# Causality Modelling of the Banking Sector Credits and Economic Growth in Nigeria

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#### ABSTRACT

This article examines the direction of causality between banking sector credit and economic growth in Nigeria over the period 1980-2013. The causal links between the pairs of variable of interest were established using pairwise Grangers causality test. The granger causality test results reveal that there exist unidirectional causality flowing from Gross domestic product to CPS and CGS. Bi-directional causality runs between Contingent Liability and GDP. These suggest that growth in the volume of contingent liabilities could boost investment in the economy and exert a positive impact on level of productivity hence having a contagion effect on the output level of goods and services in the economy. In the opposite direction, growth in GDP can also boost the total amount of new funds needed through the window of investment, productivity, inventions, innovation and diversification, thereby giving birth to the issue of new credits to fund new businesses and the expansion of already existing once in the economy. This study recommends that the managers of the Nigeria economy should fashion out appropriate policies that will enhance the bi-directional flow of influence between the banking sector where investable funds are sourced and the real sector of the economy where goods and services are produced,

Keywords: Banking Sector credits, Economic Growth, Pairwise Granger Causality.

# **1. INTRODUCTION**

The banking sector all over the globe plays a very important role in the economic development and growth of a country. As an important component of the financial system, they channel scarce resources from the surplus economic units to the deficit economic units in an economy (granting credit) as such this activities form part of their existence (Iwedi and Onuegbu, 2014). The loan resources (Bank Credit) can be in the form of short term credit, medium term credit, long term credit and contingent fund. Thus, these Bank credits to a reasonable extends, exert reasonable influence on the pattern and trend of economic growth in Nigeria through their lending and deposit mobilization activities (Nzotta, 2005). It is an accepted fact that the level of economic growth and development determines the extent of sophistication of the banking system as well as the pattern and quantum of banking sector credit. This is primarily due to the fact that the banking sector exists to propel and service economic growth and thus all shocks in the economic growth and development process affect the banking sector positively or negatively.

The major objective of achieving high and stable economic growth has been at the front burner of successive Nigerian government, this is evident during the pre-independence era (colonial period) where the government focus was on the provision of physical infrastructure in the belief, in line with the prevailing economic ideas, that the facilities would induce the private investments that would produce the desired growth. After independence the government becomes more directly involved in promoting economic growth. The thinking this time was to nurture private entrepreneurs and mobilize needed domestic resources (banking sector credit) for investment in some preferred sectors. This brought banks and their intermediation function into prominence in the economic history of Nigeria (Ekpenyong and Acha 2011).

The interventions in the financial sector in 1980s which includes setting interest rate for savings and lending, as well as directing the allocation of credit in the economy to accelerate economic growth through channelling credits to areas of high economic and investment priority do not seem to yield the desired result. As such, bank structured domestic credit for investment and operating needs did not tend to grow the economy as expected. These problems caused by financial repression were tackled by the introduction of financial reforms. Such reforms includes: liberalization of interest rate and the removal of ceilings and other controls on domestic credit allocation.

However, the reforms were expected to have a positive impact on credit allocation and savings mobilization, but the ratio of banking sector credit to Gross Domestic Product (GDP) has not increased significantly since then, as inadequate banking sector credit (quantity, quality, cost and availability) has made it difficult for firms to invest in modern machines, information technology and human resource development which are critical in reducing production costs, raising productivity, improving competitiveness and increase the output level of goods and services in the economy.

It is important to know that various studies have attempted to resolve the controversy as to whether banking sector credits stimulate growth in the economy or growth in the economy help to trigger and influence the pattern of credits from the banking sector. Thus, there are existences of arguments for and against these opposing opinions which trigger the need for further investigation in Nigeria. The basic questions include: Does banking sector credits granger cause economic growth in Nigeria? The answer to this question forms the focal point of this study. This is the driving force behind this study. Therefore, this study is carried out to fill the knowledge gap in existence over these periods.

# II. LITERATURE REVIEW

The issue of direction of causality between finance and growth is debatable. Patrick (1966) described the direction of causality as supply-leading and demand- following hypothesis. This statement was buttressed by Mckinnon (1988). When the growth within the economy results in increase in the demand for financial services and this subsequently motivates financial development, then it is termed demand- following hypothesis. Similarly, when causal relationship runs from financial development to growth, it is termed supply-leading because it is believed that the activities of the financial institution increase the supply of financial services which creates economic growth. However, there are other scholars who believe that causality runs in both directions.

## **Demand – Following Hypothesis**

The demand-following hypothesis is of the view economic growth is a causal factor for financial development. According to them, as the real sector grows, the increasing demand for financial services stimulates the financial sector Gurley and Shaw, (1967). Robinson, (1952) opined that economic activity propels banks to finance enterprises. Thus where enterprises leads, finance follows.

In the same direction of argument was Goldsmith (1969), he postulate that overall financial development matter for economic success as it lowers market friction which increases the domestic savings rate and attracts foreign capital. Further he believe that financial policies such as direction of credit to sectors itself do not seem to matter much. He is of the view that policy makers may achieve greater returns by focusing less on the extent to which their country is bank based or market based and more on legal, regulatory and policy reforms that boost the functioning of the markets and banks.

In the same vain, Lucas (1988) opined that banks only respond passively to industrialization and economic growth. Favara (2003) reported that the relationship between financial development and economic growth is at best weak. To him, there is no indication that finance spurs economic growth, rather for some specifications, the relationship is puzzlingly negative. Therefore, the effect of financial development on economic growth is ambiguous and not robust to alternative

dynamic specifications. This he attributed to the fact that financial development does not have a first order effect on economic growth, the link between them is not linear and if the dynamic specification and slope heterogeneity across countries are taken into account, the effect is negative.

## **Supply- Leading Hypothesis**

This hypothesis believe that the activities of the financial institutions serve as a useful tool for increasing the productive capacity of the economy. Early economists like Schumpeter (1911) have strongly supported the view of finance led causal relationship between finance and economic growth. Several scholars have supported this findings. Notably is the study conductedby King and Levine (1993) on seventy seven countries made up of developed and developing economies. The result showed that finance not only follows growth, finance seems important to lead economic growth. This study further buttressed the statement that financial services stimulate economic growth.

Greenwood and Jovanovich (1990) also observed that financial institutions produce better information, improve resource allocation through financing firms with the best technology and thereby induce growth. Several studies on finance and growth support a positive correlation between the two variables while causality emanates from finance to growth.

Gross (2001) following the line of argument of the previous scholars examined the impact of financial intermediation on economic growth. He asserted that economic growth is no longer believed to happen for exogenous reasons, instead governments through appropriate policies particularly with regard to financial market can influence it.

Demirguc-Kunt and Levine (2008) found strong evidence that financial development is important for growth. Diego (2003) study of fifteen European Union economies also supported the above postulations. He came to this conclusion with the aid of two channels. First is the increase in the level of financial intermediation measured by the rise in the private credit to GDP. The second channel was the improvement in the quality and efficiency of financial intermediation process proxied by the fail in the growth rate of non-performing loans to loans. The result revealed that the harmonisation process has impacted growth through the increase in the level and efficiency of financial intermediation.

Recent studies by Habibullah and Eng (2006), Arellano and Bover (1995), Blundell and Bond (1998), lend further credence to the causal relationship between credit and economic growth. Other causality studies by Calderon and Liu (2003), Fase and Abma (2003) and Christopoulos and Tsionas (2004). They found that financial development promotes growth, thus supporting the old Schumpeterian hypothesis.

#### **Bi-directional Causality**

The proponents of this view asserted that there is a bi-directional relationship between finance and growth. Demetriades and Hussein (1996) conducted a study on 16 developing economies between 1960 to 1990 with the help of time series technique. They found long run relationship for indicators of financial development and per capita GDP in 13 countries. However, they found bi- directional causality in six countries and reverse causality in six countries while South Africa showed no evidence of causation between the variables. Odedokun (1998) reported varying degree of effects of finance on growth for both high and low income groups in the developing countries.

Demetrisdes and Andrianova (2004) postulate that whether financial development Granger causes growth, it is important that the financial system is well functioning. If so, they believe it will assist the real economy to fully exploit available new opportunities. When there is reverse causation, it is assumed that when the real economy grows, there will be more savings coming into the financial system, which will allow it to extend new loans. Shan and Jianhong (2006) study of China economy where they found a two-way causality between finance and growth. The study conclude that Granger causality from GDP growth to financial development is stronger than the causality from finance to GDP growth. Akpansung and Babalola (2010) asserted that unidirectional causal relationship from GDP to private sector credit.

However, empirical evidence from Nigeria support the fact that both finance and real output are positively related to each other. Okonjo-Iweala and Osafo-Kwaako (2007) explained that "To strengthen the financial sector and improve availability of domestic credit to the private sector, a bank consolidation exercise was launched in mid- 2004. The Central Bank of Nigeria requested all deposit banks to raise their minimum capital base from about US\$15 million to US\$ 192 million by the end of 2005. In the process of meeting the new capital requirements, banks raised the equivalent of about \$3 billion from domestic capital markets and attracted about \$652 million of FDI into the Nigerian banking sector. The empirical result of Orji (2012) showed a positive relationship exists between the lagged values of total private savings, private sector credit, public sector credit, interest rate spread, exchange rates and economic growth.

Conversely, Nwanyanwu (2009) study revealed that the marginal productivity coefficient of bank credit to the domestic economy is positive but insignificant she found that banks credit did not affect the productive sectors sufficiently for the latter to impact significantly on the Nigeria economy.

Ekpenyong and Acha (2011) study on Bank and Economic growth in Nigeria shows an insignificant impact of bank intermediation variables on economic growth. The poor performance of these variables indicate that other variables such as human resources, social infrastructure, political stability and technology play more robust role in economic growth in Nigeria than banks.

Obilor (2013) revealed a significant negative effect of DMBs credit on agricultural productivity; he said that such funds by implication are diverted to other unproductive sector of the economy. For a detailed review of literature on finance and economic growth, see Trew (2006) and Aug (2008). This work takes a digression from cross-country studies by using Nigeria as a case study to examine the effect deposit money banks domestic credit on the economic performance of Nigeria. Although Nigeria vision of becoming "a globally competitive and prosperous country" by 2020 is pegged on the economic success of some key sectors of the economy (CBN 2011), one of the constraints to sectorial growth has been

hailed to be inadequate access to domestic credit. Credit provision is thus, expected to play a role as the country forges forward with the realization of its growth and development objectives.

The work of Iwedi, Igbanibo and Onuegbu, (2015) on bank domestic credits and economic growth nexus in Nigeria found that credit to the private sector (CPS) and Credit to the government sector (CGS) positively and significantly correlate with GDP in the short run. The analysis also revealed the existence of poor long run relationship between bank domestic credit indicators and gross domestic product in Nigeria.

## **III. METHODOLOGY**

## DATA

The data used for the study is basically secondary in nature. This data is obtained from the publications of the Central Bank of Nigeria Statistical Bulletin (2013). Data were collected on Gross Domestic Product (GDP), Credit to Private Sector (CPS), Credit to Government Sector (CGS), and Contingent Liabilities (LIA).

## **MODELLING TECHNIQUE**

The test for linear causality or feedback effects between the specified variables is carried out using Granger Causality Technique. This test is conducted on the model to determine the direction of causality or measure the cause-effect or lead-follow relationship between Gross Domestic Product and the banking sector credit performance indicators so as to ascertain whether the independent variables can actually cause variation in, influence or affect the dependent variables (GDP). The test is based on the following regressions:

$$Y_t = \beta 0 + \sum_{i=1}^{n} + \beta I \quad Y_t - I \sum_{i=1}^{n} X \beta I \quad x \quad \mu t$$
(1)

and

$$Xt = \alpha 0 + \sum_{i=1}^{n} + \alpha I Yt - I \sum_{i=1}^{n} X\alpha I x Yt$$
(2)

Where Xt and Yt are the variables to be tested while  $\mu t$  is the white noise disturbance terms. The null hypothesis  $\alpha 1 = \beta 1 y = 0$  for all 1's is tested against the alternative hypothesis  $\alpha 1^1 0$  and  $\beta 1^{11} 0$ . If the co-efficient of  $\alpha 1^1$  are statistically significant but that of  $\beta 1^1 y$  are not, then X causes Y. If the reverse is true, then Y cause X. However, where both co-efficient of  $\alpha 1$  and  $\beta 1^1 y$  are significant then causality is bi-directional.

# IV. EMPIRICAL RESULTS A. GRAPHICAL ANALYSIS OF DATA



The values of credit to private sector (CPS) maintained an increasing trend during the period chosen for this study. In the year 1980, *CPS* was 6,234.23 million and it rose to 26,565.80million in the year 1990. It further increased from 527,948.50 million to 9,571,942.30 million between the year 2000 and 2010. It later stood at 11,060,543.50million in 2013. While the values of credit to government sector (CGS) maintained an irregular trend throughout the period of this study. In the year 1980, *CGS* was 2,977.70 million, and it rose to 13,661.70 million in year 1990. It further increased to 211,802.90million in year 2000; it later declined to 206,724.50 million in year 2001. It then stood at 2,490,992.20 million in year 2013. Finally, the values of contingent liabilities had an irregular trend during the period chosen for study. In the year 1980, *LIA* was 0.000; it then rose to 34 million in year 1990 but later declined to 13 million in year

1994. It further stood at 21,656 million in 2000 but later declined to3, 154 million in 2010, it rose to 403,562.50 million in 2013.

## FIGURE 2



FIGURE 3



#### **Table 1: Pairwise Granger Causality Test Results**

0	
Pairwise Granger Causality Tests	
Date: 04/26/15 Time: 06:45	
Sample: 1980 2013	

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Lags: 2			
Null Hypothesis:	Obs	<b>F-Statistic</b>	Probability
CPS does not Granger Cause GDP	32	0.33557	0.71787
GDP does not Granger Cause CPS		12.0859	0.00018
CGS does not Granger Cause GDP	32	1.50576	0.23990
GDP does not Granger Cause CGS		10.0969	0.00053
LIA does not Granger Cause GDP	32	16.1189	2.5E-05
GDP does not Granger Cause LIA		12.0527	0.00018

#### Source: Extracted from E-view output

The result of the pairwise granger causality test conducted with a maximum lag of 2 on the first difference of the linear form of the variables is based on a decision rule. The null hypothesis is that there is no causal relationship between the variables. The null hypothesis is rejected if the probability of F-statistic given in the test result is less than 0.05. From table 1, the result reveals that at 5% level of significance, credit to private sector (CPS) and credit to government sector (CGS) does not granger cause growth in Gross Domestic Product (GDP), but causality runs unidirectional from Gross Domestic Product (GDP) to credit to private sector (CPS) and to credit to government sector (CGS) respectively. This implies that growth in the output level of goods and services in the economy can trigger up an active economy, boost the desire for more investment, raise the productive capacity of the economy, influence and define the pattern/volume of credit especially to the private and government sector of the economy. This will in turn increase the quantum of loans and advances that will be advanced to both the private and the public sector of the economy. Hence, GDP leads CPS and CGS respectively.Bi-directional causal relationship exist between contingent liabilities (LIA) and Gross Domestic Product (GDP), in that, LIA leads GDP while causality also flows from GDP to LIA. This suggest that an increase in the total value of contingent liabilities will raise the volume of loan and advances flowing to productive ventures, increase the size of capital/ investable funds available to firms doing business in the economy, and enlarge the size of the capital formation with its attendant effect of boosting investment and productivity level in the economy at large. These will in turn translate into a rise in the output level of goods and services in the economy. Also, Growth in GDP can boost economic activities, increases investment and raise the total value and volume of fund that will be borrowed in the economy. The Bi-directional causality between LIA and Gross Domestic Product shows that Causality flow from LIA to Gross Domestic Product, while causality also trickled down from GDP to LIA. The increase in the amount of LIA in the banking sector is a major source of growth fund, a manifestation of investor's confidence in the banking sector and an evidence of a lower cost of raising funds from banks in the financial system. These will boost investment in the economy and exert a positive impact on level of productivity in the economy hence having a contagion effect on the output level of goods and services in the economy. In the opposite direction, growth in GDP can also boost the total amount of new funds needed through the window of investment, productivity, and innovation and diversification, thereby giving birth to the issue of new credits to fund new businesses and the expansion of already existing once in the economy.

## V. Conclusion

The findings of this study leads to various conclusive remarks. The results showed Causality runs Bi-directionally between LIA and GDP. This however provides evidence for the existence a two-way. Connectivity between the banking sector activities represented by CPS, CGS, LIA and the functioning of the real sector of the economy. There, is also evidence of causality flowing from GDP to CPS and CGS respectively. These however might be

supporting the position that a strong, vibrant and active bank system can grow the economy of a country and vice versa. From the findings of this study and the conclusions derived there from, we recommend that policy makers should fashion out appropriate policies that will enhance the bi-directional flow of influence between the banking sector where investable funds are sourced and the real sector of the economy where goods and services are produced.

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