Financial Deepening and Economic Growth in Nigeria (1986 – 2010)

By

Adofu, I, Alehile, K. S and Agama, J.E
Department of Economics
Kogi State University, Anyigba

Abstract

This study empirically investigated the impact of financial deepening on economic growth in Nigeria between 1986 and 2010 using time series data sourced from the Central bank of Nigeria (CBN) statistical bulletin 2010 edition. This study employed the Vector Error Correction Mechanism (VECM) as well as the Johansen co-integration and granger causality tests and found out that causality runs from GDP to CBC and TDDC which means that economic growth causes financial deepening. Also, the findings of this study revealed that though GDP is affected by some variables of financial deepening yet past values of GDP have more impact on GDP than financial deepening. This study concluded by recommending that the productive base of the Nigerian economy should be strengthened and that saving mobilization by the commercial banks should be encourages and quantity of money in circulation should be increased.

Key Words: Financial Deepening, Economic Growth, Vector Error Correction Mechanism (VECM)
JEL Classification: E44, E51, G3

Introduction

Financial deepening means an increase in the supply of financial assets in the economy. The sum of all the measures of financial assets gives us the approximate size of financial deepening (Ndebbio 2004). That means that the widest range of such assets as broad money (M2), financial intermediaries, treasury bills, and values of shares in the stock market, money market fund etc will have to be included in the measure of financial deepening. The introduction of the structural adjustment programme in July, 1986, deregulated the financial system for effective resources allocation, stimulation of output and employment and the promotion of domestic and external stability which will enhance a deepened financial system.

The period of 1986 – 1987 was that of tight monetary management. In this phase the monetary policy package can be seen as a corrective measure to raise domestic productivity, reduce rate of inflation and unemployment and minimize the pressure on balance of payments. This was to raise the level of domestic savings from surplus spending units to a minimum rate that would enhance investment in domestic production. Also, in order to curtail the inflationary pressure prevailing in the economy over the period, the 1987 budget required that the money supply must not grow more than 1.5%. Government embarked on gradual devaluation of her currency to make export more competitive in the foreign market so as to help improve on her balance of payments.

In 1994, adverse shocks compelled government to reverse the policy direction to re-regulate as against the de-control commenced since the adoption of SAP. The exchange rate was fixed at N22 per dollar, while banks lending rate was pegged at the maximum point of 21%. These were complemented with the abolition of domiciliary account, foreign assets guarantee for domestic credit, further reduction in subsidy granted on domestic consumption of petroleum products and creation of

a special petroleum trust fund. These resulted in further widening of the parallel market exchange rate premium, while inflation rate stood at 59%, all suggesting that the policy actions had not achieved their objective (Anyanwu, 1997).

Another period of Deregulation, (but guided) was 1995 – 2005. There was further depreciation of the naira at the exchange rate market with the introduction of the autonomous foreign exchange market (AFEM). Renewed effort was put into the sanitization of the financial system. The effect of this was a reduction in the rate of inflation from 72.8% in 1986 to 2.3% in 1996. This reflected the lagged effect of the slowdown of monetary expansion which was 8.1% in 1995 and the achievement of a small surplus in government fiscal operation (Omofa, 1999).

In a renewed spirit of building a vibrant financial system that would be able to stand the test of time, the government increased the capital base of commercial banks from N2 billion to N25billion in 2004. This culminated in the emergence of 25 banks with a capital base that can support real investment in the economy. Few years after this policy stance, distresses were recorded in the Nigeria financial sector which saw about five Banks nationalized to salvage the system from eminent collapse and repose confidence in the Banking public.

Literature Review

Ndebbio, (2004) observed that there is a general observation by economists that as per capita incomes of some countries increase, these countries usually experience more rapid growth in financial assets than in national wealth or national product. Developed Countries of Europe, the United State, Japan, etc whose financial assets have grown faster than their gross national products (GNP) have been cited as good examples of this general observation. The work of Gurley and Shaw, (1967). Meltzer (1969) Stein (1970), Meier (1984) and Jao (1976) are very clear on this observation.

Meier (1984) observes that in the United States the growth of financial assets relative to GNP has been remarkably fast given that "the ratio increased from about unity at the beginning of the last century to 4.5 in the1980s". In the case of Japan, Meier further observes that the ratio of financial assets to GNP rose from 10% in 1980s to over 15% in the 1990s. Gurley and Shaw (1967) observed in a study "financial structure and economic development" that as countries rise along the scale of wealth and income, their financial structures usually become increasingly rich in financial assets, institutions and markets. Growth in excess of real growth of output has been seen as a common phenomenon in most developed countries. Gurley and Shaw's (1967) observation clearly approximates Meltzer's (1969) position with respect to financial deepening and economic growth. Meltzer also maintained that as a country rises in wealth its financial system becomes deepened. Jao (1976) did a study on financial deepening and economic growth. He opined also that as a country rises in wealth its financial system becomes deepened. Jao's (1976) position was not in any way different from that of Stein (1970) whose study was titled "Monetary Growth Theory in perspective".

From the literature on financial deepening including particularly the works of McKinnon (1973) and Shaw (1973) which were basically for extending theoretical analysis of the relationship between growth and financial deepening to developing countries, two major propositions have emerged. One, that growth of real money balance augurs well for economic growth, and two, that the growth of an economy depends, in part, on the degree of financial development or financial intermediation.

Shaw (1973) opined that, distortions in financial prices, including interest rate and foreign exchange rate, reduce the real rate of growth and retard the development process. He argued that a new effective strategy of deepening the financial market will be to liberalize it. Financial liberalization will deepen the financial market,

thus easing it of strain on taxation and reducing the demand for foreign savings, especially, where the credit providing financial institutions are risk averse.

The liberalization of financial markets will therefore open the way to superior allocation of savings by widening and diversifying the market in which savers and investors compete freely for loanable funds. In fact Mackinnon (1973) and Shaw (1973) emphasized the role of domestic saving and investment in a developing economy and argued that, w here financial deepening contributes to increase in expected profitability of capital, it is also to be expected that it would encourage investment and economic growth.

Data and Econometric methodology

Data Source and Nature

This study relied on secondary data sourced from the Central Bank of Nigeria (CBN) statistical bulletin 2010 edition. The empirical investigation carried out covered the period of 1986-2010. Three (3) indicators of financial deepening were used and one indicator of economic growth. The indicators of financial deepening used include commercial bank credit to the domestic economy, money supply and time and demand deposit with commercial banks while gross domestic product (GDP) was used as indicator of economic growth.

Specification of the Model

This study employed the method of vector Error Correction Model (VECM) to estimate the effects of financial deepening on economic growth. This choice of this method is based on the adequacy of VECM to capture both the long run and short run relationship among the variables. In order to test the causal relationships, the following multivariate model is to be estimated

$$GDP = F\{FD\}$$

Where GDP is the Gross Domestic Product (GDP) and the variables of financial deepening is proxied by the following indicators:

FD= {MS, CBC, TDDC}

Where

MS= Broad Money Supply as percentage of GDP

CBC= Commercial Bank Credit as percentage of GDP

TDDC= Time and Demand Deposit with Commercial Banks as Percentage of GDP

The choice of these variables is based on their popularity in financial deepening literature and the nature of information they provided. MS indicates financial depth; CBC provides information about financial institutions credit allocation to private sector as compared with size of the economy as a whole while TDDC measures the strength of the financial system to mobilize savings.

Econometric Tests

Given that this study used time series data, it is very necessary to investigate the time series properties of the data. Augmented Dickey-Fuller and Philip Perron unit root tests were calculated for each of the variable to provide evidence as to the order at which the variables are integrated.

Johansen Co-integration test will also be carried out to determine the existence of cointegrating equation in among the variables. The null hypothesis is the hypothesis of non-cointegration against the alternative of the existence of cointegration using. The Johansen method applies the maximum likelihood procedure to determine the presence of co-integrated vectors in non-stationary time series.

Granger causality test will also be conducted to determine the direction of causality among the variables

Empirical data Analysis

Unit Root Test

Table 1 below reports the Augmented Dickey-Fuller unit root test. All the variables were not stationary at but were all stationary at first difference at five (5) percent level of significance

Table 1: ADF Unit Root Results

Variables	ADF Test Statistics	Order of Integration	% level of Significance
GDP	-11.766	I(1)	1
CBC	-3.599	I(1)	1
MS	-4.355	I(1)	1
STDC	-3.784	I(1)	1

Table 1 above indicated that the series were integrated at order one meaning that they must be modeled at first difference to make them stationary.

Johansen Co-integration Test

The table below reports the results of the Johansen Co-integration test conduct on the data to determine if there is the presence of a significant long run relationship.

Table 2: Johansen Co-integration Test Results

Date: 12/15/12 Time: 21:37
Sample (adjusted): 1989 2010
Included observations: 22 after adjustments
Trend assumption: Linear deterministic trend
Series: GDP CBC TTDC MS
Lags interval (in first differences): 1 to 2

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.769023	63.27189	47.85613	0.0010
At most 1 *	0.640363	31.03231	29.79707	0.0359
At most 2	0.292876	8.533793	15.49471	0.4102
At most 3	0.040508	0.909721	3.841466	0.3402

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.769023	32.23958	27.58434	0.0117
At most 1 *	0.640363	22.49852	21.13162	0.0319
At most 2	0.292876	7.624072	14.26460	0.4182
At most 3	0.040508	0.909721	3.841466	0.3402

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

From the result of Johansen Co-integration presented in the table above, both Trace test and Max-eigenvalue test indicated the presence of two (2) co-integrating equation at 5% level of significance. Therefore, there is the presence of a significant long run relationship among the selected variables and the variables can be modeled using the estimation method of VECM.

Granger Causality Test

The result of the granger causality test meant to find out the direction of causation among the selected variables is reported in the table below.

Table 3: Pairwise Granger Causality Tests
Date: 12/15/12 Time: 21:07
Sample: 1986 2010
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
GDP does not Granger Cause CBC	23	6.41936	0.0079
CBC does not Granger Cause GDP		1.87533	0.1821
MS does not Granger Cause GDP	23	0.82074	0.4559
GDP does not Granger Cause MS		2.07549	0.1545
STDC does not Granger Cause GDP	23	0.52660	0.5994
GDP does not Granger Cause TDDC		6.88565	0.0060

The results of the granger causality test reported above indicated that Gross Domestic Product (GDP) granger causes Commercial Bank Credit (CBC) and not

the other way round. Both Money Supply (MS) and Gross Domestic Product (GDP) do not granger causes each other and lastly, Time and Demand Deposit of Commercial Banks (TDDC) granger causes Gross Domestic Product (GDP).

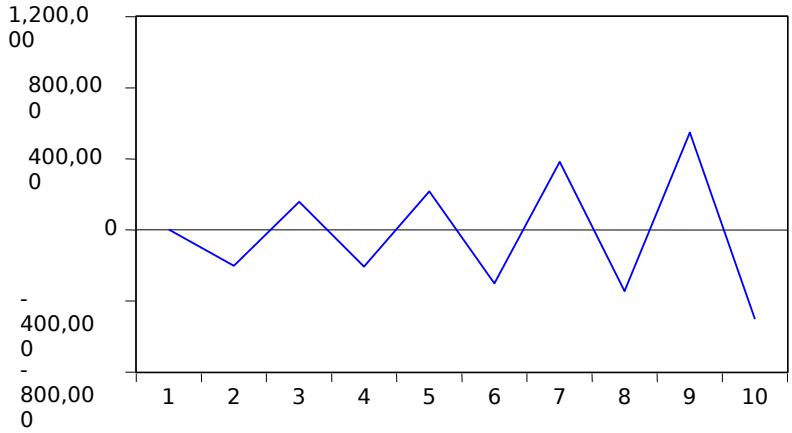
Impulse Response of GDP

An impulse response function traces the effect of a one-time shock to one of the innovations on current and future values of the endogenous variables.The graph shown below shows the response of GDP to innovations in each of the selected variables. The response of GDP to Commercial Bank Credit (CBC) is not a significant one as show by the trend line which follows a swigging nature. Therefore, commercial bank credit does not significantly affect the expansion of GDP within the period under study in Nigeria.

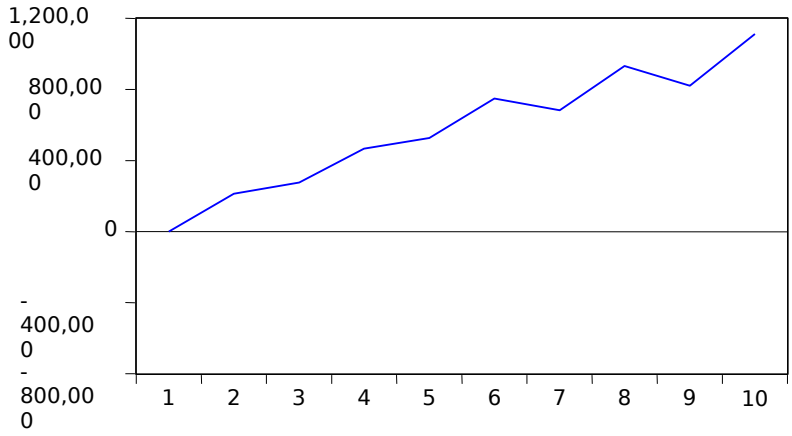
Both Time and Demand Deposit of commercial bank (TDDC) and money Supply (MS) leads to a significant expansion of GDP and shown by the respective charts below. Therefore, commercial banks time and demand deposit significant affect expansion in GDP over the period under review in Nigeria.

Response to Cholesky One S.D. Innovations

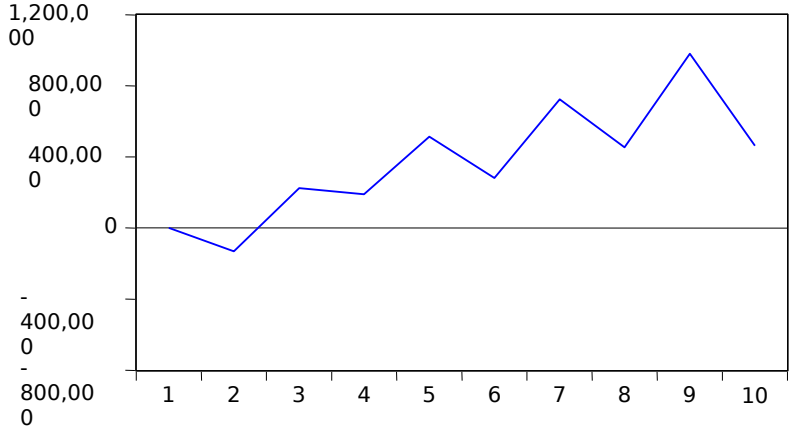
Response of GDP to CBC



Response of GDP to TTDC



Response of GDP to MS



Variance Decomposition of GDP

Variance Decomposition separates the variation in an endogenous variable into the component shocks to the VECM. Thus, the variance decomposition provides information about the relative importance of each random innovation in affecting the variables in the VECM.

From the table below, in the first period (year) the total variation in GDP was accounted for by GDP itself as it accounted for 100% of the variation in GDP. While in the second period, GDP still accounted for a high percentage of 94.4% while CBC, TTDC and MS accounted for 2.03%, 2.22% and 0.84% respectively in total variation in GDP. In the fifth period GDP accounted for 94.28% while CBC, TTDC and MS accounted for 0.78%, 3.08% and 1.84% in total variation of GDP. By the tenth period, variation in GDP caused by it still accounted for 91.89% while CBC, TTDC and MS accounted for 1.10%, 4.57% and 2.43% respectively. Form the above one can infer that that the major cause of variation in GDP is its past values.

Table 4: Variance Decomposition of GDP

Period	S.E.	GDP	CBC	TTDC	MS
1	780165.9	100.0000	0.000000	0.000000	0.000000
2	1419970.	94.90141	2.031658	2.224163	0.842764
3	2394291.	95.58201	1.147201	2.096351	1.174442
4	3265521.	94.84312	1.020020	3.165944	0.970912
5	4461943.	94.28580	0.782046	3.087228	1.844928
6	5446622.	93.70536	0.834122	3.956060	1.504458
7	6677904.	93.26988	0.884327	3.672673	2.173118
8	7638641.	92.81759	0.879355	4.290613	2.012440
9	8910182.	92.28823	1.024838	4.000510	2.686423
10	9823188.	91.89430	1.105413	4.568799	2.431485

Findings of the Study

The empirical analysis above is revealing. It indicated the presence of long run relationship between financial deepening and economic growth in Nigeria. Also, the granger causality tests indicated that GDP granger cause CBC and TTDC as against the general opinion that financial deepening causes GDP. Therefore, effort should be made to grow the economy so as to realize the deepening of the financial sector.

Impulse response of GDP also indicated that though CBC has effect on GDP but that the impact is insignificant and that TTDC and MS have positive significant impact on GDP. This suggests that increased saving mobilization and increase in money supply are viable tools for accelerating the rate of economic growth in Nigeria. Variance decomposition of GDP revealed the impact the past values of GDP have on the current level of GDP. This further confirms the need to strengthen the productive base of the country's economy to bring about the desire economic growth and development.

Conclusion

This study has empirically investigated the impact of financial deepening on economic growth in Nigeria between 1986 and 2010. This study found out that causality runs from GDP to CBC and TDDC which means that economic growth causes financial deepening. Also, form the finding of this study; it is obvious that though GDP is affect by some variables of financial deepening yet past values of GDP have more impact on GDP than financial deepening. This study concludes by recommending that the productive base of the Nigerian economy should be strengthened and that saving mobilization by the commercial banks should be encourages and quantity of money in circulation should be increased.

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