

Financial Liberalization and Economic Growth – The Nigerian Experience

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Abstract

The financial liberalization literature assumed that the removal of government control and restrictions on the workings of the financial market would stimulate higher savings as interest rate would be more market driven. The higher savings would enhance greater investment in the classical Keynesian fashion of savings being equal to investment. The increase in investment would lead to economic development and growth all other things being equal. Therefore, according to the main tenets of the financial liberalization literature, we should expect to see higher saving rates (as well as higher levels of investment and economic growth) following financial liberalization. Is this the case in Nigeria? To establish this, the study employs an empirical examination using the Johansen Co-integration test and the Error Correction Mechanism (ECM). Annual time series data were obtained from the Central Bank of Nigeria Statistical Bulletin for the period 1987 to 2012 on the variables used for the study. The results obtained from the econometric modeling shows the existence of a long-run equilibrium relationship among the variables and co-integration equation at 5% significance level. The Error Correction Mechanism shows a very high coefficient of multiple determinations in both the Over-parameterized and the Parsimonious Models. However, the descriptive statistics shows that financial liberalization has impacted minimally on economic growth in Nigeria for the period under review. The particular sequencing of the liberalization process and the hostile macroeconomic environment in Nigeria over the years has combined to minimize the expected benefits of financial liberalization. The authors recommend that government should promote monetary stability, ensure sound macroeconomic environment and provide critical infrastructures to enable the economy grow in a sustainable manner.

Keywords: Financial Liberalization, Investment, Economic Development, Economic Growth

I. Introduction

The 2007/08 global financial and economic crisis which triggered distressed assets, high bank insolvency and loss of market trust in developed economies, and threatened large-scale private sector default in emerging economies (IMF, 2009), have led to renewed interest on the role of financial liberalization in economic development. Many analysts traced the cause of the crisis to the fallout of financial liberalization and the regime of easy credit in the United States. These analysts believed that the genesis of the crisis could be traced to the period that Alan Greenspan was the Chairman of the Federal Reserve Bank of America (Stiglitz, 2008). It was said that Alan Greenspan was vehemently opposed to any regulation of financial instruments especially the derivatives. It must be noted that the mortgaged backed security that triggered off the crisis in 2007 is simply a kind of derivative. The crisis not only exposed some of the weaknesses of the analytical prescription and tools of economists but has led to renewed questions on the purported benefits of financial liberalization. Indeed global economic managers and eminent economists are beginning to reassess the market economy and more fundamentally, the role of the state in regulating and governing the market. According to Ogbu (2010), the global economic and financial crisis, the huge bailout of the financial and non-financial institutions across the world and the rather uncertain and timid response to these massive government interventions in the functioning of the market are altogether producing four-fold theoretical-conceptual outcomes. One, the empirical scenario is re-defining or re-evaluating the capitalist market economy. Two, it is exposing the limits of 'creative destruction' logic of Schumpeter (1911). Three, it calls to question the adequacy of the current economic modeling and analytical tools. Four, it is leading the way to the emergence of a 'new market economy'.

It is generally accepted in theoretical literature that liberalizing the financial system could play a vital role in economic development. This finance-growth thesis was laid by the complementary works of McKinnon (1973) and Shaw (1973) who argued that financial liberalization is the key to unlock the financial potentials of the economy. Since then a lot of theoretical and empirical researches have been carried out examining the concept in different contexts, countries and time periods. (see Abel, 1980; Romer, 1994; Lucas, 1982; Bandiera et al. 2000; Khan and Reinhart, 1990; King and Levine, 1990; Demir, 2005; etc.). Many of these researchers argued strongly on the rationale of placing restrictions on the workings of the financial market because of the detrimental effects such restrictions would have on the economy. One of the early critics of financial repression (the inverse of financial liberalization) was Goldsmith (1969) who argued that the main impact of financial repression was the effect on the efficiency of capital. McKinnon (1973) and Shaw (1973) stressed two other

channels: first, financial repression affects how efficiently savings are allocated to investment; and second, through its effect on the return to savings, it also affects the equilibrium level of savings and investment. McKinnon-Shaw hypothesis asserts that financial liberalization is essential for economic growth.

Nigeria was among the developing countries that liberalized her financial market in the late 1980s. The pertinent question is whether the country has reaped the purported benefits canvassed in the financial liberalization thesis. To this end, this paper is intended to empirically assess the impact of financial liberalization on economic growth in Nigeria for the period 1987 - 2012.

The rest of the paper is structured as follows: Following this introduction in section 1, section 2 would briefly review the theoretical and empirical literature on financial liberalization. Section 3 would focus on the research methodology including the definition of research variables while section 4 presents the results of the study. Section 5 will conclude the work with a brief remark on policy implications of the study and recommendations.

2. Review of Related Literature

Financial liberalization can be viewed as a set of operational reforms and policy measures designed to deregulate and transform the financial system and its structure with a view to achieve a liberalized market-oriented system within an appropriate regulatory framework (Johnston and Sundararan, 1999). Financial liberalization has been variously characterized in the empirical literature but Niels and Robert (2005) observed that whatever characterization, financial liberalization usually include official government policies that focus on deregulating credit controls, deregulating interest rate controls, removing entry barriers for foreign financial institutions, privatizing financial institutions, and removing restrictions on foreign financial transactions. In other words, financial liberalization has both domestic and foreign dimension. Moreover, it focuses on introducing or strengthening the price mechanism in the market, as well as improving the conditions for market competition. As opposed to financial liberalization financial repression (the inverse of financial liberalization) is evidenced by ceilings on interest rates and credit expansion, selective credit policies, high reserve requirements, and restriction on entry into the banking industry (Ikhide and Alawode, 2001).

Niels and Roberts (2005) in their work provided an extensive review of the literature on financial liberalization and investment starting with a review of McKinnon-Shaw (1973) treatise. According to them, modern literature on financial liberalization-investment nexus commenced with the seminal work of McKinnon (1973) and Shaw (1973). McKinnon and Shaw (1973) analyzed the benefits of (if not totally eliminating) financial repression, but at least reducing its impact on the domestic financial system within developing countries. Their analyses (sometimes referred to as the Complementarity Hypothesis) concluded that alleviating financial restrictions in such countries (mainly by allowing market forces to determine real interest rates) can exert a positive effect on growth rates as interest rates rise toward their competitive market equilibrium.

The early hypotheses of McKinnon and Shaw assumed that liberalization, which would be associated with higher real interest rates - as controls on these are lifted—would stimulate saving. The underlying assumption is, of course, that saving is responsive to interest rates. The higher saving rates would finance a higher level of investment, leading to higher economic growth. Therefore, according to this view, we should expect to see higher saving rates (as well as higher levels of investment and growth) following financial liberalization.

The seminal works of McKinnon (1973) and Shaw (1973) opened the floodgate of research on financial liberalization studies. Since their separate but complementary publications, several papers have been published on the relationship between financial liberalization and growth. Some studies focus on the quantity effects of liberalization while others concentrate on the quality effects of liberalization. These studies use firm-level as well as cross-country data (see Niels and Robert, 2005). Laeven quoting from Niels and Robert (2005), in a study finds evidence for the hypothesis that financial liberalization reduces financial constraints of firms. His study was based on information from 13 developing countries. Similarly, positive effects of liberalization on reducing financial constraints are found, among others, by Koo and Shin (2004) for Korea, Harris, Schiantarelli and Siregar (1994) for Indonesia, Guncavdi, Bleaney and McKay (1998) for Turkey and Gelos and Werner (2002) for Mexico. At the same time, however, studies by Jaramillo, Schiantarelli and Weiss (1996) on Ecuador and Hermes and Lensink (1998) on Chile find much less supportive evidence for the positive effect of financial liberalization on reducing financial constraints and inducing investment and economic growth.

Ozdemir and Erbril (2008) empirically investigated the impact of financial liberalization on economic growth in 10 new European Union countries and Turkey between 1995 and 2007. They constructed different financial openness indicators using panel data for different types of financial flows such as foreign direct investment, other investments, portfolio investments, trade openness index as well as other control variables. Employing the Ordinary Least Squares (OLS) method, their static robust and dynamic panel data estimates indicates clear evidence between the long-run growth and a number of financial liberalization indicators which confirms the anticipations of the 'new growth theory'. Their findings take cognizance of financial liberalization

as a policy tool because of its possibility to promote economic growth.

Munir, et al. (2010) in Pakistan examined the short and long run relationship among investment, savings, real interest rate on bank deposits and bank credit to the private sector, accompanied with the impact of financial liberalization on key macroeconomic variables for the period 1973 to 2007 using Co-integration test and Error Correction Method to analyze the annual time series data. Financial liberalization was proxied by a dummy variable, taking value 1 for the years of liberalization i.e. 1990 – 2007 and zero for non-liberalization years (1973 – 1989). Their findings show that financial liberalization has no positive effect on private credit and private investment because interest rate has been negative for some years due to high inflationary situation in Pakistan. The study recommended more need for the deregulation of interest rate so that savings could be mobilized to promote capital formation which leads to economic growth. Evidence showed that financial liberalization made no significant impact; nevertheless, their results strongly favour the McKinnon-Shaw hypothesis.

Kasekende and Atingi-Ego (2003) in the case of Uganda examined the impact of financial liberalization on the conduct of banking business and its effect on the real sector. Quarterly data from 1987Q1 to 1995Q3 for the following variables: Gross Domestic Product, Commercial Bank Credit to the Industrial Sector, Premium on Official Exchange Rate, Lending Rate, and Inflation Rate were analyzed using the Vector Autoregressive (VAR) methodology. Their findings shows that financial liberalization has promoted efficiency gains in the banking industry and consequently, the increased growth of credit to the private sector following financial liberalization leads to economic growth. The study provides evidence of a positive impact and supports the McKinnon-Shaw Hypothesis.

The study of Banam (2010) analyzed the impact of financial liberalization on economic growth in Iran through Johansen Co-integration test using time series data from 1965 to 2005 while also investigating the determinants of economic growth. The financial liberalization index was represented by the financial restraints index which includes interest rate controls, reserve requirements and directed credit multiplied by -1. The results suggest that financial liberalization has positive and statistically significant impact on economic growth measured by the gross domestic product in Iran. The findings provide support to McKinnon (1973) and Shaw (1973), who argued that financial liberalization can promote economic growth by increasing investment and productivity.

Gecizi (2007) evaluated the impact of financial liberalization on some macroeconomic variables in two emerging countries (Turkey and India) from the period spanning 1980 to 2003. The changing dynamics of domestic industrial production index, domestic interest rate, and trade-weighted average foreign industrial production index was analyzed by conducting Multivariate Granger-causality test. The findings suggest that there is an increased interdependency among the variables following the financial liberalization process. The study provides evidence on the increasing impact of foreign economies on both countries macroeconomic variables which implies that financial liberalization has been beneficial to both countries.

Abu-Bader and Abu-Qarn (2005) in an attempt to examine the relationship between financial development and economic growth in Egypt, analyzed time series annual data from 1960 to 2001 using VAR methodology on four variables namely: Gross Domestic Product to measure economic growth and ratio of money stock to nominal GDP, ratio of bank credit to the private sector to nominal GDP, ratio of credit issued to non-financial private firms to total domestic credit, representing proxies for financial development. Their findings show that the increase in private investment was facilitated by the financial liberalization in 1990 which led to the rebound in economic performance of Egypt in the 1990s. Their results infer that there is a direct linkage between financial development and financial liberalization.

Achy (2003) conducted a cross-country regression analysis to examine the effect of financial liberalization on savings, investment and economic growth in sample of five MENA countries (Egypt, Jordan, Morocco, Tunisia and Turkey) over the period 1970 – 1998. To examine its effect on growth, the estimated growth equation relates real GDP to a set of financial depth measures, real interest rate, private investment rate, external debt/GDP ratio, annual change of terms of trade and real exchange rate overvaluation, all proxied for financial liberalization. The study employed the Fixed-Effects Estimation which allows each country to have its own intercept. The findings suggest that financial liberalization has led to further distortion of credit allocation in favour of consumption at the expense of productive activities because the financial depth indicators fail to explain growth experience in these countries. The study shows that financial liberalization is in line with the Keynesian view and inimical to financial development.

Bashar and Khan (2007) in their econometric study of Bangladesh evaluated the impact of liberalization on the country's economic growth by analyzing quarterly data from 1974Q1 – 2002Q2 using Co-integration and Error Correction Method. The variables used was per capital GDP, gross investment as a share of GDP, labour force as a share of population, secondary enrolment ratio, trade openness indicator, real rate of interest and net capital inflows. The empirical results show that the coefficient of the financial liberalization policy variable (real interest rate) is negative and significant, implying that financial liberalization has had negative effect on

Bangladesh's economic growth. The study discards the fact that financial liberalization foster economic growth as asserted by McKinnon and Shaw.

Faria, et al. (2009) examined the relationship among capital account liberalization, economic performance and macroeconomic stability in Brazil using the VAR methodology. Two models were constructed: one with a de-jure index of financial liberalization which includes GDP, Nominal Exchange Rate, Country Risk and Interest Rate and another with a de-facto index of financial integration including GDP, Nominal Exchange Rate, Inflation Rate and Interest Rate. The study database spans from 1994Q2 to 2007Q4. Their results offer no evidence that financial liberalization has generated positive effects on inflation and economic growth. Apart from raising the rate of inflation, it has an adverse effect on exchange rate. The research supports the criticism of financial liberalization that its destabilizing effects supersede its potential beneficial effects.

Fowowe (2004) used panel data to assess the effects of financial liberalization policies in the growth of 19 countries in Sub-Sahara Africa for the period 1978-2000. Two indexes and a dummy variable for financial liberalization (assigning value of zero prior to liberalization and 1 after liberalization) were constructed. The control variables were initial income per capita, investment, life expectancy, degree of openness, and the debt service ratio. The study employed both the Fixed Effects and Dynamic Panel Estimator and also Ordinary Least Square Method and Random Effects estimations to assess the sensitivity of the results. The estimates show a significant positive relationship between economic growth and financial liberalization policies. The study provides evidence to validate the growth-stimulating effect of financial liberalization.

Asamoah (2008) assessed financial liberalization and its impact on savings, investment and the growth of GDP in Ghana. The data used included monthly savings and interest rates and also yearly and seasonal dummy variables instead of post and pre-liberalization as the dummies. The empirical estimation of 42 observations i.e. January 2000 to June 2003 was evaluated using the Ordinary Least Square (OLS) regression analysis. The results show that the rise in interest rate over the years after liberalization of the financial sector has led to a corresponding increase in savings which has a positive impact on the growth of GDP. The findings showed that financial liberalization has increased the rate of capital accumulation and improved efficiency in capital utilization which is both essential for economic growth.

Adam (2011) investigated the impact of Ghana's financial openness induced growth on poverty using the Johansen Co-integration test and Granger-Causality tests. The study was limited to the period from 1970 to 2007. Annual Standard of Living Index (SLI) was proxied for poverty and the financial liberalization index was constructed using Principal Component Analysis (PCA). The results showed that there is a positive relationship between growth and standard of living, though it is disproportionate. Also, it provides evidence that there exist a positive long-run relationship between growth and financial liberalization. This means that Ghana's financial liberalization has contributed positively towards its economic growth.

Nair (2004) examined the impact of financial sector liberalization measures on household sector saving rate in India by constructing a continuous time series financial liberalization index which includes total credit to household sector by bank and other financial institutions, foreign investment, market capitalization ratio and real effective exchange rate. The study covered the period 1970/1971 to 1999/2000. The financial liberalization index along with other determinants of household savings was estimated using the VAR methodology. It can be deduced from the findings that the financial liberalization index has a negative impact on household saving rate due to the fact that the increased credit availability as a result of financial liberalization lead to increase in consumption rather than savings. Evidence from this study provide argument to nullify the McKinnon-Shaw complementarity hypothesis which asserts that financial liberalization is capable of increasing savings and economic growth and financial repression will do otherwise.

In Nigeria, Akpan (2004) conducted a study to theoretically and empirically explore the effect of financial liberalization in the form of an increase in real interest rates and financial deepening (M^2/GDP ratio) on the rate of economic growth in Nigeria using the endogenous growth model. The study used time series annual data covering the period from 1970 – 2002. The Error Correction Model (ECM) was used to capture both the short and long run impact of the variables in the model. The finding shows a low coefficient of the real deposit rate which implies that interest rate liberalization alone is unlikely to expedite economic growth. Overall, the results show a positive impact on the economy of Nigeria.

Okpara (2010) also investigated the effect of financial liberalization on some macroeconomic variables in Nigeria. Real GDP, financial deepening, gross national savings, foreign direct investment and inflation rate were selected and given pre/post liberalization comparative analysis using the discriminant analysis technique. The pre-liberalization period covers 1965 – 1986 while the post-liberalization period continued from 1987 to 2008. The findings show that the variable that impacts most on the economy owing to financial liberalization is the real GDP which recorded positively the highest contribution. This implies that financial liberalization positively increases the growth of the economy.

Other studies in Nigeria (see Busari, 2007; Akinlo and Akinlo, 2007, Ayadi et al, 2009, Uchendu, 1993 and Ndebibo, 2004), suggest that the impact of financial liberalization on economic growth in Nigeria has

largely been marginal. From the foregoing, it could be seen that results from extant literature on the impact of financial liberalization on economic growth have been mixed. The purported benefits of financial liberalization on economic growth have not been unequivocal. More empirical works are certainly needed to verify the finance-growth nexus established in the financial liberalization literature. Moreover, the current global crisis has further compounded the problem of establishing the purported benefits of financial liberalization. Most countries are currently re-examining their economic models and financial architecture in response to the economic down-turn.

3. Data and Methodology

The study uses indicators of financial liberalization (degree of openness, financial deepening measure - M_2/GDP), and macroeconomic measures of uncertainty (exchange rate, inflation rate and lending rate) as independent variables while Gross Domestic Product (proxy for economic growth) as dependent variable. Some of these variables are defined as follows:

3.1 Dependent Variable (Gross Domestic Product)

The work uses the non-oil Gross Domestic Product as a proxy for economic growth. This is a measure of growth of the economy in annual basis. This was determined by dividing real gross domestic product with the total population and obtaining the growth rate. The population figures were projections from the 1991 and 2006 official census figures. The projections were based on the 2.8 per cent annual growth rate (CBN 2012). The per capita GDP growth was used to proxy economic growth. This is in line with the works of Demircuc-Kunt and Levine (1996), Levine and Zervos (1996), Demircuc-Kunt and Makismovic (1996), Levine and Zervos (1998).

$$\text{Economic Growth} = \frac{\text{Non-Oil Gross Domestic Product}}{\text{Total Population}} \dots\dots\dots (1)$$

3.2 Macroeconomic Measures of Uncertainty (Inflation, Lending and Exchange Rate)

Uncertainty is the unconditional variance of a particular economics series (e.g. demand, price, inflation, exchange rate, interest rate, etc) which managers are presumed to be uncertain about. According to Gecizi (2007) there are various methods of constructing an uncertainty variable in the empirical literature. One approach is to incorporate some direct measure of uncertainty, generally from business surveys. A second approach is to compute the unconditional variance of a particular economics series, (commonly, demand, price, inflation, exchange rate, interest rate, etc) which, managers are presumed to be uncertain about. A third approach is to estimate a statistical model of the process (such as ARCH/GARCH or ARIMA models) determining the conditional variance of the same related series and use this as a proxy for uncertainty. The computation of conditional variance via such models requires high frequency of data which are not always available especially in developing country like Nigeria.

The study used an unconditional volatility measure of inflation, interest and exchange rates as macroeconomic measures of uncertainty. Many empirical works (see Price, 1995; Huizanga, 1993; Driver and Moreton, 1991; Goldberg, 1993; Campa and Goldberg, 1995 and Darby et al, 1999) have used various macroeconomic variables as proxies for measurement of uncertainty.

Thus we derive the volatility by using an autoregressive moving average mode, the proxy being the standard deviation of the model's residual as used by Goldberg (1993)

$$\text{Uncertainty} = ER_t = \alpha_1 ER_{t-1} - \varepsilon_t - \beta_1 \varepsilon_{t-1} \dots\dots\dots (2)$$

3.3 Financial Deepening (M_2) as a Ratio of Gross Domestic Product (GDP)

This is broad money aggregate and measures the depth of financial sector development and has inducement to saving-investment and growth. This was determined by dividing the value of liquid liabilities (M_2) with real gross domestic product. Liquid liabilities as a ratio of GDP were used as proxy for financial deepening. This is in line with the works of King and Levine (1993a) and Beck, Demircuc-Kunt and Levine (2001).

$$\text{Liquid Liabilities} = \frac{\text{Value of Liquid Liabilities } (M_2)}{\text{GDP}} \dots\dots\dots (3)$$

3.4 Empirical Specification

Following the works of Ozdemir and Erbril (2008) and Bashar and Khan (2007), the empirical model is specified as follows:

$$\text{GDP} = f(\text{FD, DOP, EXR, INF, LR}) \dots\dots\dots (4)$$

- Where, GDP = Gross Domestic Product
- FD = Financial Deepening measure
- DOP = Degree of Openness
- EXR = Exchange Rate
- INF = Inflation Rate
- LR = Lending Rate
- f = Functional relationship

In its econometric form, the equation (4) above is rendered thus:

$$\text{GDP} = B_0 + B_1 \text{FD} + B_2 \text{DOP} + B_3 \text{EXR} + B_4 \text{INF} + B_5 \text{LR} + e \dots\dots\dots (5)$$

Where,

- B_0 = intercept of relationship in the model
- B_1 - B_5 = coefficient of each of the independent variables
- e = stochastic error or error term

To remove the problem of time-invariant characteristics inherent in the model, we log the variables in the model, thus:

$$\log GDP_t = B_0 + B_1 \log FD_t + B_2 \log DOP_t + B_3 \log EXR_t + B_4 \log INF_t + B_5 \log LR_t + e \dots \dots \dots (6)$$

It is important to specify the error correction model (ECM) from equation (6) above, thus the model is rendered as follows:

$$\Delta \log GDP = B_0 + B_1 \sum \log FD_{t-1} + B_2 \sum \log DOP_{t-1} + B_3 \sum \log EXR_{t-1} + B_4 \sum \log INF_{t-1} + B_5 \sum \log LR_{t-1} + \sum ECM + \sum e \dots \dots \dots (7)$$

Where,

- ECM = Error Correction term
- t-1 = variable lagged by one period
- \sum = White noise residual

The a priori expectation is that $B_1, B_2, B_3 > 0$ while $B_4, B_5 < 0$. This expectation is underpinned by financial liberalization literature and economic growth theories.

Section 4: Data Analysis and Interpretation of Findings

In this section, we provide the benchmark test of the significance of the independent variables in equations 1, 2 and 3 in explaining the impact of financial liberalization on economic growth in Nigeria.

4.1 Ordinary Least Square Regressions

Dependent Variable: GDP

Method: Least Squares

Date: 04/17/14 Time: 09:09

Sample(adjusted): 1987- 2012

Included observations: 24 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP	15.73210	5.435635	1.543973	0.0003
FD	-0.325929	0.194674	1.674228	0.1199
DOP	0.280711	0.139700	-0.577748	0.5741
EXR	1.668951	0.991508	-1.683245	0.1181
INF	-0.132700	-0.099069	1.339468	0.2052
LR	-0.145270	-0.695746	0.208798	0.8381
R-squared	0.909033	Mean dependent var		6.897917
Adjusted R-squared	0.898550	S.D. dependent var		1.094669
S.E. of regression	0.601022	Akaike info criterion		2.096940
Sum squared resid	4.334733	Schwarz criterion		2.444891
Log likelihood	-12.92093	F-statistic		7.951898
Durbin-Watson stat	1.068708	Prob(F-statistic)		0.001265

Computed by the authors with E-View software

From the above regression coefficients, we can express the model (short-run) as follows:

$$GDP = 15.73210 - 0.325929_{FD} + 0.280711_{DOP} + 1.668951_{EXR} - 0.132700_{INF} - 0.145470_{LR} + e$$

From the results of the OLS, it is obvious that the constant parameter (B_0) is positive at +15.73210. This means that if all the independent variables are held constant, GDP as a dependent variable will grow by 15.73210 units in annual-wide basis. For financial deepening, the coefficient is -0.325929. This means that FD is negatively related to GDP. This result is curious. A priori, it is expected that financial deepening will impact positively on investment and growth. But the result shows that a unit increase in the ratio of M_2/GDP , will consequently lead to a decrease in GDP by 0.325929 units. Moreover, the coefficient of degree of openness (DOP) is positive at 0.280711. This means that a direct relationship exist between GDP and DOP. In the short run, a unit increase in DOP will lead to increase in GDP by 0.280711 units.

Furthermore, the coefficient of exchange rate is +1.668951. This means that there is positive relationship between exchange rate and GDP. In the short run, a unit increase in exchange rate (EXR) will cause GDP to increase by 1.668951 units. This result is also curious and contrary to a priori expectation. The coefficient of inflation (INF) is negative at -0.132700. This means that an inverse relationship exist between INF and GDP. A unit increase in inflation rate will lead to a decrease in GDP by 0.132700. This result is in line with economic growth theories and our apriori expectation.

Finally, the coefficient of lending rate (LR) is negative at -0.145270. This means that in the short run, lending rate is inversely related to GDP. A unit increase in lending rate will lead to a decrease in GDP by 0.145270 units.

This result is in line with a priori expectation.

Overall, the coefficient of multiple determinations, denoted as (R^2) is 0.909033 or approximately 91%. This means that 91% of total variation in GDP can be explained by the exogenous variables namely FD, DOP, EXR, INF and LR while the remaining 9% is due to other stochastic variables. The Durbin-Watson statistics (at 1.068708) is below the critical threshold of 2.0. This means the model is free from autocorrelation.

4.2 Unit Root Tests Results

It is almost a convention in time series analysis, to verify the order of integration for each series to avoid the problem of spurious regression (see Granger and Newbold, 1974; Phillips, 1986). The enquiry into stationary property of each variable is conducted using Augmented Dickey-Fuller (Dickey and Fuller, 1979) and Phillips-Perron (Phillips and Perron, 1988) test procedures. The Phillips-Perron test method which computes a residual variance that is robust to auto-correlation is employed as alternative to the ADF. The decision rule is that Augmented Dickey Fuller (ADF) test statistics must be greater than Mackinnon Critical Value at 5% and at absolute term, i.e. ignoring the negative value of both the ADF test statistics and Mackinnon critical values, before the variable is adjudged to be stationary, otherwise we accept the null hypothesis (H_0) that data is non-stationary and reject the alternate hypothesis (H_1) that data is stationary.

Table 4.2 Result of ADF Unit Root Test

Variables	ADF Test Statistics Value	5% McKinnon Critical Value	Decision Rule		Remarks
			H_0	H_1	
GDP	-2.675452	-3.0114	Accept		Non-stationary
FD	-1.433125	-3.0114	Accept		Non-stationary
DOP	-2.559157	-3.0113	Accept		Non-stationary
EXR	-1.887654	-3.0113	Accept		Non-stationary
INF	-2.322456	-3.0113	Accept		Non-stationary
LR	-2.245702	-3.0113	Accept		Non-stationary

Source: Author's computation

From the result in table 4.2 it is clear that all the variables have ADF test statistics value less than the Mackinnon critical value both in absolute terms and at 5% level - that is before differencing. Therefore, to ensure the stationarity of data for these variables, there is need to further test for stationarity at first difference. The result of first difference ADF unit root test is presented in table 4.3 below.

Table 4.3 Result of ADF Unit Root Test

Variables	ADF Test Statistics Value	5% McKinnon Critical Value	Decision Rule		Remarks
			H_0	H_1	
GDP	-3.345776	-3.0199	Reject	Accept	Stationary
FD	-3.843889	-3.0199	Reject	Accept	Stationary
DOP	-3.965743	-3.0199	Reject	Accept	Stationary
EXR	-4.23054	-3.0199	Reject	Accept	Stationary
INF	-4.65789	-3.0199	Reject	Accept	Stationary
LR	-4.33217	-3.0199	Reject	Accept	Stationary

Source: Author's computation

From the result in table 4.3, it could be seen that all the variables were stationary at first difference. We therefore reject null hypothesis because their respective ADF test statistics value is greater than MacKinnon critical value at both in absolute terms and at 5%. The order of integration for all the variables is therefore is 1(1).

Summary of Order of Integration

Variable	Order of Integration
GDP	I(1)
FD	I(1)
DOP	I(1)
EXR	I(1)
INF	I(1)
LR	I(1)

Testing for Cointegration

With the results of the above unit-root tests suggesting that all the variables are stationary of the order 1(1), we

move a step further to employ the Johansen (1991) and Johansen and Juselius (1990) procedures to test for cointegration among the variables. The Johansen methodology is a generalization of the Dickey-Fuller test. Two likelihood ratio tests (trace and maximum eigenvalue) were used to test the hypotheses regarding the number of cointegrating vectors. The results of tests for cointegration among the variables of financial liberalization-led economic growth estimation equation are as reported in tables 4.4 below. The condition for a long-run co-integrating vector is that the trace statistics (likelihood ratio) must be greater than 5% critical value.

Table 4.4 Result of Johansen Co-integration

Eigen Value	Likelihood ratio	5% Critical value	1% Critical value	Hypothesized No. of CE(s)
0.925435	124.3875	92.18	101.09	None**
0.847632	73.46987	67.65	75.02	At most 1*
0.501237	34.62554	46.32	56.22	At most 2*
0.502314	18.57445	27.34	34.02	At most 3*
0.233457	6.543293	16.90	20.87	At most 4*
0.012341	0.387546	3.55	6.89	At most 5*

*** denotes rejection of the hypothesis at 5% (1%) significance level*

L.R test indicates 2 co-integrating equation(s) at 5% significance level

Source: Author's computation

The result of the Johansen co-integration shows that co-integration (long run relationship) exist among the dependent variable – gross domestic product and independent variables – financial deepening, degree of openness, exchange rate, inflation rate and lending rate. This can be inferred from the fact that the critical value at 5% is less than likelihood ratio. We therefore, reject the hypothesis of no co-integration at 5% significance level.

Error Correction Model (ECM)

The error correction model is a statistical relationship that shows the speed of adjustment, i.e. the rate at which the dependent variable adjusts to changes in the independent variables. We have ascertained that a long-run equilibrium relationship exist between the dependent variable and independent variables, we therefore, test for the speed of adjustment using the short run dynamism of error correction model (ECM). The ECM methodology involves specifying an over-parameterized model (ECM1) and later on, estimating a parsimonious model (ECM2). An over-parameterized error correction model is estimated by setting the lag length enough to ensure that the dynamics of the model have not been constrained by a too short lag length.

Table 4.5 Result of Over-Parameterized Model (ECM1)

Dependent Variable = D(GDP,2)

Variable	Coefficient	Standard Error	T-Statistics	Probability Value
D(GDP(-1),2)	-0.374340	0.334140	-1.120309	0.0734
D(FD,2)	-0.523488	0.124694	-4.198181	0.0063
D(FD(-1),2)	-0.216289	0.216412	-0.999431	0.2642
D(DOP,2)	0.106619	0.123854	0.860844	0.1240
D(DOP(-1),2)	0.122685	0.078634	1.560202	0.0825
D(EXR,2)	0.116828	0.076942	1.518390	0.1349
D(EXR(-1),2)	0.182203	0.051356	3.547842	0.1221
D(INF,2)	0.033430	0.234022	0.142849	0.2033
D(INF(-1),2)	0.015445	0.034253	0.450909	0.4563
D(LR,2)	0.037754	0.103543	0.364214	0.4692
D(LR(-1),2)	0.154668	0.122349	1.284154	0.2343
ECM(-1)	-0.154327	0.0054796	-2.816391	0.0334

$R^2 = 0.964113$

Source: Authors' computation

From the result of the over-parameterized ECM in Table 4.5 above, it is obvious that the coefficient of the error correction term is significant and negative. In other words, the negative sign justifies its significance. That is to say that the ECM will be effective to correct any deviations from the long-run equilibrium. The coefficient of the ECM at -0.154327 indicates that the speed of adjustment to long run equilibrium is 15.4% when any past deviation will be corrected in the present period. This means that the present value of GDP adjust rather slowly to changes in FD, DOP, EXR, INF and LR.

From this result above, there is a need to take the analysis further by simplifying the model into a parsimonious model – that will be easily interpreted. The parsimonious model will be developed by estimating the equations of only those variables that were significant in the over-parameterized model.

Table 4.6 Result of Parsimonious Model (ECM2)
Dependent Variable = D (GDP,2)

Variable	Coefficient	Standard Error	T-Statistics	Probability Value
D(GDP(-1),2)	-0.265149	0.104235	-2.543761	0.0252
D(FD,2)	-0.465326*	0.086543	-5.376818	0.0001
D(DOP(-1),2)	0.076355	0.065655	1.162973	0.1678
D(EXR(-1),2)	0.106767*	0.043213	2.470714	0.0233
D(INF,2)	0.043230	0.022672	1.906757	0.1466
D(LR(-1),2)	0.324435*	0.067622	4.797729	0.0052
ECM(-1)	-0.113257	0.050437	-2.245514	0.0320

$R^2 = 0.912439$

Note: *denotes that the coefficients are significant at 95% confidence level

From the result in Table 4.6, it shows that the coefficient of the ECM Parsimonious Model is -0.113257. This coefficient is significant and has also the appropriate negative sign. The coefficient of the parsimonious model shows that the speed of adjustment of any past deviation to long run equilibrium is 11.32%. This means that the present value of the dependent variable adjust rather slowly to changes in the independent variables than what was obtained in the over-parameterized model.

Moreover, the result of the parsimonious model indicates that all the variables except the lagged value of FD are significant. To highlight their significance, we considered their probability value. The probability value of each variable must necessarily be less than 10%. From the foregoing, it could be concluded that changes affecting GDP are determined by EXR, LR, DOP in the short run and FD and INF in the long run.

Furthermore, the result in Table 4.6 indicates that the coefficient of FD is negative while the coefficients of DOP, EXR, INF and LR are positive. This means that DOP has direct relationship with GDP. The DOP coefficient of +0.076355 shows that a unit increase in DOP will lead to increase in GDP by 0.076355 units. Also, the coefficient of EXR at +0.106767 indicates that a positive relationship exist between EXR and GDP. A unit change in EXR will lead to increase of 0.106767 units in GDP. The result in Table 4.6 also shows that INF and GDP are positively related. The INF coefficient is +0.43230; this means that a unit increase in INF will lead to an increase of 0.43230 units in GDP.

Finally, the coefficient of determination (R^2) is 0.912439, which is approximately 91%. This means that 91% of total variations in the present value of GDP can be explained by changes in the past values of the independent variables while the remaining 9% is due to other stochastic variables outside of the model.

4.7. Policy Implication

It used to be a long-held view of the orthodoxy that liberalizing the financial market would help remove the binding constraints on credit needed for investment. It was largely canvassed in the theory of financial liberalization that liberalization will boost investment and economic growth by removing the constraints on investment funding and other distortions on the allocative efficiency of the market. The a priori expectation is that liberalization would boost investment and economic growth in the long run.

The result of this study has largely validated theoretical expectations. Except for financial deepening (FD), all the explanatory variables and their lagged values demonstrated positive relationship with GDP. The inverse relationship between FD and GDP is curious and contrary to theoretical postulations. The a priori expectation is that financial deepening will granger cause economic development but the result of the study proved otherwise. The particular sequence of financial liberalization in Nigeria and the chequered history of the Nigerian financial development might be primate causes why financial deepening has not impacted positively on economic growth. Degree of Openness (DOP) has direct relationship with GDP. This is in line with a priori expectations. Financial liberalization in Nigeria was expected to harness the opportunities offered by globalization and to help attract foreign investments (both direct and portfolio) into the country. This has largely been realized as shown by the result of this study. This is in line with results from Okpara (2010).

Again, in line with a priori expectation, lending rate (LR) shows positive relationship with GDP. Financial liberalization which ushered in interest rate deregulation has proved to be beneficial to investors and the country in economy-wide basis. Deregulation in interest rate has encouraged investors to access investment funding from financial institutions to boost production and economic growth. This is in line with results of Akpan (2004).

Moreover, Exchange rate (EXR) is shown to have positive relationship with GDP. This result is curious and contrary to a priori expectation. The implication of this result is that though the exchange rate of the key currency (US dollar) to the Nigeria currency (Naira) might have been on the high side for the period under review, it has not as expected, adversely affected the economy; rather it has had positive effects on the economy. In other words, the deregulation of the exchange rate has empowered Nigeria to compete favourably in the international market and this has boosted the economy.

Finally, against all expectation, inflation (INF) is shown to have positive relationship with GDP. This result is very curious and contrary to a priori expectation. Inflation which is associated with persistent increase in general price level has been shown in the study to have encouraged production instead of consumption. Inflation may have influenced producers to invest more in anticipation of favourable price and profit and this consequently, might have led to increase in employment levels and income. Increase in production, income and employment are key components of economic growth. In other words, an inflationary economy occasioned by financial liberalization has proved to be fruitful to the Nigerian economy.

5, Conclusion and Recommendations

It is generally accepted in the financial liberalization literature that liberalizing the financial system could play a vital role in economic development. Therefore, the main focus of this work is to examine empirically the effect of financial liberalization on Nigeria's economic growth for the period 1987 to 2012. Employing essentially, the Johansen Co-integration test and Error Correction Models (ECM) as econometric tools, the result of the study shows that financial liberalization has impacted positively on economic growth in Nigeria. This is in line with the main tenets of financial liberalization thesis as laid out by McKinnon (1973) and Shaw (1973). The study also shows that financial liberalization has helped to ease the binding constraints on investment funding as investors have benefitted from interest rate deregulation as they seek investment funding from financial institutions in the country. The deregulation of exchange rate occasioned by financial liberalization has also had salutary effects on economic growth in Nigeria for the period under review. Moreover, against all odds and expectation, inflation has proved to be beneficial to the economy of the country for the period under review. The inflationary trend may have motivated investors to invest more in anticipation of favourable price and income. These have combined to raise employment and income levels in the country. Therefore, macroeconomic instability which is associated with inflationary trend has not negatively impacted economic growth as expected but have achieved the opposite, perhaps by default.

Moreover, the degree of openness or trade dependency ratio occasioned by financial liberalization has impacted positively on economic growth in Nigeria. In other words, Nigeria has benefitted from globalization in her trade relations with the rest of the world. The study also shows that financial deepening which is expected to significantly impact on economic growth as espoused in the financial liberalization literature have not achieved that purpose in Nigeria. It might be that the particular sequencing of financial liberalization in Nigeria and the instability that have trailed the country's financial sector over the years have conspired to negate financial system development to the level and depth that would be significant to promote economic growth in Nigeria.

From the foregoing, the authors make the following recommendations, which it is hoped, will further boost the impact possibility of financial liberalization on the country's economic growth:

- i. Government should ensure macroeconomic stability. The Central Bank of Nigeria should pursue with vigor measures to ensure stability in the macroeconomy. It is unarguable that financial liberalization may have achieved greater success in Nigeria if the economy has been stable over time.
- ii. Government should closely monitor the policy on interest deregulation. From the analysis of this study, it is evident that the adoption of market determined interest rates and capitalization as opposed to determined or pegged rate have triggered a significant realignment of financial depth, width and savings mobilization. The interest rate deregulation in Nigeria has been accompanied with declining banks credits because lending rates have been negatives (or very high) leading to high interest rate spread (lending savings margins) culminating in crowding out investors from sourcing loans from these institutions as they would want to.
- iii. Further to (ii) above, government should direct their efforts towards achieving a positive interest rate regime. There is need to lower lending rate in Nigeria. Moderate lending rate regimes have worked well for East Asian countries of Hong Kung, Taiwan, South, Korea, Singapore, etc.
- iv. The monetary authorities should continue with policy reforms especially financial liberalization policies to consolidate on the emerging confidence in financial institutions occasioned by these reforms.
- v. Government should ensure a conducive business environment. No business can thrive in an atmosphere of fear and insecurity. The upsurge in security challenges in the country should be seriously tackled to engender confidence of investors in the economy. Moreover, infrastructures that support businesses especially energy should be made available in appropriate quality and quantity.

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