

## Financial Deepening and Economic Development of Nigeria: An Empirical Investigation (1981-2013)

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### Abstract

This research work examined financial deepening and economic development in Nigeria between 1981 and 2013. The central focus is that a high level of financial deepening is a necessary condition for accelerating growth in an economy. This is because of the central role of the financial system in mobilizing savings and allocating same for the development process. The study made use of secondary data, sourced for a period of 33 years. We specified four explanatory variables for the study based on theoretical underpinnings. We sought to establish a relationship between these variables and financial deepening index. The ordinary least squares analytical framework was used in the analysis. The result shows that 27% of the variables under consideration affect GDP per capita while 73% of other variables not captured in the model also affect GDP per capita and the adjusted  $R^2$  of 16.7% show the robustness of the model. The unit root test revealed that GDP per capita, ratio of money supply relative GDP and inflation was found to be stationary at level  $I(0)$ , which denotes rejection of null hypothesis that GDP per capita has a unit root and accept the alternative. The co integration test shows that there exists a long-run relationship of the variables. The vector error correction model test shows that 53% of the variables affect GDP per capita while 47% of the variable is not captured in this model. A trend analysis was also done in the study. At the end of the study, we found that financial deepening index is low in Nigeria over the years. We also found that the four explanatory variables, as a whole were useful and had a statistical relationship with financial deepening. But three of the variables; trade openness(TROP), inflation rates(INFLA), and ratio of money supply relative to gross domestic product(M2/GDP) had a significant relationship with financial deepening based on GDP per capita. We concluded that, the financial system has not sustained an effective financial intermediation, especially credits allocation and a high level of monetization of the economy. Thus the regulatory framework should be restructured to ensure good risk management, corporate governance and stemming systemic crisis in the system as well as Federal government pro-active in areas of imports and exports so as to create trade openness in the economy in order to increase GDP per capita and better the lives of her citizens.

**Keywords:** Financial structure, financial deepening, financial savings, , Inflation rate, Trade openness, economic development.

### Introduction

The mere nature of the reforms in the financial system in Nigeria which heightened the 1986 deregulation, affected the level of financial deepening of the country and the level relevance of the financial system to economic development. The rapid globalization of the financial markets and the increased level of integration of the Nigerian financial system to the global system have generated interest on the level of financial deepening that has occurred. The financial system comprises various institutions, instruments and regulators. According to the Central Bank of Nigeria (1993) the financial system refers to the set of rules and regulations and the aggregation of financial arrangements, institutions, agents, that interact with each other and the rest of the world to foster economic growth and development of a nation. According to Nzotta (2004:169) the financial system serve as a catalyst to economic development through various institutional structures. The system vigorously seek out and attract the reservoir of savings and idle funds and allocate same to entrepreneurs, businesses, households and government for investments projects and other purposes with a view of returns. This forms the basis for economic development. The financial system play a key role in the mobilization and allocation of savings for productive, use provide structures for monetary management, the basis for managing liquidity in the system. It also assists in the reduction of risks faced by firms and businesses in their productive processes, improvement of portfolio diversification and the insulation of the economy from the vicissitudes of international economic changes. Additionally, the system provides linkages for the different sectors of the economy and encourages a high level of specialization expertise and economies of scale. Nzotta further contends that the financial system, additionally, provides the necessary environment for the implementation of various economic policies of the government which is intended to achieve non-inflationary growth, exchange rate stability, balance of payments equilibrium, foreign exchange management and high levels of employment.

The Nigerian financial system can be broadly divided into two sub-sectors, the informal and formal sectors. The informal sector has no formalized institutional framework, no formal structure of rates and comprises the local money lenders, thrifts, savings and loans associations. According to Olofin and Afangideh (2008:48) this sector is poorly developed, limited in reach and not integrated into the formal financial system. Its exact size and effect on the economy remain unknown and a matter of speculation. The formal sector, on the other hand, could be clearly distinguished into the money and capital market institutions. The money market is the short-term end of the market and institutions here deal on short term instruments and funds. The capital market encompasses the institutions that deal on long-term funds and securities. The regulatory institutions in the financial system are the Federal Ministry of Finance, the Central Bank of Nigeria as the apex institution in the money market, the Securities and Exchange Commission (SEC) as the apex institution in the capital market, Nigerian Deposit Insurance Corporation, (NDIC), National Insurance Commission (NAICOM) and the National Pensions Commission (PENCOM). Since 1986, the monetary authorities have adopted various measures aimed at deepening the financial system and reducing the level of financial repression in the system. In terms of flow of funds, the banking system, clearly dominate and has an important impact on the level of economic development. Thus, we can make a distinction between bank based and market-based financial systems. (Stiglitz, 1985, Levine, 2002). These issues have been the focus of theoretical debate for decades. Attempts have also been made to examine whether one type of financial system better explains economic growth in a country than another. Arestis and Luintel (2004) Empirical studies on financial structure and its effects on economic growth have concentrated on the developed economies, especially the United States of America and United Kingdom, which are market based and Germany and Japan essentially bank based. Olofin and Afangideh (2008). These studies include Arestis et'al (2001). Hohi et al (1991) and Weinstein and Yafeh, (1998). The Studies above points to the fact that the financial structure is important in economic growth. As noted by Olofin and Afangideh, "the results based on the models of developed countries can only be used as speculation when it comes to economic policy for developing countries. They are not likely to provide a convincing reference point for developing countries, given the differences in their level of development. Moreover critical issues on economic growth remain unaddressed. The more developed a financial system and structure, the greater the slice of returns that accrue to financial investors. Financial reforms have been a regular feature of the Nigerian financial system. The reforms have evolved in response to the challenges posed by developments in the system such as systemic crisis, globalization, technological innovation, and financial crisis. The reforms often seek to act proactively to strengthen the system, prevent systemic crisis, strengthen the market mechanism, and ethical standards. Financial reforms in Nigeria dates back to 1952 when the Banking Ordinance was enacted. The deregulation of banking in 1986 provided the impetus for the Structural Adjustment Programme. The 1986 reform of the financial system saw a policy shift from direct control to a market based financial system, especially as regards monetary management, risk management and asset holding capabilities of the institutions. A number of other reforms followed including the consolidation policy in banking 2005 and insurance 2007.

The capital market has also experienced a lot of reforms over the years, especially as regards the capital requirements of the operators, the operational and ethical standards of the institutions and the modalities of the market mechanism. The reforms in the system impacted positively on the growth of the financial system. The system moved from a rudimentary one at inception to a more sophisticated one in 2009 with diverse institutions and operators, diversified financial assets and an enhanced regulatory framework. The reforms have also tried to address the financial gaps in the system, remove rigidities in the system of credit allocation and control and achieve positive real interest rates and greater efficiency by the market operators in the intermediation process. The process of financial sector reform consists of the movement from an initial situation of controlled interest rates, poorly developed money and securities market and under-developed banking system, towards a situation of flexible interest rates, an expanded role for market forces in resource allocation, increased autonomy for the central bank and a deepening of the money and capital markets. The link between financial sector stability and growth is, explained by increased market depth, which potentially increases market efficiency. It also reduces risks through the elimination of weak institutions. Financial sector reforms/seeks to develop an efficient framework for monetary management. This encompasses efforts to strengthen operational capacities of the banking system, foster efficiency in the money and securities markets, over-haul the payments system and ensure greater autonomy to the central bank in formulating and implementing macroeconomic policies. Thus, there is the need to deepen the financial sector and reposition it for growth and integration into the global financial system in conformity with international best practices. One of the most important policy concerns in most countries is the effect of consolidation of financial institutions on financial system growth and development. The first major concern is the transmission mechanism. Consolidation could alter the credit allocation of the financial system by fostering the creation of larger banks having better access to the funds market. It also affects the availability and pricing of loans in response to changes in the market dynamics and the level of economic development. Generally, this study is important at this level of economic development when efforts are being made to reposition the financial system to enable it play key roles in economic development of Nigeria. The

study essentially seeks to examine in an empirical manner, the nature of financial deepening in Nigeria between 1981 to 2013. I shall seek to ascertain the critical factors that have affected the level of financial deepening in Nigeria. Moreover, i shall also seek to find answers to the basic questions: Is there any verifiable pattern in the financial savings of the system since 1981? Is there any relationship between the lending pattern of banks and financial deepening? Is there any relationship between the level of financial deepening and credits to private sectors? Finally, i shall seek to ascertain if there is observable growth in the financial deepening index (money supply relative to GDP) ratio in Nigeria. This study is divided into five sections. Section one is the introduction. Section two is the theoretical foundation. Section three presents a general specification of the model. Section four presents the results of the analysis and their implications, while the last section is the conclusion and recommendations.

### **Theoretical Framework**

At all levels, Financial deepening affects economic growth, stagnation or even lead to decline in any of economic system. Financial resources are mobilized and channeled to economic activities by financial institutions or financial intermediaries who channel these resources from surplus economic units to deficit economic units. In doing this, they evolve appropriate structures necessary for the intermediation functions which they perform.

However, various studies have shown that there is a strong and positive relationship between the financial sector and economic development. According to Porter (1966) the level of financial institution development is the best indicator of general economic development. Furthermore, Goldsmith (1969) contends that financial institution development is of prime importance for real development because the financial superstructure in the form of both primary and secondary securities accelerates economic growth and improves economic performance to the extent that it facilitates the migration of funds to the best user. This refers to the place in the economic system where the funds will yield the highest social return. In his empirical study, as reported by Nzotta (2004) Goldsmith calculated the values of the financial interrelation ratio, the ratio of all financial instruments at a given time, to the value of the national wealth. He found that the ratios for developing countries were far lower than those of developed countries and concluded that because the development of financial institutions affects development, the low level of development of the financial superstructure affects development negatively. The views above are supported by the development hypothesis theory. The supporters of this theory believe that the lack of a developed financial infrastructure restricts economic growth. Thus, the focus of policy at each point in time should be to ensure that the financial system operates efficiently such that the real sector will receive the necessary support. The acceptance of the hypothesis theory made economic theorists to conclude that a measure of intervention is important and in fact necessary for meaningful growth. Various policies should thus be put in place to encourage and promote the activities of financial institutions in this regard. This gave rise to the financial repression theory. This theory is usually associated with the work of Mckinnon (1973) and Shaw (1973). The implication of their studies is that financial development would contribute most significantly to economic growth, if monetary authorities did not interfere in the operations of financial institutions and the financial infrastructure generally. The studies by Mckinnon and Shaw observed that financial repression is correlated with sluggish growth in developing countries. Such economies, according to Nnanna and Dogo (1998) are typically characterized by high and volatile inflation and distorted interest and exchange rate structures, low savings and investments and low level of financial intermediation, as interest rates do not reflect the cost of capital- Various studies investigated the relationship between financial system structure and development and the level of economic growth in Nigeria. These studies include Akinlo and Akinlo (2007) Ayadi et al (2007), Ndebbio (2004) Oyejide (1998) Edo (1995), Ogun (1986). The studies relied on money market indicators and established a positive and significant relationship between financial development and economic development. (Nwaogwugwu: 2008) Financial deepening is very often used in development studies and refers to the increased provision of financial services with a wider choice of services geared to the development of the levels of society. The World Bank (1932) further contends that financial deepening encompasses the increase in the stock of financial assets. From this perspective, financial deepening implies the ability of financial institutions in general, to effectively mobilize financial resources for development. This view accepts the fact that a financial system's contribution to the economy depends on the quality and quantity of its services and the efficiency with which it performs them. Popiel (1990) conducted one of the most elaborate studies on financial deepening. According to him, financial markets are deep from a qualitative standpoint when: They offer savers and investors a broad range of financial instruments which differ in terms of liquidity, yields, maturities and degree of risk including debt instruments, equity instruments and in between quasi-equity instruments; They encompass a diversity of sub-markets, trading in different financial instruments; Mature, domestic financial markets are integrated into the international financial markets; Are linked together through financial instruments; Finally, the markets are linked together through various financial institutions which function as market makers and financial intermediaries. The

conclusions of Popeil above agree with the views of Shaw (1973) who contends that financial deepening is an outcome of the adoption of appropriate real finance policy and the broadening of the markets. The attempt to effect this in Nigeria resulted in the deregulation of the financial system in 1986 and the various reforms in the financial system since then.

Financial deepening implies the ability of financial institutions to effectively mobilize savings for investment purposes. The growth of domestic savings provides the real structure for the creation of diversified financial claims. It also presupposes active operations of financial institutions in the financial markets, which in turn entail the supply of quality (financial) instruments and financial services (Ndekwa. 1998: 14). The views above conform to the conclusions of a study by Nnanna and Doga (1999) that financial deepening represents a system free from financial repression. Their findings in this study is that policies of financial repression aimed at encouraging domestic investments through suppressing interest rates produced negative results. Here, negative real interest rates did not encourage greater investments but rather encouraged the banks to be more risk averse and more hesitant to lend. On the other hand, when interest rates are more market oriented and less negative in real terms, bank lending increases and same to domestic investments and national savings. Financial deepening generally entails an increased ratio of money supply to Gross Domestic product Popiel (1990), Nnanna and Dogo (1999) and Nzotta (2004). Financial deepening is thus measured by relating monetary and financial aggregates such as M1, M2 and M3 to the Gross Domestic Product (GDP). The logic here is that the more liquid money is available to an economy, the more opportunities exist for continued growth of the economy. How does this come about? Deep and mature financial markets are indispensable for economic development Olofin and Afangideh (2008) Arestic (2001) and Levine (2002).

It is also instructive to note that the study by Nnanna and Dogo found that the depth of the Nigerian financial market remained fairly shallow up to 1983. The financial deepening index grew between 1987 and 1997. The results of their study showed a positive serial correlation between financial deepening and nine explanatory variables. From the literature, i summarize the reasons why financial deepening is poor in developing countries as including the low level of foreign direct investments, shallow capital market, distortions in interest rate, and weak association between financial openness and financial deepening. Ju and Wei, (2007), recently the low level of corporate governance in financial institutions has also sustained poor financial deepening in the system. (Nzotta, 2006). Moreover, in a world of friction less capital markets and various levels of country risks, the least developed financial system is completely by-passed by international investment flows. Thus, a developing country with poor financial infrastructure may experience large outflows of foreign capital, Yan (2007).

Inflation: refers to a generalized increase in the level of price sustained over a long period in an economy (Lipsey 1995). It is a rise in the general level of prices of goods and services in an economy over a period of time. Gross Domestic Product: implies the market value of all officially recognized final goods and services produced within a country in a given period. GDP per capita is often considered as an indicator of a country's standard of living, which is been measured as ratio of real GDP to population (RGDP/POP). GDP is related to national account, a subject in macroeconomics. It is customarily reported on an annual basis. The ratio of money supply relative to GDP measures financial determination. Meaning that, the more liquid money is available to an economy, the more opportunities exist for continued growth of the economy.

Trade openness implicitly refers to trade policy orientation, which can be measured as exports plus imports relative to nominal GDP (EXP+IMP/GDP) Alcalá and Ciccone (2004). In other words, trade openness is a measure of trade policies, which serve as more complex notion covering not only the trade policy orientation of countries but also a set of other domestic policies (such as macroeconomics or institutional one's) which altogether make the country more or less outward oriented. A potential advantage of this approach is that, it is directly informative about role of trade policies for growth. Simple measure of trade policy such as an average tariff rate or coverage ratios of non-tariff barriers that trade have, however, draw back such as in ordinate weight to categories of goods that are relatively unimportant to a country.

### Specification Model

Development of this Model: In this study, according to Nnanna and Dogo in their investigation of the financial deepening function in pre and post financial reform periods in Nigeria; nine explanatory variables were used in investigating financial deepening. In the current investigation, four explanatory models was adopted. Cleared to ratio of Money Supply relative to Gross Domestic Product(M2/GDP), ratio of Credit to Private Sector relative to Gross Domestic Product(CPS/GDP), Trade Openness(TROP) and the Rate of Inflation (INFLA).

This model is given as  $GDP_{pc} = \alpha_0 + \alpha_1 M2/GDP + \alpha_2 CPS/GDP + \alpha_3 TROP + \alpha_4 INFLA + \mu$

The model above can be reduced to the linear logarithmic equation form thus:

$$\text{LogGDP}_{PC} = \alpha_0 + \alpha_1 \text{Log (MS/GDP)} + \alpha_2 \text{Log (CPS/GDP)} + \alpha_3 \text{Log (INF.)} + \alpha_4 \text{Log (TROP)} + \mu$$

### Sources of Data and Method of Analysis

The data used in this study were sourced from the Central Bank of Nigeria publications and those of the Bureau of statistics as well as world bank data base. The data was for the period 1981 – 2013. The period chosen for the study encompasses the phases of the major reforms in the financial system and the period of consolidation of the banking and insurance systems in Nigeria. In my analysis, financial deepening defined as GDP per capita is a function of value of the ratio of money supply relative to GDP, ratio of private sector credits relative to GDP, Trade openness, rate of inflation and the error term. The level of development of the Nigerian financial system makes it imperative to use this concept of financial deepening specified above, unlike Goldsmith's Financial Interrelations Ratio.

### Result of Various Tests that are Involved

**TABLE 1: OLS Result**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-10.77703	4.426918	-2.434432	0.0215
INFL	0.160922	0.058628	2.744812	0.0105
M2	0.630212	0.470634	1.339070	0.1913
CPS	-0.349668	0.449152	-0.778506	0.4428
OPEN	0.001140	0.000601	1.896014	0.0683
R-squared	0.271949	Mean dependent var		0.145455
Adjusted R-squared	0.167942	S.D. dependent var		5.630558
S.E. of regression	5.136039	Akaike info criterion		6.249168
Sum squared resid	738.6090	Schwarz criterion		6.475912
Log likelihood	-98.11128	Hannan-Quinn criter.		6.325461
F-statistic	2.614712	Durbin-Watson stat		1.592348
Prob(F-statistic)	0.056515			

**Source:** Authors' computation using E-view 7.0 (2015)

**Table 2 : Cointegration Test Result**

Date: 06/13/15 Time: 12:28  
 Sample (adjusted): 1983 2013  
 Included observations: 31 after adjustments  
 Trend assumption: Linear deterministic trend  
 Series: GDP INFL M2 CPS OPEN  
 Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.714587	86.07976	69.81889	0.0015
At most 1	0.516236	47.21142	47.85613	0.0574
At most 2	0.435254	24.70053	29.79707	0.1724
At most 3	0.139298	6.987753	15.49471	0.5791
At most 4	0.072632	2.337540	3.841466	0.1263

Trace test indicates 1 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 *	0.714587	38.86835	33.87687	0.0117
At most 1	0.516236	22.51089	27.58434	0.1953
At most 2	0.435254	17.71278	21.13162	0.1410
At most 3	0.139298	4.650213	14.26460	0.7852
At most 4	0.072632	2.337540	3.841466	0.1263

Max-eigenvalue test indicates 1 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 Cointegrating Coefficients (normalized by b'S11\*b=I):

GDP	INFL	M2	CPS	OPEN
-0.095976	0.094400	0.620505	-0.626315	0.001069
-0.004525	0.039707	-0.039730	0.246415	-0.000356
-0.289384	0.032289	0.111933	-8.64E-05	0.000424
0.021966	-0.015525	0.506554	-0.414896	2.53E-05
0.086829	-0.012914	-0.258293	0.253099	0.000342

Unrestricted Adjustment Coefficients (alpha):

D(GDP)	-2.001505	-1.500445	2.244557	-0.303014	-0.657463
D(INFL)	-9.285175	-4.539349	4.811714	3.002217	1.034471
D(M2)	1.221544	-2.255693	-1.104145	0.212802	-0.371262
D(CPS)	1.495970	-1.842705	-0.972298	0.743657	-0.489512
D(OPEN)	-669.8004	123.4789	-713.1537	59.74135	-171.4064

1 Cointegrating Equation(s):      Log likelihood      -618.5229

Normalized cointegrating coefficients (standard error in parentheses)

GDP	INFL	M2	CPS	OPEN
1.000000	-0.983577 (0.11992)	-6.465180 (1.05603)	6.525721 (1.07364)	-0.011138 (0.00147)

Adjustment coefficients (standard error in parentheses)

D(GDP)	0.192097 (0.09627)
D(INFL)	0.891157 (0.28185)
D(M2)	-0.117239 (0.07707)
D(CPS)	-0.143578 (0.08057)
D(OPEN)	64.28502 (26.3377)

2 Cointegrating Equation(s):      Log likelihood      -607.2675

Normalized cointegrating coefficients (standard error in parentheses)

GDP	INFL	M2	CPS	OPEN
1.000000	0.000000	-8.389800 (3.86801)	14.22409 (4.08321)	-0.022475 (0.00506)
0.000000	1.000000	-1.956756 (3.79401)	7.826912 (4.00509)	-0.011526 (0.00497)

Adjustment coefficients (standard error in parentheses)

D(GDP)	0.198887 (0.09177)	-0.248521 (0.09782)
D(INFL)	0.911700 (0.26775)	-1.056767 (0.28539)
D(M2)	-0.107031 (0.06321)	0.025746 (0.06738)
D(CPS)	-0.135239 (0.07211)	0.068051 (0.07686)
D(OPEN)	63.72622 (26.2555)	-58.32623 (27.9848)

3 Cointegrating Equation(s):      Log likelihood      -598.4111

Normalized cointegrating coefficients (standard error in parentheses)

GDP	INFL	M2	CPS	OPEN
1.000000	0.000000	0.000000	-0.164162 (0.20706)	-0.001218 (0.00076)
0.000000	1.000000	0.000000	4.471135 (1.00314)	-0.006568 (0.00367)
0.000000	0.000000	1.000000	-1.714969 (0.15201)	0.002534 (0.00056)

Adjustment coefficients (standard error in parentheses)

D(GDP)	-0.450652 (0.25555)	-0.176046 (0.08999)	-0.931091 (0.52948)
D(INFL)	-0.480735 (0.79519)	-0.901401 (0.28004)	-5.042558 (1.64758)
D(M2)	0.212491 (0.18847)	-0.009905 (0.06637)	0.724002 (0.39049)
D(CPS)	0.146129 (0.22069)	0.036656 (0.07772)	0.892635 (0.45725)
D(OPEN)	270.1018 (70.5142)	-81.35332 (24.8325)	-500.3452 (146.101)

4 Cointegrating Equation(s):      Log likelihood      -596.0860

Normalized cointegrating coefficients (standard error in parentheses)

GDP	INFL	M2	CPS	OPEN
1.000000	0.000000	0.000000	0.000000	-0.001634 (0.00062)
0.000000	1.000000	0.000000	0.000000	0.004747 (0.00305)
0.000000	0.000000	1.000000	0.000000	-0.001807 (0.00116)
0.000000	0.000000	0.000000	1.000000	-0.002531 (0.00081)

Adjustment coefficients (standard error in parentheses)

D(GDP)	-0.457308 (0.25551)	-0.171342 (0.09068)	-1.084584 (0.67680)	1.009365 (0.66082)
D(INFL)	-0.414788 (0.77492)	-0.948011 (0.27502)	-3.521772 (2.05265)	3.450858 (2.00418)
D(M2)	0.217165 (0.18849)	-0.013209 (0.06689)	0.831798 (0.49927)	-1.409104 (0.48748)
D(CPS)	0.162464 (0.21634)	0.025111 (0.07678)	1.269338 (0.57304)	-1.699475 (0.55951)
D(OPEN)	271.4140 (70.5986)	-82.28081 (25.0557)	-470.0830 (187.004)	425.2084 (182.588)

**Source:** Authors' computation using E-view 7.0 (2015)

**TABLE 3 : UNIT ROOT TEST RESULT**

**GDP<sub>pc</sub> UNIT ROOT TEST**

Null Hypothesis: GDP has a unit root  
 Exogenous: Constant  
 Lag Length: 0 (Automatic - based on SIC, maxlag=8)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-4.856536	0.0004
Test critical values: 1% level	-3.653730	
5% level	-2.957110	
10% level	-2.617434	

\*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation  
 Dependent Variable: D(GDP)  
 Method: Least Squares  
 Date: 06/13/15 Time: 12:31  
 Sample (adjusted): 1982 2013  
 Included observations: 32 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP(-1)	-0.733560	0.151046	-4.856536	0.0000
C	0.615225	0.848142	0.725379	0.4738
R-squared	0.440152	Mean dependent var		0.562500
Adjusted R-squared	0.421490	S.D. dependent var		6.307433
S.E. of regression	4.797423	Akaike info criterion		6.034496
Sum squared resid	690.4581	Schwarz criterion		6.126105
Log likelihood	-94.55194	Hannan-Quinn criter.		6.064862
F-statistic	23.58595	Durbin-Watson stat		2.020451
Prob(F-statistic)	0.000035			

**Source:** Authors' computation using E-view 7. (2015)

## UNIT ROOT TEST ON INFLATION

Null Hypothesis: INFL has a unit root  
 Exogenous: Constant  
 Lag Length: 0 (Automatic - based on SIC, maxlag=8)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.004768	0.0451
Test critical values:		
1% level	-3.653730	
5% level	-2.957110	
10% level	-2.617434	

\*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation  
 Dependent Variable: D(INFL)  
 Method: Least Squares  
 Date: 06/13/15 Time: 12:35  
 Sample (adjusted): 1982 2013  
 Included observations: 32 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INFL(-1)	-0.460526	0.153265	-3.004768	0.0053
C	9.909871	4.349704	2.278286	0.0300
R-squared	0.231334	Mean dependent var		0.071875
Adjusted R-squared	0.205711	S.D. dependent var		18.17578
S.E. of regression	16.19877	Akaike info criterion		8.468210
Sum squared resid	7872.009	Schwarz criterion		8.559818
Log likelihood	-133.4914	Hannan-Quinn criter.		8.498575
F-statistic	9.028631	Durbin-Watson stat		1.680892
Prob(F-statistic)	0.005326			

**Source:** Authors' computation using E-view 7.0 (2015)

### UNIT ROOT TEST M2

Null Hypothesis: D(M2) has a unit root  
 Exogenous: Constant  
 Lag Length: 0 (Automatic - based on SIC, maxlag=8)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-5.228800	0.0002
Test critical values:		
1% level	-3.661661	
5% level	-2.960411	
10% level	-2.619160	

\*MacKinnon (1996) one-sided p-values

Augmented Dickey-Fuller Test Equation  
 Dependent Variable: D(M2,2)  
 Method: Least Squares  
 Date: 06/13/15 Time: 12:37  
 Sample (adjusted): 1983 2013  
 Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(M2(-1))	-0.970986	0.185700	-5.228800	0.0000
C	0.102521	0.782473	0.131021	0.8967

R-squared	0.485271	Mean dependent var	-0.029032
Adjusted R-squared	0.467522	S.D. dependent var	5.967255
S.E. of regression	4.354371	Akaike info criterion	5.842578
Sum squared resid	549.8558	Schwarz criterion	5.935094
Log likelihood	-88.55996	Hannan-Quinn criter.	5.872736
F-statistic	27.34035	Durbin-Watson stat	1.985412
Prob(F-statistic)	0.000013		

**Source:** Author's computation using E-view 7.0 (2015)

### **UNIT ROOT TEST CPS**

Null Hypothesis: D(CPS) has a unit root  
 Exogenous: Constant  
 Lag Length: 1 (Automatic - based on SIC, maxlag=8)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-5.654620	0.0001
Test critical values:		
1% level	-3.670170	
5% level	-2.963972	
10% level	-2.621007	

\*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation  
 Dependent Variable: D(CPS,2)  
 Method: Least Squares  
 Date: 06/13/15 Time: 12:40  
 Sample (adjusted): 1984 2013  
 Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(CPS(-1))	-1.393036	0.246354	-5.654620	0.0000
D(CPS(-1),2)	0.417735	0.176850	2.362081	0.0256
C	0.403711	0.804085	0.502075	0.6197
R-squared	0.578686	Mean dependent var		-0.030000
Adjusted R-squared	0.547478	S.D. dependent var		6.519528
S.E. of regression	4.385672	Akaike info criterion		5.889202
Sum squared resid	519.3212	Schwarz criterion		6.029322
Log likelihood	-85.33803	Hannan-Quinn criter.		5.934028
F-statistic	18.54262	Durbin-Watson stat		2.083934
Prob(F-statistic)	0.000009			

**Source:** Author's computation using E-view 7. (2015)

### UNITROOT TEST ON OPENNESS

Null Hypothesis: D(OPEN) has a unit root  
 Exogenous: Constant  
 Lag Length: 0 (Automatic - based on SIC, maxlag=8)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-8.952422	0.0000
Test critical values:		
1% level	-3.661661	
5% level	-2.960411	
10% level	-2.619160	

\*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation  
 Dependent Variable: D(OPEN,2)  
 Method: Least Squares  
 Date: 06/13/15 Time: 12:44  
 Sample (adjusted): 1983 2013  
 Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(OPEN(-1))	-1.475757	0.164844	-8.952422	0.0000
C	226.8745	324.4789	0.699197	0.4900
R-squared	0.734301	Mean dependent var		-36.92935
Adjusted R-squared	0.725138	S.D. dependent var		3431.721
S.E. of regression	1799.157	Akaike info criterion		17.89036
Sum squared resid	93871966	Schwarz criterion		17.98288
Log likelihood	-275.3006	Hannan-Quinn criter.		17.92052
F-statistic	80.14586	Durbin-Watson stat		2.237967
Prob(F-statistic)	0.000000			

**Source:** Authors' computation using E-view 7.0 (2015)

**TABLE 4 : VECTOR ERROR CORRECTION MODEL**

Vector Error Correction Estimates  
Date: 06/13/15 Time: 12:52  
Sample (adjusted): 1984 2013  
Included observations: 30 after adjustments  
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1				
GDP(-1)	1.000000				
INFL(-1)	2.827664 (0.48941) [ 5.77773]				
M2(-1)	17.76581 (3.62042) [ 4.90711]				
CPS(-1)	-7.574199 (3.86027) [-1.96209]				
OPEN(-1)	-0.005101 (0.00642) [-0.79495]				
C	-268.6701				
Error Correction:	D(GDP)	D(INFL)	D(M2)	D(CPS)	D(OPEN)
CointEq1	-0.033426 (0.02615) [-1.27832]	-0.120574 (0.08796) [-1.37078]	-0.011863 (0.02241) [-0.52924]	0.013243 (0.02315) [ 0.57219]	16.45703 (4.81446) [ 3.41825]
D(GDP(-1))	-0.609039 (0.22401) [-2.71875]	-0.343701 (0.75355) [-0.45611]	0.196592 (0.19203) [ 1.02377]	0.184797 (0.19828) [ 0.93198]	137.0207 (41.2456) [ 3.32207]
D(GDP(-2))	-0.230700 (0.20507) [-1.12497]	0.089553 (0.68984) [ 0.12982]	-0.016420 (0.17579) [-0.09340]	-0.014291 (0.18152) [-0.07873]	156.9233 (37.7581) [ 4.15601]
D(INFL(-1))	0.181253 (0.08138) [ 2.22732]	0.272679 (0.27374) [ 0.99612]	-0.030885 (0.06976) [-0.44275]	-0.082325 (0.07203) [-1.14292]	-77.23434 (14.9832) [-5.15472]
D(INFL(-2))	-0.076247 (0.08385) [-0.90928]	-0.334384 (0.28208) [-1.18544]	0.011806 (0.07188) [ 0.16425]	-0.031710 (0.07422) [-0.42722]	-89.97544 (15.4394) [-5.82766]
D(M2(-1))	-0.049888 (0.65674) [-0.07596]	1.027568 (2.20919) [ 0.46513]	0.203617 (0.56296) [ 0.36169]	0.308821 (0.58131) [ 0.53125]	-681.4048 (120.920) [-5.63519]
D(M2(-2))	-0.816040	-3.690315	1.235349	1.372686	-75.19240

	(0.80640)	(2.71264)	(0.69126)	(0.71378)	(148.475)
	[-1.01195]	[-1.36042]	[ 1.78711]	[ 1.92312]	[-0.50643]
D(CPS(-1))	0.247198	-0.001090	-0.216980	-0.410811	413.0562
	(0.62374)	(2.09819)	(0.53468)	(0.55210)	(114.844)
	[ 0.39631]	[-0.00052]	[-0.40582]	[-0.74409]	[ 3.59669]
D(CPS(-2))	0.900643	3.803399	-1.332002	-1.640666	-133.1962
	(0.73154)	(2.46080)	(0.62708)	(0.64751)	(134.691)
	[ 1.23116]	[ 1.54560]	[-2.12413]	[-2.53379]	[-0.98890]
D(OPEN(-1))	-0.000752	-0.005889	0.000474	0.000554	-0.622889
	(0.00070)	(0.00235)	(0.00060)	(0.00062)	(0.12868)
	[-1.07547]	[-2.50512]	[ 0.79172]	[ 0.89481]	[-4.84078]
D(OPEN(-2))	-7.26E-05	-0.001952	0.000135	0.000125	-0.241197
	(0.00064)	(0.00215)	(0.00055)	(0.00057)	(0.11757)
	[-0.11362]	[-0.90871]	[ 0.24666]	[ 0.22061]	[-2.05154]
C	0.587031	1.091982	0.178504	0.477299	168.1885
	(1.00605)	(3.38423)	(0.86240)	(0.89050)	(185.235)
	[ 0.58350]	[ 0.32267]	[ 0.20699]	[ 0.53599]	[ 0.90798]
R-squared	0.534611	0.423709	0.326137	0.369347	0.858434
Adj. R-squared	0.250207	0.071531	-0.085668	-0.016051	0.771921
Sum sq. resids	504.5295	5709.067	370.7314	395.2865	17103713
S.E. equation	5.294282	17.80928	4.538302	4.686188	974.7852
F-statistic	1.879757	1.203110	0.791970	0.958351	9.922614
Log likelihood	-84.90459	-121.2974	-80.28236	-81.24436	-241.3723
Akaike AIC	6.460306	8.886491	6.152157	6.216291	16.89149
Schwarz SC	7.020785	9.446970	6.712636	6.776769	17.45196
Mean dependent	0.330000	0.166667	0.093333	0.303333	146.0870
S.D. dependent	6.114153	18.48258	4.355570	4.649025	2041.108
Determinant resid covariance (dof adj.)		9.50E+10			
Determinant resid covariance		7.39E+09			
Log likelihood		-553.6864			
Akaike information criterion		41.24576			
Schwarz criterion		44.28169			

Source: Authors' computation using E-view 7.0 (2015)

### Discussion of Regression Result

The data used in the regression runs are as shown in Appendix 1. These are absolute aggregates for each variable obtained for the period 1981–2013 (33 years). All the variables are expressed in percentages. The value of money supply is obtained from the broad definition of money supply (MS2) and is in Naira values. The data were subsequently converted to the relevant ratios as shown in appendix 2. To test for stationarity and co-integration, we adopted the Sargan – Bhargavan Durbin – Watson (SBDW) test. It is important to note that the present of co-integration in a model means that long-run equilibrium relationship exists among the non-stationery variables.

### Ols Test Result:

The summary of the financial deepening regression result from the Least Squares Analysis is as shown in the model summary in Table 1. The table presents the results of the empirical regression estimates for the specified equation. From the results in Table 1, the coefficient of Inflation rate, ratio of Money supply relative to GDP and openness are all positive but only the probability of inflation is significant while others are not significant. Also, the coefficient of the ratio of credit to private sector relative to GDP as one of the variables is negative and the probability value is not significant. This suggests that inflation rate has a positive relationship with GDP per

capita as one of the variable in determining financial deepening and economic development. The OLS result shows that 27% of the variables under consideration affect GDP per capita. The adjusted  $R^2$  of 16.7 % shows the robustness of the  $R^2$ . This result shows that 73% of other variables not captured in the model also affect GDP per capita. The coefficient of the ratio of money supply relative to GDP which is the proxy for M2/GDP shows that 1% increase in GDP per capita would result due to 0.63% increases in M2/GDP. Similarly, 0.35 reductions in CPS would result into 1 unit decrease in GDP per capita and also 1% increase in trade openness by the Federal Government would lead to 10% increase in GDP per capita. This result indicates that the federal government should be pro-active in areas of imports and export so as to create trade openness in the economy, in order to increase GDP per capita and better the lives of citizens. The coefficient of the trade openness from the OLS result is in line with the apriori expectation that says there is positive relationship or direct proportional relationship between trade openness and real GDP per capita. Consequently, this shows that as volume of exports and imports relative to GDP increases, GDP per capita would also increase. The standard error of the estimates also known as residual standard deviation has a value of 5.136039. The F-statistic value is found to be 2.614712. The F value is highly significant at 5 percent level. The overall fit of the regression model measured by the F- statistic, is statistically significant at this level. The Durbin Watson (DW) statistic of 1.592348 indicates that there is problem of auto-correlation in the regression model. Also, multi-colinearity which often present in cross-sectional data seems to be non existent in the model.

### **Unit root test**

Table 3 above shows the result for the unit root test. Revealed that GDP per capita, ratio of money supply relative to GDP and inflation was found to be stationary at level  $I(0)$ , which denotes rejection of the Null hypothesis that GDP per capita has a unit root and accept the alternative. The unit root test result also shows that trade openness (TROP) and ratio of credit to private sector relative to GDP (CPS/GDP) are stationary at level  $I(1)$ , which denotes rejection of the Null hypothesis that GDP per capita has a unit root and accept the alternative.

### **Co integration test**

Table 2 shows the co-integration test. The trace test statistics indicates 1 cointegrating equation at 0.05 level which denotes the rejection of the hypothesis at that level and the max-eigen value test also indicates 1 cointegrating equation at 0.05 levels which denotes rejection of the hypothesis at that level and concludes there exist a long-run relationship of the variables.

### **Vector error correction model(VEC) TEST:**

Table 4 above shows the error correction model result. VEC result shows that 53% of the variables affect GDP per capita while 47% of the variable are not captured in this model which is been represented by symbol “ $\mu$ ” in the model. It shows that even though the variables are not stationary at same other of integration, the VEC proof that there is a long-run relationship between the variables and the  $R^2$  of 53% of the variable that causes variation in GDP per capita.

### **Findings**

The findings of the study from the analysis done could be summarized as shown below. The main features of the financial deepening aggregates during the 33 year period, as evidenced from Appendix 1. were as presented below. The financial deepening index of MS2/GDP moved from 17.7 in 1986 down to 12.7 in 1992 and increased to 38.0 by 2009. This declined further to 20.4 by 2010 down to 18.9 in 2013. The aggregate moved down to 24.8 by 2007 and up again to 38.0 by 2013. The trends above clearly show that the financial deepening index did not experience any dramatic changes during the period. This is despite the various reforms introduced from 1986 which should have a positive effect on financial deepening in Nigeria. Although the number of financial institutions especially banks, increased following the 1986 reforms, over time, these institutions could not sustain a high level of intermediation in the system. The presence of weak and terminally distressed banks especially in the 1990s up to 2004 accounted for the low level of financial deepening index during the period: This necessitated the banking consolidation reforms introduced in 2004/2005. A high level of financial deepening should sustain and provide basis for moderate lending rates in any economy. Curiously, the prime lending rates had remained very high. The major reason for this according to Nzotta (2004), Ojo (1994) includes technical insolvency and presence of weak banks, the underdeveloped nature of the financial system, the lack of interest elasticity, unresponsiveness of the rates to changes in business cycle and the huge fiscal deficits by the public sector over the years. I also note that the rate of inflation in Nigeria also remained fairly stable between

2009 and 2013. The decline had been more pronounced between 2006 and 2008 following the increased use of Automated Teller Machines and plastic money in the country. The ratio moved from 57 in 1995, up to 72.8 in 1996 and the level of credits to private sector ratio (CPS/GDP) declined between 1985, 1989, 1995, 2000, 2010 and in the year 2013. The ratio experienced an upsurge between 2006 and 2009. The bank consolidation of 2005 enhanced the operations of banks and also financial sector development and this affected the assets of banks. In summary, from the analysis above it is evident that there is relatively a low level of deepening of the financial market in Nigeria during the period of the study. However, the level of financial deepening has been enhanced just after major reforms in the financial system. It is also important to note that the reforms and policy thrusts could have impacted more positively on the system if the issue of systemic crisis had reduced considerably.

### Conclusion and Recommendations

Based on the analysis done in this study, we conclude that the level of financial deepening in Nigerian has remained relatively low in spite of the various reforms and institutional changes put in place by the monetary authorities. It is also evident that the low level of monetization of the economy and the level of the ratio of private sector credits relative to GDP have negatively affected the level of financial deepening in Nigerian while the rate of inflation, trade openness and the ratio of money supply relative to GDP have positively affected financial deepening and economic development in Nigeria. Although the level of inflation rates have remained very high, the level of private sector credits have not sustained the desired level of new investments necessary to facilitate growth in the economy at large.

The following recommendation should be made;

1. There should be an urgent need to sustain a higher level of macro economic stability in Nigeria.
2. There should be a need to reduce the high incidence of non performing credits in Nigeria.
3. Government should ensure that private sector credits are channeled to the real sector of the economy.
4. There should be enhancement in the level of corporate governance in the financial system and also strengthen risk management in the financial system.
5. Banks supervision and regulation should be promptly and strengthened, with a focus on risk management.
6. Federal government should be pro-active in areas of imports and exports relative to gross domestic product so as to create conducive trade openness in the economy in order to increase GDP per capita and better the lives of citizens.

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**APPENDIX 1:**

**MACRO ECONOMIC DATA FROM CENTRAL BANK OF NIGERIA STATISTICAL BULLETIN  
 2013**

<b>YEAR</b>	<b>GDP PER CAPITA(%)</b>	<b>(M2/GDP) (%)</b>	<b>(CPS/GDP) (%)</b>	<b>INFLA(%)</b>	<b>TRADE OPENNESS(%)</b>
1981	-15.5	15.3	9.1	9.9	-1.81
1982	-3.6	15.6	10.6	21.4	-17.3
1983	-7.4	16.1	10.6	7.2	-3.21
1984	-4.5	17.3	10.7	23.2	-8.15
1985	5.6	16.6	9.7	40.7	2.26
1986	-11.1	17.7	11.3	4.7	-8.8
1987	-13.1	14.3	10.9	5.4	-4.5
1988	4.7	14.6	10.4	10.2	7
1989	3.7	12	8	56	13.7
1990	9.9	11.2	7.1	50.5	55.6
1991	-3.1	13.8	7.6	7.5	-351.7
1992	-2.1	12.7	6.6	12.7	872
1993	-0.4	15.2	11.7	44.8	183
1994	-1.6	16.5	10.2	57.2	409.9
1995	-2.8	9.9	6.2	57	-5686
1996	2.4	8.6	5.9	72.8	374.4
1997	0.3	9.9	7.5	29.3	745.5
1998	0.2	12.2	8.8	10.7	588.6
1999	-2	13.4	9.2	7.9	4103
2000	2.7	13.1	7.9	6.6	552.9
2001	1.8	18.4	11.1	6.9	733.2
2002	1.2	19.3	11.9	18.9	587.1
2003	7.7	19.7	11.1	12.9	496.9
2004	3.3	18.7	12.5	14	195.5
2005	0.8	18.1	12.6	15	2955.1
2006	5.4	20.5	12.3	17.8	272.3
2007	4	24.8	17.8	8.2	1797.3
2008	3.4	33	28.5	5.4	2436.9
2009	4.1	38	36.7	11.5	1959.2
2010	4.9	20.4	18.7	12.6	2477.1
2011	2	19.2	16.9	13.8	5113.8
2012	1.4	19.5	20.6	10.9	5539.7
2013	2.5	18.9	19.7	12.2	4379.4

**APPENDIX : 2**  
**Nigeria's Selected Financial Deepening Indicators**

Year	Money Supply'	Credit to ppPrivateGDP at Current	Financial Deepening		
	(M2)	P.Sector (CPS)	Basic Prices		
	(N' Billion)	(N' Billion)	(N' Billion)	(M2/GDP) (%)	(CPS/GDP) (%)
1981	14.47	8.57	94.33	15.3	9.1
1982	15.79	10.67	101.01	15.6	10.6
1983	17.69	11.67	110.06	16.1	10.6
1984	20.11	12.46	116.27	17.3	10.7
1985	22.30	13.07	134.59	16.6	9.7
1986	23.81	15.25	134.60	17.7	11.3
1987	27.57	21.08	193.13	14.3	10.9
1988	38.36	27.33	263.29	14.6	10.4
1989	45.90	30.40	382.26	12.0	8.0
1990	52.86	33.55	472.65	11.2	7.1
1991	75.40	41.35	545.67	13.8	7.6
1992	111.11	58.12	875.34	12.7	6.6
1993	165.34	127.12	1,089.68	15.2	11.7
1994	230.29	143.42	1,399.70	16.5	10.2
1995	289.09	180.00	2,907.36	9.9	6.2
1996	345.85	238.60	4,032.30	8.6	5.9
1997	413.28	316.21	4,189.25	9.9	7.5
1998	488.15	351.96	3,989.45	12.2	8.8
1999	628.95	431.17	4,679.21	13.4	9.2
2000	878.46	530.37	6,713.57	13.1	7.9
2001	1,269.32	764.96	6,895.20	18.4	11.1
2002	1,505.96	930.49	7,795.76	19.3	11.9
2003	1,952.92	1,096.54	9,913.52	19.7	11.1
2004	2,131.82	1,421.66	11,411.07	18.7	12.5
2005	2,637.91	1,838.39	14,610.88	18.1	12.6
2006	3,797.91	2,290.62	18,564.59	20.5	12.3
2007	5,127.40	3,668.66	20,657.32	24.8	17.8
2008	8,008.20	6,920.50	24,296.33	33.0	28.5
2009	9,419.92	9,110.86	24,794.24	38.0	36.7
2010	11,034.94	10,157.02	54,204.80	20.4	18.7
2011	12,172.49	10,660.07	63,258.58	19.2	16.9
2012	13,895.39	14,649.28	71,186.53	19.5	20.6
2013	15,158.62	15,778.31	80,222.13	18.9	19.7