, 2012; Ogiriki and Andabai, 2014) [73, 67, 54, 94, 78], while others have argued that economic growth drives financial intermediation (Liang and Teng, 2006; and Coccorese, 2008.) [64, 24]. Adding to the disparity are yet studies which have argued that a bi-directional causality exist between financial intermediation and economic growth (Obedegun, 1996; Wang, 1999; Abu-Bader and Abu-Qarn, 2008; Odhiambo, 2011; Hassan *et al.* 2011) [1]. Again, most of these studies were cross country based. Given that the operation of the financial institutions and polices pursued in each country differs; a curious reader may be interested in what would be the sign and causality of the relationship between financial intermediation and economic growth using a country specific data. The gaps identified above motivated this paper.

3. Objectives

The specific objectives of this study include the following:

i) To examine the effects of financial intermediation variables on economic growth of Nigeria.
ii) To determine the direction of causality between financial intermediation variables and economic growth in Nigeria.

4. Review of Literature

The link between financial intermediation and economic growth has been associated with three main hypotheses namely: the Classicist theory of Capital Formation, Financial Repression Hypothesis and the Endogenous Growth theory.

i) The Capital Formation Theory

Capital formation theories are attributed and associated with classical writers like Adam Smith (1776) and David Richardo (1817). According to these theories, capital formation could be achieved if the society does not apply the whole of its current productive activity to the needs and desires of immediate consumption but direct a part of it to the making of capital goods that can so greatly increase the efficiency of productive efforts.

Classical economics view economic growth as being largely influenced by the ability of the people to save more and invest more in an economy. Saving, according to this theory can be formed through less expenditure and more production. Capital formation is thus an important determinacy of economic growth. Moreso, the classical/neoclassical theories of economic growth posit that economic growth can only take place with increase in productivity. Saving and capital accumulation play a significant role in ensuring tremendous increase in productivity. Financial intermediation, thus,

brings about economic growth through improvement in saving mobilization and subsequent investment of such savings to accelerate economic growth.

Classical economists have also stressed the combination of productivity and thrift as the two principal determinants of interest rates. Neoclassical economists, however, while recognizing the importance of production and thrift, emphasize the desire for a certain pattern of consumption and savings over time. Thus, borrowing to increase current consumption was also seen as a determinant of the demand for loanable funds, and therefore, of the level of interest rate (Fisher 1930, Henning *et al.* 1975).

The link between saving and investment, via financial intermediation, is important because it holds the positive correlation between savings and growth. If capital accumulation is therefore, indeed the engine of growth, understanding the interaction between savings and investment is crucial for assessing the validity of the traditional belief that increasing savings is the surest way to promote growth (Schmidt – Hebbel *et al.* 1996) [91]. The best medium for understanding this interrelationship is financial intermediation.

ii) The Financial Repression Hypothesis

Ronald Mckinnon (1973) and Edward Shaw (1973) [93] are the advocates of this hypothesis. The hypothesis states that, the imposition of control on the financial system discourages saving, distorts the flow of credit, and hence intercept and destroy impulse to economic growth.

Financial repression arises when government policies distort the efficient functioning of the domestic financial markets by keeping returns of financial assets low and shifting the allocation of credit from the market to government, thereby repressing the economy (Fry, 1973; Athukorala and Rajaturana, 1993) [11]. The crucial role of financial sector is its ability to transfer savings from household to investors (that is financial intermediation). Mckinnon points to the interventionist policies of Government of developing countries as a reason for the inability of developing countries to attain real growth. These interventions according to him, take the form of ceiling on deposits and high reserve requirements on deposits which reduces the attractiveness of holding claims on the domestic financial system. Fry and Mason (1983:732) posit that financial repression includes all indiscriminate distortions of financial prices including interest rates and foreign exchange rates. The consequences of financial repression, however, are low saving, misallocation of available loanable funds and fragmentation of the economy of the less developing countries (Ikhide, 1990) [53].

In Shaw's analysis, when financial intermediation is constrained by financial repression, investors resort to informal credit market. Shaw maintains that financial liberalization will lead to a better integration of formal and informal credit markets, which could channel funds more efficiently between savers and investors. The cost of financial intermediation may decrease due to economics of scale in lending, lower information costs and reduction in risk through diversification.

Hence, the Mckinnon-Shaw hypothesis suggests that a high real interest rate could increase savings and banks credit. Focusing on the role of deposit as a source for financial institutions, Shaw argued that high deposit rates in LDC's may stimulate investment spending by allowing the supply of credit to expand in line with the financing needs of the productive sectors of the economy. Moreso, the McKinnon-Shaw hypothesis holds that financial repression distorts the domestic financial markets through a variety of measures. These measures damage the economy of many LDC's by reducing savings and encouraging investment in unproductive activities. It is then recommended that positive real rates of interest should be established on loans and deposits by eliminating interest rates and credit ceiling, stopping selective allocation of credit and lowering reserve requirements. The true scarcity price of capital could then be seen by savers and investors, leading to improved locative efficiency and higher output growth. The McKinnon – Shaw hypothesis suggests that the level of financial intermediation should be closely related to the prevailing level of interest rate, the reason being that the level of real interest rates, when held below their normal competitive levels, indicates the extent of financial intermediation thereby increasing the supply of credit to the private sector. This in turn, stimulates investment and economic growth (Gregorio and Guidotti, 1995:436) [26].

These notwithstanding, the studies of South Korea and Taiwan during the 1980s, by Patrick (1996) showed that these countries experience do not support the view of financial liberalization for effective growth. Other opponents of the financial liberation stressed that a full liberalized financial sector could not grow well in developing countries. They argue that developing countries aggregate output or GDP may not grow under a liberalized financial sector vis-a-vis repressed financial sector (Bencivenga and Smith, 1991) [14].

iii) Endogenous Growth Theory

This growth theory embraces a diverse body of theoretical and empirical work that emerged in the 1980s. It emphasized that economic growth was an endogenous outcome of an economic system, not the result of forces that impinged from outside. Its central idea was that the proximate causes of economic growth were the effort to economize, the accumulation of knowledge and the accumulation of capital. The theory fits the real world perfectly well and has important policy implications. This is because it traces the rate of growth of output per capita to two main sources; savings and efficiency. The theory introduced human capital into the model and predicted that savings rate affected growth rate as well as final income levels. It also predicted that capital accumulation could sustain long-term growth while economic policy accelerates growth, even in the long term.

Recent theoretical work has incorporated the role of financial factors in models of this endogenous growth in an attempt to analyze formally the interactions between financial markets and long-run economic growth. Greenwood and Jovanovic (1990) [46] present a model in which both financial intermediation and growth are endogenous. They showed that there is a positive two-way causal relationship between economic growth and financial development. On one hand, the process of growth stimulates higher participation in financial markets thereby facilitating the creation and expansion of financial institution. On the other hand, financial institutions, by collecting and analyzing information from many potential investors allow investment projects to be

undertaken more efficiently and, hence, stimulate investment and growth.

iv) Empirical Evidence on Financial Intermediation and Economic Growth Nexus

Unarguably, a well-developed financial sector contributes to economic growth by mobilizing savings and efficiently allocating them among competing investment projects and other demands for funds. The existing evidence of positive correlation between indicators of financial development and economic growth reflects the importance of the commercial banking sector in particular, and the financial system in general (Schmidt – Hebbel *et al.* 1996) [91].

Until 1970's, two major theoretical discussions that influenced economic policy were classical and neoclassical monetary theory, and the Keynesian alternative. The classical and neoclassical theories explain the importance of supply side factors in promoting economic growth. They believe in the neutrality of money in the economy and the importance of finance in promoting economic growth. In the Keynesian theory, interest rate is considered as the price of investment. Therefore, the cost of finance should be kept low to stimulate investment and economic growth (Keynes 1973; Chick, 1988). When the cost of finance is low, the demand for loanable fund increases and thereby investment also rises.

The theoretical relationship between financial depth and economic growth, as formulated by Schumpeter (1934); McKinnon (1973) [65], and Shaw (1973) [93] is that government restrictions on the banking system hinder financial development and, ultimately growth. The recent endogenous growth literatures in which service provided by financial intermediaries are explicitly modeled also reached similar conclusions. These models suggest that financial intermediation has a positive effect on growth (Adam, 1998:35).

Goldsmith (1995), Cameron (1967), McKinnon (1973) [65] and Shaw (1973) [93], had demonstrated that the financial sector could be a catalyst of economic growth if it is developed and healthy. The benefits accruable from healthy and developed financial system relate to savings mobilization and efficient financial intermediation roles (Gibson and Tsakalotos, 1994).

Gurley and Shaw (1967) [48] argue that the prevalence of financial institutions leads to specialization and division between savings and investments, which promote growth. Shaw (1973) examines the benefits of an efficient and well-functionin financial system. According to him, higher real deposit rates increase financial savings and expand the role of financial institutions in intermediating funds between surplus and deficit units.

McKinnon (1973) [65] and Shaw (1973) [93] opined that government controls should be dismantled so that the true scarcity price of capital can allocate funds to users, thereby improving savings mobilization, promoting efficient investments and accelerating economic growth. Their argument for the dismantling of government control and restrictions of financial system (because they hinder financial development and economic growth) is supported by the conclusion they draw on the frame work, that saving rises with an increase in the deposit rate, and investing the increased savings with a decline in the real cost of borrowing promotes growth.

Fry (1978) tested the Mckinnon Shaw hypothesis that financial market conditions influence savings and growth rate. Using data for seven (7) Asian countries over 7-11 years period and estimating with pooled time series and cross-section data, he found that the real interest rate exerts a significant influence on domestic savings and rate of growth. Using a life-cycle saving model with pooled time series data for Seven Asian countries, Fry and Mason (1982) found that interest rate conflict is positive and statistically significant in the savings functions. In the same vein, Kaput (1976) analyzed the effects of keeping the interest rate as a proxy for financial conditions. He concluded that a decline in real deposit rate of interest reduces real money demand and real credit supply. In turn, the real credit squeeze lowers both the rate of new fixed investment and also investment in working capital. Hence capacity utilization falls and the growth rate declines.

Hao (2006) [49] sought to establish the relationship between financial intermediation and economic growth, using a country-specific data from China. The study focused on the post – 1978 reform period, using provincial data (28 provinces) over the period of 1985-1999. The study which employed the use of a linear model, expresses economic growth as a function of lagged economic growth, financial development indicator (banks savings, and loan-budget ratio) as well as a set of traditional growth determinants (population growth, education, and infrastructural development). The study uses the one-step parameter estimate for the generalized method of moment (GMM) estimation and finds that financial intermediation has a causal effect and positive impact on growth, the channels of household's savings mobilization and the substitution of loans for state budget appropriations. However, the study reveals that bank, as an indicator of financial development, is significant but negatively related to growth. This was attributed to inefficiency in loan distribution and self-financing ability of the provincial governments.

Romeo-Avila (2007) [89] also confirms the positive impact of fiancé on growth. He investigates the relationship between finance and growth, with emphasis on the effect of financial deregulation and banking law harmonization on growth in the European Union. The study establishes that financial intermediation impact positively on economic growth through three channels.

Odhiambo (2008) seeks to examine the dynamic causal relationship between financial depth and economic growth in Kenya. The study focuses on the period, 1969 to 2005, and includes savings as an intermitting variable. To achieve this task, this study adopted two econometric techniques. The dynamic tri variant granger causality test and the error correction model (ECM Modeling). This study concludes that one-way direction causality, from economic growth to finance, exist in Kenya. In other words, finance plays a minor role in the attainment of economic growth in Kenya.

Kar, Nazliogu, and Agir (2011) focused on developing countries and also introduced new indicators of financial development and economic growth. Using countries which constitute the Middle East and North Africa (MENA) for the period 1980 to 2007, the study uses a simple linear model. This model defines economic growth as a function of financial development. Six new indicators of financial development were introduced and these include the ratio of

narrow money to income, ratio of quasi money to income, ratio of deposit money bank liabilities to income, ratio of broad money to income, ratio of domestic credit to income, and ratio of private sector credit to income. On the other hand, the real income was employed as a proxy for economic growth. The Granger Causality test was employed to establish that the causal relationship is bi-directional, but it is country or financial development indicator specific. This study, however, suggests that a strong link may exist between financial development and real sector.

Bi-directional causal relationship between financial intermediation and economic growth is also supported by the works of Greenwood and Javanovic (1990) [46]. They develop a long run model that suggests a double direction of causality over a time horizon. In their model, economic growth favours the expansion of financial intermediation in their earlier stages of development while, later on, a mature financial system enhances more efficient investment decisions and faster economic growth. The studies on causality by Obedekun (1996) and Wang (1999) also favour the hypothesis of double causality.

Although most of these studies show that there exist a positive relationship between financial intermediation and economic growth, while some opine that the existing relationship is bi-directional, other studies have indicated that the association between them is negative. For instance, Diaz-Alejandro (1985) argues that financial deepening is unlikely to increase the marginal productivity of capital, rather than the volume of savings and investment. Bencivengan and Smith (1991) [14] show in their model that growth increase even when negative savings are reduced as a result of financial development, the reason being the dominant effect that financial development has on the efficiency of investment.

The study by Greene and Villanueva (1991), which explore the determinants of private investment in a large sample of developing countries for 1975-87 period find a robust and quantitatively significant negative relationship between real interest rates and private investment. In a study focused on the relationship between interest rates and growth, Gelb (1989) finds no relationship between aggregate investment and real interest rates.

Other authors who support the negative association between financial development and economic growth include Demetriades and Hussein, (1996); Neusser and Kugler, (1999); Shan, *et al.* (2001); Demetriades and Hussein, (1996); Bloch and Tang, (2003); and Odhiambo, (2008) [74].

Calvo and Guidolti's (1991) study of the relationship between real interest rates and economic growth, suggests an inverted U-curve type of relationship where very low (and negative) real interest rates tend to cause financial disintermediation and hence tend to reduce growth, as implied by the Mckinnon Shaw hypothesis. On the other hand, very high real interest rates are likely to result in a lower level of investment. At intermediate levels real interest rates do not appear to be closely associated with growth reflecting no clear-cut relationship between real interest rates, savings and investment. Fry (1993); Roubini and Sala -1 martin (1992) also provide some support for this view of inverted U-curve.

In conclusion, Gregorio and Guidotti (1995:437) [26] submit that these considerations suggest that real interest rates are likely to be rather poor indicator of the degree of financial intermediation of investment. According to them, the impact of real interest rates on growth cannot be easily interpreted as measuring the effect of financial development on growth.

Empirical evidence on the link between financial intermediation and economic growth also exist in Nigeria. For instance, Ojo (1984) examined the effect of financial intermediation on the speed and character of economic growth in Nigeria. He regressed the ratio of capital formation to national income (I/Y) on both the level of financial development and income. The results indicated that capital formation is positively and significantly influenced by the level of financial development, on the assumption that the rate of capital formation is related to the proportion of saving out of income.

Ebhodaghe (1996) observed that financial intermediation provides a varied menu of financial assets, particularly suited to the needs/desires of the surplus units and encourages investment by providing a variety of available sources of funds for deficit units.

Olomola (1997) [81] has examined the empirical relationship between financial deepening and real private sector investment in Nigeria for the period 1960-96 using OLS technique. On finding a positive and significant relationship between the two variables, he concludes that improved financial intermediation would help bridge the gap between domestic savings and investment in Nigeria. Similar conclusions have been reached by Obadan and Odusola, (1999).

Ajakaiye and Odusola (1995) have also examined the empirical determinants of financial savings in Nigeria, using OLS technique for the period 1980-93. Their findings show a positive relationship between savings and real deposit rate during the period of financial regulation and a negative one for the deregulation era. Savings were inversely related to exchange rate in conformity with theory. Income growth and foreign savings coefficients, contrary to expectations, were positive and significant as well.

Essien and Onwioduoikit, (1998) have also examined the effects of financial liberalization on savings mobilization in Nigeria for 1987-93 using quarterly data and error correction model. They found that there was no long run equilibrium relation between saving and its determinants.

Tella and Okosun (1993), have examined the behaviour of interest rate in Nigeria and confirmed that under administered interest rate, the banks competed with each other for deposits through various non-price variable procedures such as advertising and promotions, image making, public relations, top level contacts, being socially responsible etc.

Adam (1998) has also examined the empirical relation between financial intermediation and economic growth in Nigeria for the period 1970-98. By adding some important variables (per capita income, population per bank branch, private sector credit etc.), and employing the two-stage-least-squares technique for analysis, he found that GDP growth is positively related to private sector credit, public sector credit and investment. Private sector credit has a higher magnitude on growth because production of private goods and services rests with the private sector. The findings also show that there exist a positive link between real deposit rate and deposit ratio, and its positive link is that real deposit interest rate is the actual rate for measuring deposit mobilization. His findings support the view that financial liberalization

promotes the efficiency of the financial intermediation process. On finding a positive and significant relationship between financial intermediation and economic growth, he concludes that financial deregulation can be associated with increased deposit or higher credit availability and economic growth.

Okon, (2008) also confirms the positive impact of finance on growth in Nigeria. Using 1970-2006 data on the variables explaining economic growth and financial intermediation, and employing the two stage least squares (2SLS) for analysis, he found that financial liberalization promotes the efficiency of financial intermediation process and hence growth.

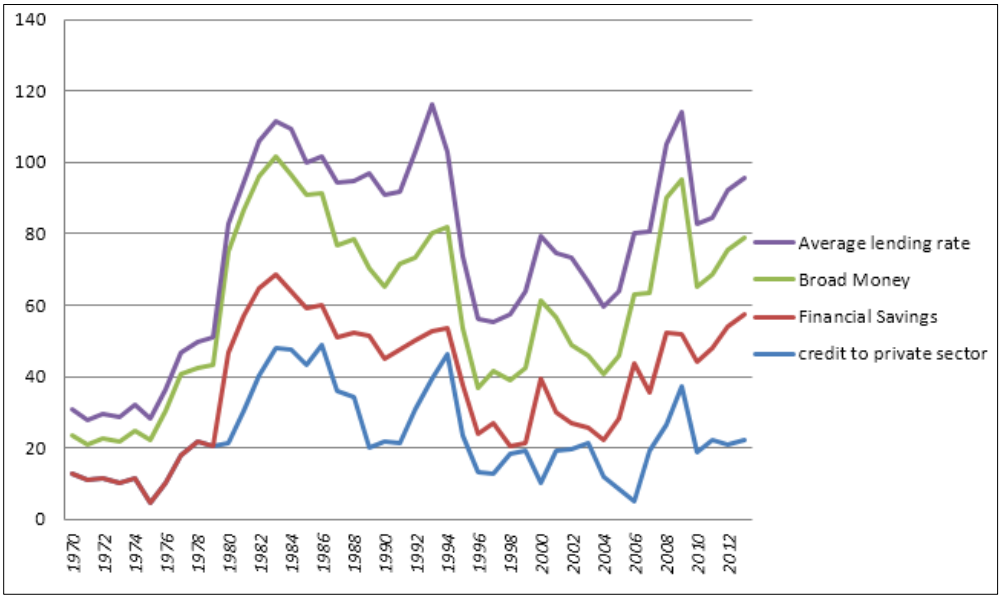
Shittu, (2012) [94] seek to establish the impact of financial intermediation in Nigeria using time series data from 1970 to 2010. For analysis, the unit root test and the cointegration test were done and the model was estimated using the Engle-Granger technique. His result establishes that financial intermediation has a significant impact on economic growth in Nigeria.

Ogiriki and Andabai, (2014) [78] also examined the relationship between financial intermediation and economic growth in Nigeria for the period of 1988-2013. Using a vector error correction model, they found a long run equilibrium and positive relationship between financial intermediation and economic growth in Nigeria.

Summarily, an assessment of works by various authors in this field shows that there is no generally accepted result as per the nature of the effect of financial intermediation on economic growth. While some argue that there is a positive relationship between them, others contend that the relationship between them is negative. Also, on the direction of causality, while some conclude that financial intermediation causes economic growth, others argue otherwise; and yet, some conclude that the causation is bidirectional.

This cacophony of opinions arising from the conflicting results justifies this research; whose objective is to determine the nature of the effect of financial intermediation on economic growth, and the direction of causality between them, using Nigeria data on financial intermediation and economic growth variables.

5. Stylized Characterization of Financial Intermediation in Nigeria



Source: World Development Index Database, 2014

Fig 1: Trends of Financial Intermediation in Nigeria

The trend shows how financial intermediation variables fluctuated overtime during the period. They fluctuated upwards from 1978 to a peak in 1984. They fluctuated downwards after the peak in 1986, and experienced increases in 1994. Government policies no doubt have contributed to fluctuations in these indicators of financial intermediation.

6. Methodology

The paper in this section will establish the method for which it will use in analyzing the data gathered to achieve the objectives of the paper.

In this work, the level of credit allocations is used as measure of the degree of financial intermediation. We will thus use the ratio of banks credits to private sector to GDP, and the ratio of savings to GDP as proxies of financial intermediation. Both of them are measures of financial intermediation (Gregorio and Guidotti, 1995:438) [26]. Growth is proxied by GDP growth rate. In order to examine the effects of financial intermediation on economic growth in Nigeria, the functional relationship of the model is captured as:

$$GPDG = f(PC, FS\ M2, AVL, INF);$$

Where:
GDPG = GDP growth rate;
PC = ratio of private sector credit to GDP;
FS = ratio of financial savings to GDP;
M2 = ratio of broad money supply to GDP;
AVL = average lending rate;
INF = annual inflation rate.

For econometric analysis, the functional equation will be transformed into a linear function thus:

$$GDPG = \beta 0 + \beta 1InPC + \beta 2InFS + \beta 3M2 + \beta 4AVL + \beta 5INF + \varepsilon t$$

It is expected that credit given to the private sector will increase investment which will in turn affect the economy positively.

In addition, it is important to state that the ratio of broad money supply to nominal gross domestic product shows the degree of monetization in the economy (Wolde Rufael, 2009; Jalil, *et al.* 2010). Thus, an increase in this ratio implies an extensive use of currency rather than an increase in bank deposits. In other words, this is an increase in monetization instead of financial depth. In Nigeria, M2 is regarded as the intermediate monetary target and it comprises both the narrow money supply (M1) and Quasi-money.

7. Results and Discussion

i) Correlation Test

The first step was to determine if the independent variables correlate with the dependent variable. The scatter plot revealed that the variables used for the study are correlated. Individual correlational relationships between the dependent variable (GDPG) and each independent variable are displayed in the appendix.

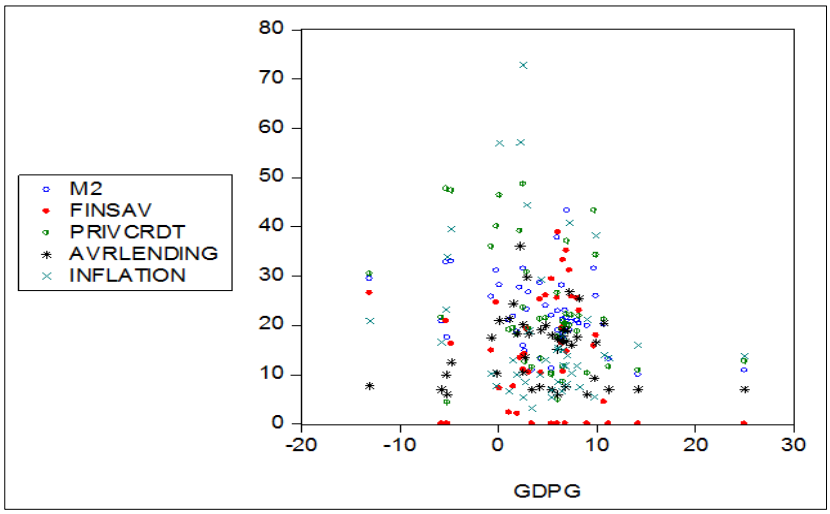


Fig 2: Scatter Diagram of Dependent and Independent Variables

ii) Unit Root Tests

After plotting the scatter diagram, the next step is to have a visual analysis of data. They showed varying degrees of fluctuations. The variables seemed to fluctuate upwards. The diagrams are displayed in the appendix.

To find the order of integration of the variables the Augmented Dickey-Fuller and Phillips-Perron unit root tests of the data series were adopted, as shown in Table 2.

Table 2: ADF and Phillips Perron Unit Root Tests

VARIABLES	ADF	TESTS		PHILLIP	PERRON	TESTS
	Levels	1st Diff.	Order of Integration	Levels	1st Diff.	Order of Integration
GDPG	-1.976995	-5.202243	I(1)	-6.384616		I(0)
INF	-3.279052		I(0)	-3.182088		I(0)
AVL	-2.142246	-7.172803	I(1)	-2.381548	-7.996363	I(1)
Log(FS)	-1.915105	-6.831337	I(1)	-1.799311	-7.038068	I(1)
Log(M2)	-3.321159		I(0)	-2.442740	-5.271096	I(1)
Log(PC)	-2.660068	-5.935050	I(1)	-2.529607	-11.46104	I(1)

The dependent variable (GDPG) was stationary at first difference in the ADF test and stationary at levels in the PP test. Inflation was stationary at levels in both tests. Other independent variables were stationary at first differences with the exception of broad money for the ADF test. Thus, the variables under the study are integrated at either I(0) or I(1). Thus, in the absent of I(2), the findings justified the use of ARDL approach to detecting the long-run relationship.

iii) Lag Selection Procedures

The choice of lag length was based on Akaike information criterion (AIC), Schwarz information criterion (SIC) and Hannan-Quin information criterion (HQ). The test indicated in the appendix showed that four (4) lags were selected based on the AIC.

iv) F-Bound Test Co-integration

The long run relationship between the indicators of financial intermediaries and economic growth is investigated by testing a joint significance of F-test. For the above stated null hypothesis of no cointegration. The calculated Pesaran *et al.* (2001) F-statistics for GDPG, PC, FS, M2, AVL, and INF was 6.06. The F-statistic is higher than critical upper bound at 5 percent level of significance (3.38). These findings confirm the existence of a long-run relationship between the variables in the presence of structural breaks stemming in the series for

the period 1970 to 2013 in Nigeria.

The Diagnostic tests for serial correlation, and heteroscedasticity were conducted, and the results are presented in Table 3. The results also showed that there is no evidence of serial correlation and heteroscedasticity among variables.

Table 3: Summary of Diagnostic Tests

Serial correlation	Remark	Heteroscedasticity	Remark
1.723635 (0.4224)	No Serial Correlation	17.84630 (0.5327)	Homoscedasticity

v) ARDL Long-run Co-integration

Having found a long run relationship, the paper applied the ARDL method to estimate the long run coefficients for the model. Table 4 reports the regressions of the long-run relationship. The overall goodness of fit of the estimated equation was high; the F-statistic measuring the joint significance was statistically significant. It is interesting to know that in the long run interest rate, inflation, and money supply exerted negative effects, while private credit and savings had positive effect on real GDP. As expected the coefficient of private credit was positive but statistically insignificant, while the coefficient of savings was positive and statistically significant. An increase in both private credit and savings increase economic growth.

Table 4: ARDL Long-run Cointegration

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(M2)	-11.276510	5.024438	-2.244333	0.0363
LOG(PRIVCRDT)	0.951489	1.871980	0.508280	0.6168
LOG(FINSAV)	1.660173	0.752539	2.206096	0.0392
AVRLENDING	-0.182705	0.208978	-0.874276	0.3923
INFLATION	-0.312757	0.085292	-3.666881	0.0015
C	43.549824	14.744851	2.953561	0.0079

With regard to financial development indicators, the result of the long run analysis indicates that credit to the private sector exerts positive effect while money supply affects real GDP negatively. Coefficients of credit to the private sector and savings have expected signs and this finding is consistent with theory. The private sector is usually the engine of economic growth. This explains why the extension of most of its credits to the private sector by the banks is viewed in a good light. Such loans are normally used for productive purposes. Even when they are devoted to consumption, they still indirectly influence economic growth. When demand increases, it encourages manufacturers to expand their capacity to meet such increases and engenders economic growth.

The result of the negative relationship between money supply and real GDP reported in this study is inconsistent with general evidence in the empirical literature; it is not surprising in the case of Nigeria. A possible explanation is that money supply increased to finance deficit in Nigeria. And this is because the deficit in Nigeria is used to pay off foreign debt obligation and not spent on goods and services and also used to finance war against insurgency. It could also be due to leakages caused by earlier identified corrupt practices by those who have access to the deficit funds who take money outside the country to foreign accounts.

The average lending rate exerts a negative effect on real GDP. This implies that lending rate have not affected economic growth positively due to a fall in number of borrowings by investors. High lending rates have tended to discourage investors from borrowing funds for investment purposes in the economy.

vi) Short run ARDL Co-integration

The ECM results are presented in Table 5. The results indicate that the values: credit to private sector, broad money, financial savings, and inflation, promote economic growth positively and significantly at the 5 percent level of significance with the exception of lending rate which was significant at 10 percent level. The result is in line with the new growth theory that posits a positive relationship between financial development indicators (credit to the private sector, financial savings, average lending) and economic growth. However, the result for broad money supply indicates a negative relationship with economic growth at 5 percent level of significance. The negative sign contradicts the theoretical expectation. However, the interest rate has a positive influence on economic growth. The error-correction coefficient is negative and significant. This indicates the speed of the adjustment back to the long-run equilibrium after a short-run shock. The coefficient of CointEq (-1) is -0.722 at 1 percent level of significance. This implies 72.2 percent adjustment back to the long-run equilibrium each year after a shock in the short run.

Table 5: Short-run ARDL Cointegration

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDPG(-1))	-0.548324	0.103844	-5.280254	0.0000
D(GDPG(-2))	-0.506635	0.092655	-5.467996	0.0000
D(GDPG(-3))	0.109552	0.073427	1.491990	0.1513
DLOG(M2)	-6.245845	2.222591	-2.810165	0.0108
DLOG(PRIVCRDT)	3.608545	1.066424	3.383781	0.0029
DLOG(FINSAV)	0.604120	0.337984	1.787419	0.0890
DLOG(FINSAV(-1))	-2.225241	0.348779	-6.380080	0.0000
DLOG(FINSAV(-2))	-3.090806	0.391320	-7.898402	0.0000
DLOG(FINSAV(-3))	-1.793773	0.379551	-4.726041	0.0001
D(AVRLENDING)	0.259571	0.123792	2.096836	0.0489
D(INFLATION)	-0.119405	0.025443	-4.693093	0.0001
D(INFLATION(-1))	0.145853	0.035325	4.128851	0.0005
D(INFLATION(-2))	0.206741	0.039385	5.249256	0.0000
D(INFLATION(-3))	0.104910	0.030091	3.486447	0.0023
CointEq(-1)	-0.722476	0.091119	-7.928967	0.0000

It is important to investigate whether the above long run relationships are stable for the entire period of study. For this purpose, we have examined the stability of the model parameters using the cumulative sum of recursive residuals (CUSUM) and the cumulative sum of squares of recursive residuals (CUSUMSQ) test procedures. CUSUM and CUSUMSQ are plotted against the break points. Parameter stability is indicated when the CUSUM and CUSUMSQ plots against time remain within the 5 percent significance level over the sample period, while parameters and hence the variance are unstable if these plots move outside the 5 percent critical lines. The plots of the CUSUM and CUSUMSQ in appendix are obtained from a recursive estimation of the model. These plots indicate stability in the coefficients of the model.

vii) Non-Granger Causality (Toda Yamamoto Granger Causality)

The paper employs the Toda-Yamamoto (1995) procedure to examine the causal nexus between the indicators of financial intermediaries and economic growth in Nigeria. The results are presented in Table 6. The findings indicate the existence of a bi-directional causality between real GDP and inflation rate at the 5 percent level of significant. A unidirectional causality runs from savings to real GDP. Similarly, one-way causality moves from financial savings to credit to private sector. A unidirectional causality was detected moving from financial savings to broad money supply at a significant level. Furthermore, credit to private sector, broad money, financial savings, interest rate, and inflation rate jointly cause economic growth while GDPg, broad money, financial savings, average lending rate, and inflation rate does not jointly cause credit to private sector. Since all financial intermediaries can jointly cause economic growth, the finding is in support with the theoretical view of Gurley and Shaw (1955) and Goldsmith (1969) who believes that financial intermediaries cause economic growth.

Table 6: Non-Granger Causality (Toda Yamamoto Granger Causality)

Variables	GDPg	PRIVCRDT	M2	Finsav	Avrlending	Inflation	Joint
GDPg	-	7.055368 (0.1330)	3.147614 (0.5334)	15.57376 (0.0036)	7.277092 (0.1219)	11.64372 (0.0202)	49.77981 (0.0002)
PRIVCRDT	1.635190 (0.8025)	-	2.508007 (0.6432)	10.89909 (0.0277)	3.659368 (0.4541)	4.366215 (0.3587)	25.51351 (0.1825)
M2	4.460142 (0.3473)	3.651265 (0.4553)	-	12.61909 (0.0133)	5.789738 (0.2154)	2.937761 (0.5683)	25.33744 (0.1888)
FINSAV	2.605749 (0.6258)	2.341268 (0.6733)	1.830873 (0.7668)	-	2.336848 (0.6741)	2.297665 (0.6812)	16.36220 (0.6939)
AVRLENDING	8.855855 (0.0648)	18.36249 (0.0010)	26.44624 (0.0000)	8.008565 (0.0913)	-	30.69805 (0.0000)	100.6776 (0.0000)
INFLATION	12.16770 (0.0161)	2.886377 (0.5770)	1.797830 (0.7729)	1.531719 (0.8210)	3.353256 (0.5005)	-	37.64658 (0.0098)

8. Conclusion and Recommendations

This paper examines the effect of financial intermediation on economic growth of Nigeria using time series data from 1970 to 2013. This was made possible by examining selected financial intermediation variables, determining their effects on the growth of the Nigerian economy. The credit to private sector, financial savings, average lending rate, broad money supply, and inflation were financial intermediation variables used as independent variables while real GDP growth was used as dependent variable.

The result showed that the variables exhibited various levels of stationarity, and had long run relationships. Diagnostics tests were favourable. In the short run, the results showed positive and significant relationships between selected financial intermediation variables (credit to private sector, financial savings, and average lending rate) and real GDP. However, their long run effects varied. Credit to private sector was positively related to growth but insignificantly. The private sector is usually the engine of economic growth. This explains why the extension of most of its credits to the private sector by the banks is viewed in a good light. Such loans are normally used for productive purposes. Even when they are devoted to consumption, they still indirectly influence economic growth. When demand increases, it encourages manufacturers to expand their capacity to meet such increases and engenders economic growth. Average lending did not support growth. However, financial saving exerted a positive and significant effect on growth.

Broad money supply and inflation rate exert negative and significant effects on growth in both the short run and long run. As explained in previous chapter, it is not surprising in the case of Nigeria. The cusum and cusum sum of squares revealed that the coefficients are stable. Therefore credit to private sector and financial savings are the financial intermediation variables that affected growth positively in the Nigerian economy during the period under study.

9. Recommendations

Based on our results, the following were recommended.

The authority charged with the responsibility of regulating the supply of money should make sure money supplied are geared into productive sectors that produces good and services. Financial institutions, either government owned or private owned, should give more credits to the private sector with bearable interest rate. This would increase investment in the Nigerian economy.

The government should adopt policies that reduce inflation and also the diversification of exports is necessary.

The government should ensure stable political and economic climate conducive to investment and to finance its budget deficit from real resources.

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Appendices

Table 1: Showing Financial Intermediation Variables and GDP Growth

Year	GDP Growth Rate	Credit of financial sector (% of GDP)	Gross savings (% of GDP)	Broad Money (M2) (% of GDP)	Average Lending Rate	Inflation Rate
1970	25	12.7	0.07	10.9	7	13.8
1971	14.2	10.9	0.06	10	7	16
1972	3.4	11.5	0.06	10.9	7	3.2
1973	5.4	10.3	0.05	11.2	7	5.4
1974	11.2	11.6	0.06	13.2	7	13.4
1975	-5.2	4.4	0.08	17.6	6	33.9
1976	9	10.3	0.08	19.9	6	21.2
1977	6	17.7	0.08	22.9	6	15.4
1978	-5.8	21.6	0.08	20.9	7	16.6
1979	6.8	20.3	0.1	23	7.5	11.8
1980	4.2	21.3	25.3	28.6	7.5	9.9
1981	-13.1	30.5	26.6	29.5	7.75	20.9
1982	-0.2	40.1	24.7	31.1	10.25	7.7
1983	-5.3	47.8	20.9	32.8	10	23.2
1984	-4.8	47.4	16.3	33	12.5	39.6
1985	9.7	43.4	15.8	31.5	9.25	5.5
1986	2.5	48.7	11.1	31.5	10.5	5.4
1987	-0.7	36	14.9	25.8	17.5	10.2
1988	9.9	34.3	18	26	16.5	38.3
1989	7.2	20.1	31.2	19	26.8	40.9
1990	8.2	21.9	23	20.4	25.5	7.5
1991	4.8	21.5	26.1	24	20.01	13
1992	2.9	30.8	19.3	23.2	29.8	44.5
1993	2.2	39.2	13.4	27.7	36.09	57.2

1994	0.1	46.4	7.2	28.2	21	57
1995	2.5	23.6	13.9	15.9	20.18	72.8
1996	4.3	13.3	10.4	13.2	19.04	29.3
1997	2.7	12.6	14.2	14.8	13.54	8.5
1998	1.9	18.2	2.1	18.7	18.29	10
1999	1.1	19.1	2.31	21.1	21.32	6.6
2000	5.4	10	29.4	22	17.98	6.9
2001	3.1	19.3	10.5	26.7	18.29	18.9
2002	1.5	19.5	7.6	21.8	24.4	12.9
2003	10.7	21.2	4.5	20.2	20.48	14
2004	6.58	11.7	10.6	18.3	19.15	15
2005	6.51	8.6	19.6	17.7	17.85	17.9
2006	6.03	4.9	38.9	19	17.26	8.5
2007	6.45	19.2	16.3	28.1	16.94	6.6
2008	5.98	26.6	25.6	37.8	15.14	15.1
2009	6.96	37.1	14.7	43.3	18.99	13.9
2010	7.98	18.8	25.5	21	17.59	11.8
2011	7.43	22.1	25.8	20.7	16.02	10.3
2012	6.58	20.8	33.3	21.2	16.79	12
2013	6.89	22.3	35.2	21.5	16.72	8

Sources: World Development Index database, 2014, CBN Statistical Bulletin, 2013.

Correlation coefficient tests

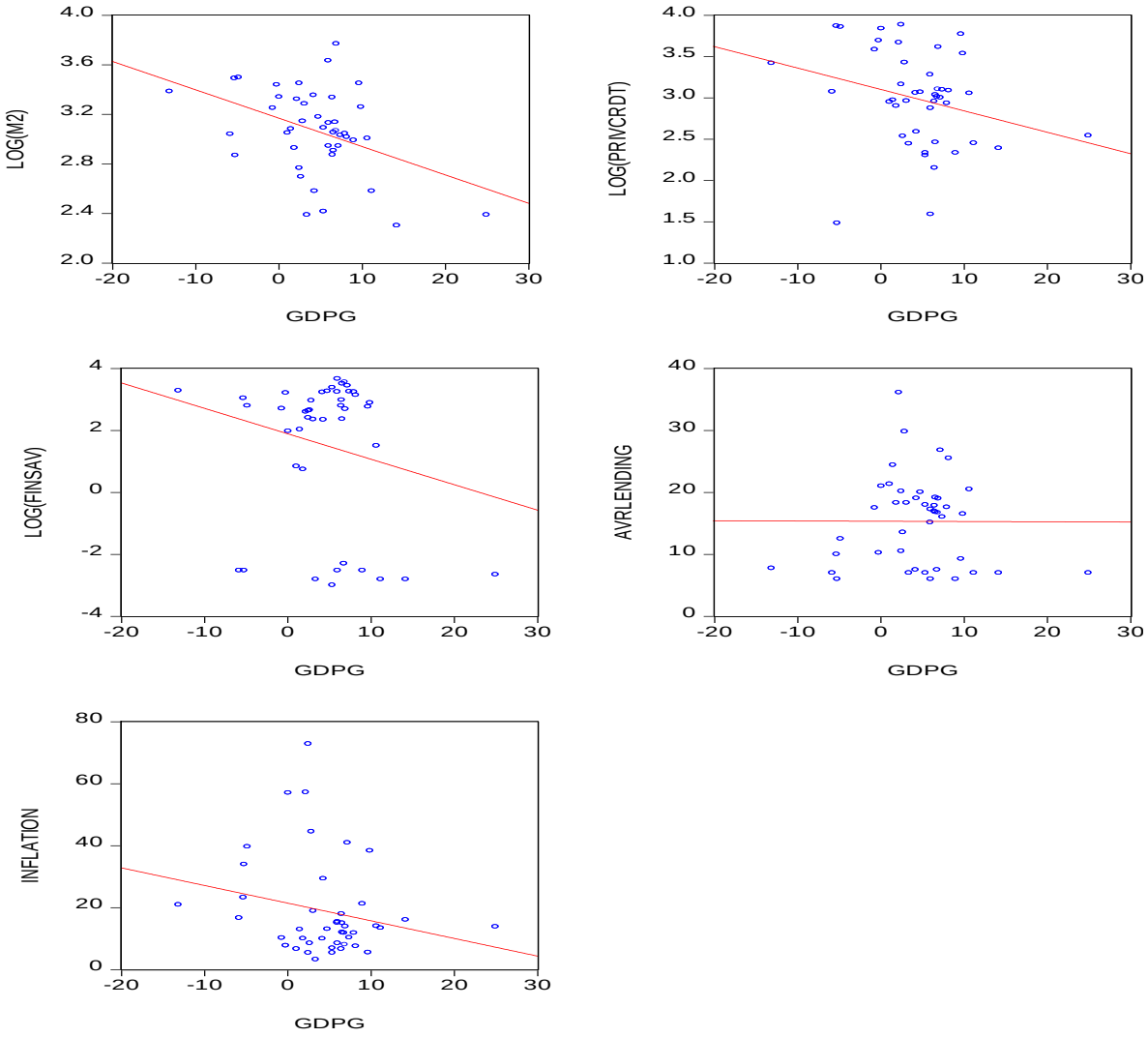

Fig 3

Table 2

	GDPG	M2	PRIVCRDT	FINSAV	AVRLENDING	INFLATION
GDPG	1	-0.3592980137550239	-0.3512193886157719	-0.09916457777338605	-0.003373381901547836	-0.2186412411951282
M2	-0.3592980137550239	1	0.7599320388043171	0.3536025416321273	0.1271259593150361	0.05396729944307523
PRIVCRDT	-0.3512193886157719	0.7599320388043171	1	0.1836554218853018	0.1681866012835450	0.29415287866139650
FINSAV	-0.0991645777338605	0.3536025416321273	0.1836554218853018	1	0.3568170063768608	-0.0274296311291042
AVRLENDING	-0.0033733819015478360	0.1271259593150361	0.1681866012835450	0.3568170063768608	1	0.4068826260901457
INFLATION	-0.2186412411951282	0.0539672994430752	0.2941528786613965	-0.0274296311291042	0.4068826260901457	1

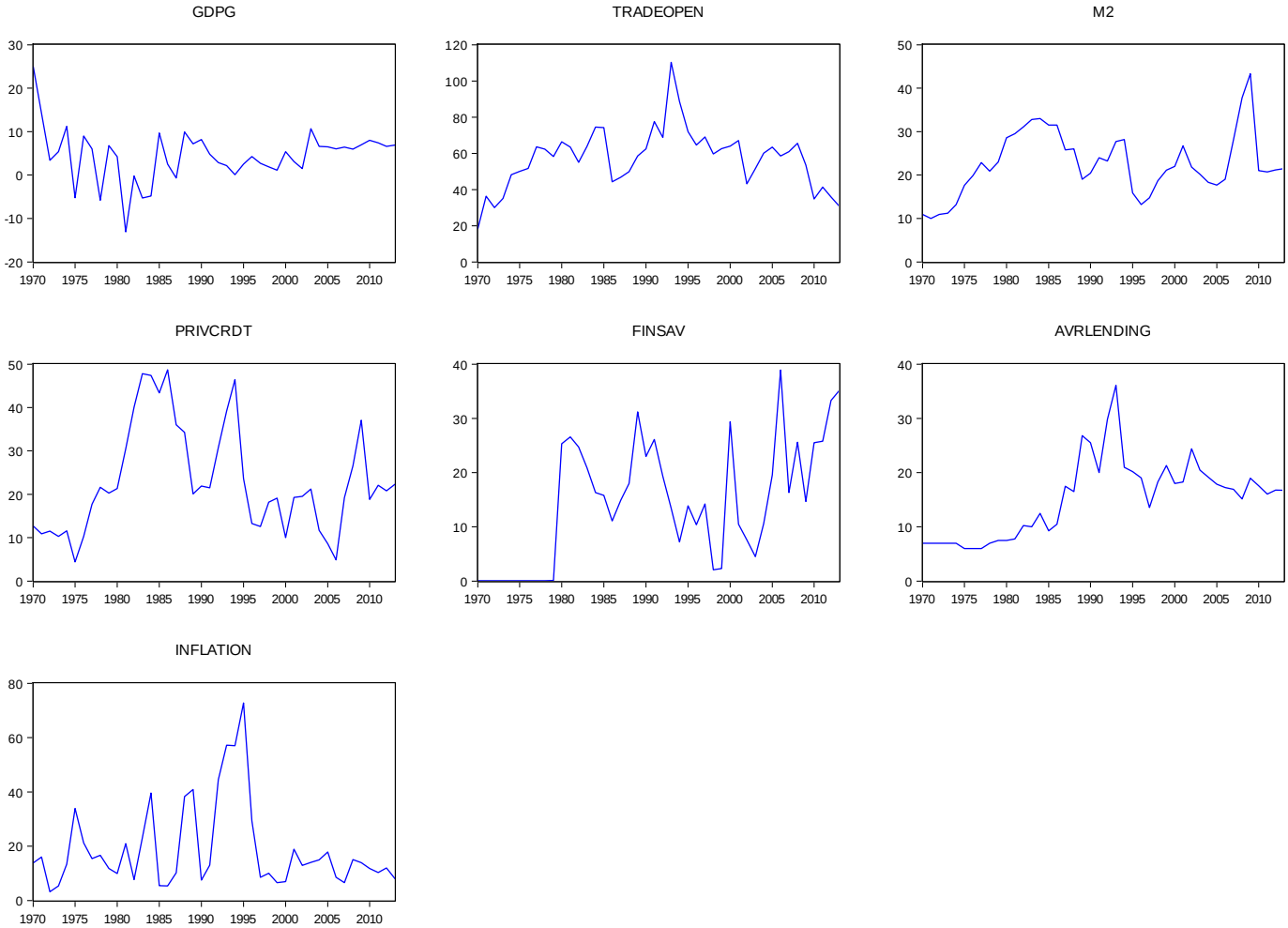

Fig 4