

NEW ESTIMATES OF THE EFFECT OF FINANCIAL LIBERALISATION ON ECONOMIC GROWTH IN NIGERIA

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Abstract

The theory of financial liberalisation advocates the freeing up of financial markets so as to ensure a more efficient allocation of investment and a consequent improvement in economic growth. Nigeria's experience with financial liberalisation started in 1987 but this resulted in a banking crisis 5 years later. Using an index which tracks the specific policies associated with financial liberalisation, this paper conducts an empirical evaluation of the impact of financial liberalisation on Nigeria's economic growth. The results show that liberalisation has exerted a significant positive effect on growth in the long run, thus lending credence to the views that even though financial liberalisation might result in financial fragility in the short run, it is growth-enhancing in the long run.

JEL Classification: E44, E58, O16, O55

Keywords: Financial Development, Financial Liberalisation, Economic Growth, Nigeria.

1. INTRODUCTION

The Nigerian government embarked upon financial liberalisation in the belief that freeing-up financial markets would help stimulate economic growth. The Nigerian financial sector prior to liberalisation was repressed. The monetary policy adopted by the federal government was one of direct monetary control and the government was actively involved in interfering with both the interest rates charged by financial institutions and the allocation of credit to corporations. There was restricted entry into the financial sector and with the indigenisation decree, the Federal Government effectively nationalised the

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major banks in the country. From the late 1950s when the Central Bank of Nigeria (CBN) was established, until the liberalisation of the financial sector in 1987, the government dictated both deposit and lending interest rates to financial institutions in the country. The Banking Amendment Act of 1962 and the Banking Decree of 1969 both empowered the CBN to fix deposit, as well as minimum and maximum lending interest rates. Banks were required to extend a greater percentage of their credit to sectors identified as the preferred sectors while the less preferred sectors were to receive a lower percentage of bank's loans. Another form of repression which was used by the CBN was the setting of reserve requirements for banks which restricted their credit creation capabilities.

Nigeria's financial liberalisation started in August 1987 with the deregulation of interest rates. The financial reforms progressed over the next decade with a series of policies which included further interest and exchange rate deregulation, relaxing restrictions on bank licensing, and the abolition of some directed credit policies. With regard to sectoral credit guidelines and credit ceilings, the requirement of a minimum credit allocation to indigenous borrowers was abolished in 1985 and was followed by a gradual abolition of selective credit allocations starting from 1986. The minimum capital requirement and the cash requirement for merchant banks were re-introduced in 1990. The controls on maximum and minimum interest rates were abolished in 1987 and in the same year, the unified foreign exchange market was established. In 1989 the official and autonomous parts of the foreign exchange market were unified. However, interest rate controls were re-introduced in 1991 as a result of the banking crisis in the country.

This paper conducts an empirical analysis of Nigeria's financial liberalisation. Such an analysis is important for a number of reasons. First, despite the fact that there was a banking crisis in the immediate aftermath of financial liberalisation, some studies posit that liberalisation can enhance economic growth in the long run. (Kaminsky and Schmukler, 2002; Loayza and Ranciere, 2004; Tornell and Westermann, 2004). Such studies claim that the establishment of deposit insurance schemes and the relaxation of banking supervision after financial liberalisation can lead to imprudent behaviour by banks. Financial fragility can also increase following liberalisation because of lending booms arising either as a result of banks' inability to effectively screen potential borrowers and monitor existing ones, or as a result of abolished directed credit guidelines freeing up funds which would hitherto have been lent to select preferential groups. In the long run, banking regulation is expected to improve and the ability of banks to effectively screen potential borrowers is expected to increase, thereby reducing financial fragility and leading to improved eco-

conomic performance. This paper is therefore an attempt to test the validity of such studies for the Nigerian case.

This paper is also important because it seeks to address some deficiencies of previous empirical studies on the effects of financial liberalisation on economic growth in Nigeria. Some studies such as Ikhide (1987) and Olomola (1994) use financial development variables as the dependent variable and the growth rate as an explanatory variable. The results from such estimations do not give any indications of how financial development has affected economic growth. Other studies such as Ogungbenro et al. (1996) do not include a specific growth equation but use an investment equation to try measuring the impact of financial liberalisation on economic growth; a specific growth equation is nevertheless needed in order to ascertain the effect of financial liberalisation on growth. Another limitation of previous research is that a long-run analysis into the effects of financial liberalisation on economic growth was never conducted. Furthermore, previous studies have not captured the gradual institutional changes that financial liberalisation entails. Ogungbenro et al. (1996) used the real rate of interest as a measure of financial liberalisation while Ikhide (1987) used the financial inter-relations ratio and the new issue ratio to measure financial development. However, financial liberalisation encompasses other policies, such as bank denationalisation and restructuring, abolition of directed credit allocation, liberalising entry into banking, and strengthening of prudential regulation. Any analysis that does not take into account these policies will suffer from omitted variable bias (Gibson and Tsakalatos, 1994, p. 596).

We have constructed an index that takes into account the progression that financial liberalisation entails, which has been included in growth equations. Annual time series data have been used and the data ranges from 1972 to 2002². The index is not restricted to interest rate deregulation but includes 6 other measures of financial liberalisation. We have also used cointegration techniques to examine the long-run relationship between economic and financial liberalisation. Therefore, our results will provide a better understanding of how liberalisation has affected economic growth in Nigeria. We are not aware of any previous study that has taken this into consideration for the Nigerian environment.

The rest of this paper is organised as follows: In the next section, we provide an overview of the theoretical and empirical review of literature. Section 3 outlines the financial liberalisation index, while in the fourth section we describe the methodology and discuss the data analysis and implications of our findings. The final section concludes the paper.

² The period of analysis was dictated by the availability of data on specific financial liberalisation measures.

2. LITERATURE REVIEW

2.1 *Theory*

Both McKinnon (1973) and Shaw (1973) identify lagging economies as facing financial repressive policies hampering their economic development. Many of these countries have been drawn to pursuing policies of financial repression because of the “benefits”³ that could be gained from them. Also, repression could be practised to make cheap capital available to some “priority” sectors in the economy. These priority sectors usually have close ties with the government and ceilings on the rates of interest make cheap capital available to them. McKinnon and Shaw note that the problem with lagging economies was not lack of investment opportunities but unattractive savings. A main feature of shallow finance is that the low level of interest rates discourages agents from saving and consequently, this makes capital for investment hard to come by. Lagging economies are also characterised by manipulation of prices in virtually all markets.

According to the financial liberalisation theory, financial repression through interest rate ceilings keeps interest rates low and this discourages savings with the consequence that the quantity of investment is stifled. Thus investment is constrained by savings. The quality of investment is also low because the projects that will be undertaken under a regime of repression will have a low rate of return. With financial liberalisation, the interest rate will rise, thereby increasing savings and also investment. The increased investment results in the rationing out of low-yielding projects and the subsequent undertaking of high-yielding projects. The quality of investment rises and this will ultimately increase economic growth. McKinnon and Shaw therefore advocated the liberalisation of such repressed financial systems so as to increase savings and investment, and consequently promote economic growth.

The importance of financial development for growth has also been highlighted in the endogenous growth models. The endogenous growth theories emphasise the role of financial intermediaries in economic growth. Financial intermediaries increase the efficiency of resource use by monitoring borrowers and evaluating alternative investment opportunities. Also, the financial in-

³ Such benefits include bypassing costs in the administration of other forms of taxation. Financial repression is a form of taxation which is cheap and convenient to administer. Such government taxation of financial intermediaries include high reserve requirements and direct taxation of banks incomes.

struments that they provide make it possible for economic agents to pool and limit risk. Financial services make it cheaper and less risky to trade goods and services and to borrow and lend (World Bank, 1989). It has been noted that the biggest difference between rich and poor is the efficiency with which their resources are used (World Bank, 1989). Resources are not useful if there is no sufficient technology or know-how to allocate them. Consequently, because of the financial sector's ability to increase efficiency, it is very vital for economic growth.

The criticisms of financial liberalisation include the analysis of Stiglitz and Weiss (1981) who show that the relationship between financial development and growth is not as straightforward as McKinnon and Shaw suggest. This is due to the fact that imperfections –which are inherent in financial markets - can adversely affect economic growth. These imperfections in financial markets arise as a result of asymmetric information, which is the unequal distribution of information between two sides in a transaction. The nature of financial transactions in which the borrower usually has more information than the lender about the likelihood of the loan being repaid, makes asymmetric information inherent in this market. The existence of asymmetric information leads to two types of problems namely adverse selection and moral hazard. Adverse selection is a situation that occurs when the borrowers selected for loans by lenders are the ones most likely to default, and those not selected are the ones not likely to default. In the case of moral hazard, the borrower is seen to be acting 'immorally' by the lender. Usually, this means that borrowers undertake investments with a greater degree of risk than that agreed with the lender.

Other criticisms include the neostructuralists (such as van Wijnbergen (1983) and Taylor (1983)) whose view was that informal financial markets are more efficient in allocating credit because they, unlike formal intermediaries, are not subject to reserve requirements. Reserve requirements reduce the amount of credit provided by banks and because informal intermediaries are not subject to such requirements, they (informal intermediaries) can allocate credit more efficiently. Also, if higher deposit interest rates attract deposits from non-financial assets like currency or inflation hedges, this will have a positive effect on investment and growth. There will be a transfer from assets that are not important in the production process, to those that are important for production because the deposits can be channelled into investment, resulting in a higher growth. On the other hand, if deposits are attracted from the informal financial sector, the presence of reserve requirements or credit ceilings can reduce the total amount of credit and the reduced investment can result in a fall in economic growth.

2.2 Empirical Evidence

Empirical evidence on the effect of financial liberalisation on economic growth in Nigeria includes Ikhide (1987), Ogungbenro et al. (1996), Olomola (1994), Alayande (2007) and Adeoye (2007). A brief review of these studies is provided below.

Ikhide (1987) used data over the period 1958 to 1986 to examine the relationship between financial growth and economic development in Nigeria. The author used 2 dependent variables: the financial inter-relations ratio (ratio of assets of all financial institutions to GDP), and the new issue ratio (ratio of new issues of financial instruments by financial institutions to GDP). Explanatory variables used are: rate of change of real income, inflation rate, rate of growth of population, and the average rate of interest. The results showed that the financial inter-relations ratio is significantly positively related to all variables except the average rate of interest. When the dependent variable is the new issues ratio, all variables are positive and significant with the exception of the population growth rate. The authors concluded that a supply-leading relationship exists between financial growth and economic development.

The study by Olomola (1994) used data from 1980 to 1991 to investigate the effects of economic growth on financial liberalisation. The author used 5 different measures of financial development as dependent variables: ratio of total assets of financial system to GDP, ratio of CBN domestic assets to GDP, ratio of commercial bank domestic assets to GDP, ratio of merchant bank domestic assets to GDP, ratio of private sector credit to total credit. Explanatory variables are: per capital real GDP, a dummy variable for the Structural Adjustment Programme (SAP), and an interaction term of both the dummy variable and real GDP. For most of the financial development variables, there is a negative relationship with economic growth. The only financial development variable that exhibits a positive relationship with economic growth is the ratio of private credit to total credit.

Ogungbenro et al. (1996) conducted an empirical investigation of the effects of financial liberalisation on savings, investment, and growth. The author used quarterly data from 1986 to 1993 and two dependent variables: savings and investment. Explanatory variables include: growth rate of GNP, real interest rate, ratio of foreign savings to GNP, per capita GNP, and ratio of population per bank branches. The results showed that savings is positively related to foreign savings and per capita income, and negatively related to the real interest rate, GNP growth rate, and the ratio of population per bank branches. Investment has a positive relationship with its lagged value and per capita

income. The authors concluded that the financial liberalisation policies between 1986 and 1993 had a mild impact on savings and investment.

Alayande (2007) used quarterly data from 1970(1) to 2004 (4) to examine the relationship between financial liberalisation and economic growth in Nigeria. The dependent variable has been changed in real GDP per capita and explanatory variables are: ratio of M2 to GDP, ratio of private sector credit to GDP, ratio of reserve money to total deposits, ratio of reserve money to quasi money, and the real interest rate. The results showed positive coefficients for the ratio of reserve money to quasi money, real interest rate, and ratio of private credit to GDP; other variables, on the other hand, have negative coefficients. All variables are statistically significant and the author concluded that the negative signs on some variables indicate the effects of policy inconsistency.

Adeoye (2007) used data over the period 1970-2005 to investigate the finance-growth nexus in Nigeria. The dependent variable is real GDP growth and explanatory variables are: ratio of M2 to GDP, ratio of bank credit to GDP, real interest rate, dummy measuring reforms, real gross investment, and enrolment rate. The results showed that growth is positively related to enrolment rate and investment, and is negatively related to all other variables. Granger causality tests were also conducted and there was no evidence of causality between economic growth and financial sector development.

Although the studies reviewed above have made an attempt at empirically examining the effect of financial liberalisation on economic growth in Nigeria, they have a number of limitations that our study aims to improve. First, the studies by Ikhida (1987) and Olomola (1994) use financial development and not economic growth as the dependent variable. In order to correctly assess how financial liberalisation has affected growth, it is essential that the dependent variable is economic growth. It is only when growth is the dependent variable that the effect of a policy such as financial liberalisation can be ascertained.

Secondly, the study by Ogunbenro et al. (1996) did not employ economic growth as a dependent variable but used the results obtained from savings and investment equations to draw conclusions about the effect of financial liberalisation on economic growth. Savings and investment are not sufficient proxies for economic growth. An analysis of the effect of financial liberalisation on economic growth needs to employ the growth variable itself as a dependent variable.

Although the new studies by Alayande (2007) and Adeoye (2007) tried to employ recent econometric techniques of cointegration in their analysis, their studies also suffer from a number of deficiencies. Alayande (2007) did not employ any control variables in his study but only used variables measuring fi-

financial sector development, thereby implying that only financial development variables contribute to economic growth. The paper by Alayande also includes alternative measures of financial development in the same equation, causing multicollinearity problems. In addition to this, the two papers have some econometric problems. The discussion of the results by Adeoye makes use of the over-parameterized model with no indication of either the parsimonious model or the long-run model. Both studies include integrated variables of different orders in the same equation and while Adeoye did not conduct a cointegration test, Alayande employed the Johansen cointegration test. However, an important condition for the Johansen test is that all variables must be integrated of the first order and this condition is clearly violated by Alayande's study. These econometric deficiencies render the results of the estimations unreliable.

Furthermore, none of the studies measure the gradual institution changes involved in financial liberalisation. Rather, they employed a number of variables measuring financial deepening to try to measure financial liberalisation. However, in order to know exactly the effect of financial liberalisation policies on growth, the gradual progression involved with liberalisation needs to be accounted for.

This paper improves the above studies by using variables that provide better measures of financial liberalisation. We have developed an index which tracks the gradual progression made with different financial reforms in Nigeria since 1987. We have also employed the use of a dummy variable which takes on the value of 1 after significant measures were made to liberalise the financial sector. These variables provide a more comprehensive measure of financial liberalisation policies. Also, unlike the studies by Ikhida and Olomola, the growth rate of real GDP has been employed as the dependent variable. The results from our analysis will thereby give a clearer picture of how financial liberalisation has affected economic growth. We have also conducted a long-run analysis to study how is the relationship between economic growth and financial liberalisation. None of the above studies related to the long-run.

3. THE INDEX OF FINANCIAL LIBERALISATION

The financial liberalisation index developed in this paper draws from Laeven (2000). We have identified seven liberalisation measures and each of these measures is assigned a value of zero prior to liberalisation and it becomes one after liberalisation. This gives a matrix of seven dummy variables and the index is the addition of the variables for each year. Table 1 gives the derivation

Table 1. Financial Liberalization Index

YEARS	BANK DENATIONALISATION & RESTRUCTURING	INTEREST RATE LIBERALIZATION	STRENGTHENING OF PRUDENTIAL REGULATION	DIRECTED CREDIT	FREE ENTRY INTO BANKING	CAPITAL ACCOUNT LIBERALIZATION	STOK MARKET DEREGULATION	FINDEX
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0
1987	0	1	0	0	0	0	0	0
1988	1	1	0	1	1	0	1	3
1989	1	1	0	1	1	1	1	5
1990	1	1	0	1	1	1	1	6
1991	1	0	1	1	0	1	1	6
1992	1	0	1	1	0	1	1	5
1993	1	0	1	1	0	1	1	5
1994	1	0	1	1	0	1	1	5
1995	1	0	1	1	0	1	1	5
1996	1	0	1	1	0	1	1	5
1997	1	1	1	1	1	1	1	7
1998	1	1	1	1	1	1	1	7
1999	1	1	1	1	1	1	1	7
2000	1	1	1	1	1	1	1	7
2001	1	1	1	1	1	1	1	7
2002	1	1	1	1	1	1	1	7

of the index. Information on the sequencing financial liberalisation is from various sources that are provided in Table 2. The seven financial liberalisation measures are: bank denationalisation and restructuring, interest rate liberalisation, strengthening of prudential regulation, abolition of directed credit, free entry into banking, capital account liberalisation, and stock market deregulation.

Table 2. Sequencing of Financial Liberalisation in Nigeria

1985
elimination of minimum credit allocation requirement to indigenous borrowers implementation of third phase of rural banking programme
1986
modification of credit ceilings for merchant banks gradual abolition of selective credit allocations
1987
removal of controls on minimum and maximum interest rates
1988
adoption of new Securities and Exchange Commission decree establishment of National Deposit and Insurance Corporation introduction of significant institutional changes at the Central Bank unification of credit ceiling requirement for commercial and merchant banks
1989
adoption of privatization and commercialization programme signing of accord between banks and Central Bank to limit spreads between interest rates
1990
introduction of cash requirement for merchant banks all banks to report on activities of their subsidiaries offering financial services introduction of minimum capital requirement introduction of new accounting guidelines for all financial institutions
1991
re-administration of interest rates no new bank licenses promulgation of Banks and Other Financial Institutions Decree

Sources: Turtelboom (1991), Galbis (1993), Montiel (1996), Inanga and Ekpenyong (2002), Brownbridge and Harvey (1998), Moreira (1999), Naude (1995), Emenuga (2002), African Development Bank (1994)

An examination of the financial liberalisation index in Table 1 reveals a number of features of Nigeria's financial liberalisation. Firstly, the reforms started with three measures namely interest rate liberalisation, abolishing of di-

rected credit, and free entry into banking, and these were subsequently followed by the other reforms in subsequent years. Therefore, financial liberalisation in Nigeria did not involve a lumping together of different reforms all in one year. Another feature of the liberalisation of the financial sector were a number of policy reversals. Specifically, interest rates were re-regulated and free entry into banking was stopped in 1991 and these reversals were triggered by the banking crisis. However, as can be seen from the table, the crisis also resulted in more reforms with the measures taken to strengthen prudential regulation so as to tackle the crisis. We can also see that liberalisation in Nigeria followed a pattern similar to that in other countries, where interest rate liberalisation was the first reform undertaken and the strengthening of prudential regulation came in the latter stages of liberalisation (Laeven, 2000).

4. ECONOMETRIC ANALYSIS

4.1 *Model Specification*

In this section we present the model used to examine how financial liberalisation has affected economic growth in Nigeria. The variables selected include those measuring financial liberalisation, variables measuring macroeconomic policy, and a variable measuring macroeconomic uncertainty.

Financial liberalisation represents the primary explanatory variable of interest in this study. It comprises two measures of financial liberalisation that we will include in separate equations to measure the impact of financial liberalisation on growth. These are (i) financial liberalisation index (FINDEX); (ii) financial liberalisation (FINDUMMY). FINDUMMY, the dummy variable for financial liberalisation, captures the starting date of the major financial liberalisation in Nigeria. The dummy takes a value of 0 prior to liberalisation and 1 after liberalisation⁴. To support the financial liberalisation hypothesis, these variables should have positive and significant coefficients in the growth regressions.

Numerous empirical studies have included a diverse array of macroeconomic policy variables to measure the impact of these variables on growth (Kormendi and Meguire, 1985; Knight, Loayza, and Villanueva, 1993; Fischer, 1993). The general consensus is that stable macroeconomic policies promote economic growth. Countries that are more open and embrace trade have experienced faster economic growth (Ng and Yeats, 1996; Dollar and Kraay, 2001).

⁴ The dummy takes on the value of 1 starting from 1987.

We follow Thirlwall (2002) by measuring trade policy by the growth rate of exports. Fiscal policy has been identified as an important growth determinant (Easterly and Rebelo, 1993). Excessive spending of the government on consumption has been shown to negatively affect economic growth (Fischer, 1993) and we measure fiscal policy with the ratio of government consumption to GDP.

Macroeconomic uncertainty and instability adversely affect economic growth. Countries that are heavily indebted have to commit resources that would otherwise be used for investment and development projects to service their debt obligations. Higher debt service payments will therefore be expected to impact negatively on economic growth. The debt service ratio is used to measure macroeconomic uncertainty.

From the above discussion, the liberalisation proxies and export growth are expected to have positive coefficients while government consumption and debt are expected to be negative. The estimated models take the following form:

$$YGROW = \pi_0 + \pi_1 FINDEX + \pi_2 EXGROW + \pi_3 DEBT + \pi_4 GOVCON + e1 \quad (1)$$

$$YGROW = \vartheta_0 + \vartheta_1 FINDUMMY + \vartheta_2 EXGROW + \vartheta_3 DEBT + \vartheta_4 GOVCON + e2 \quad (2)$$

where YGROW = growth rate of Real GDP

FINDEX = index of financial liberalisation

FINDUMMY = dummy for financial liberalisation

EXGROW = the rate of growth of exports

GOVCON = the ratio of government consumption to GDP

DEBT = debt service ratio

e1-e2 = error terms

4.2 Estimation and Presentation of Results

Annual time series data from World Development Indicators (WDI) CD-ROM 2004 have been used and the data ranges from 1972 to 2002. All estimations are carried out using MICROFIT 4.1 (Pesaran and Pesaran, 1997).

The augmented Dickey-Fuller (ADF) unit root tests were carried out for all variables used in the growth equations and the results are presented in Table 3. The table shows that all variables are either I(0) or I(1). Specifically, the variables integrated of order zero are the real interest rate, export growth, and government consumption; while the variables integrated of order one are output growth, the financial liberalisation index, the dummy for financial liberalisation, and debt.

Table 3. Augmented Dickey-Fuller unit root tests

Variables	I(0)	I(1)	Conclusion
ygrow	-2.8533	-3.1197	I(1)
findex	-1.4569	-3	I(1)
findummy	-1.1767	-5	I(1)
exgrow	-5.4073	-5.3674	I(0)
govcon	-3.9703	-4.231	I(0)
debt	-1.3682	-7.7953	I(1)

Notes: the null hypothesis for each column is the presence of unit roots. The 5% critical value for the I(0) test is -2.9798 and -2.9850 for the I(1) test. All variables are constant with no trend.

This situation, where we have some variables integrated of order zero and some other variables integrated of order one, means that we cannot estimate using the Engle-Granger or Johansen cointegration techniques because they require all variables to be integrated of order one. An alternative technique, that does not restrict the order of integration of the variables, is the Autoregressive Distributed Lag (ARDL) framework of Pesaran, Shin and Smith (1996), Pesaran and Shin (1999), and Pesaran, Shin and Smith (2001). The ARDL method allows the use of variables that are integrated of different orders in estimating long run relationships. Specifically, variables that are I(0) and I(1) can be included in the same cointegrating equation. This technique suits our purpose, hence is adopted for our analysis.

The ARDL procedure comprises two steps. The first step involves testing the null hypothesis of no long run relationship between the levels of the variables. In order to do this, an F-test with a non-standard distribution is employed. Pesaran, Shin and Smith (1996) have provided two sets of asymptotic critical values for this test for the cases when all the variables are I(1) and for cases when all variables are I(0). If the computed F-statistic exceeds the upper critical value, then the null hypothesis of no long run relationship can be rejected, regardless of the order of integration, otherwise, the null hypothesis cannot be rejected. If the F-statistic falls within the critical bounds, the null hypothesis of no long-run relationship can still be rejected provided all variables are either I(0) or I(1). However, if the F-statistic is below the critical bounds then the null hypothesis of no long-run relationship is rejected. If a long run relationship exists, then the second step can be implemented. This involves the

estimation of the ARDL model by OLS using either the Akaike Information Criterion (AIC) or the Schwartz Bayesian Criterion (SBC) to select the maximum order of lags to obtain long run coefficients. This method also involves the simultaneous estimation of the error correction form (ECM) of the ARDL model.

In accordance with the ARDL method, we next conduct cointegration tests to examine the existence of a long run relationship between the variables by computing the F-statistic for the joint significance of lagged levels of variables. Because annual data are used in this analysis, the maximum lag length was set at three and the AIC was then used to determine the appropriate lag length. The results of the cointegration test are presented in Table 4 and we find evidence of a long-run relationship in equation 1. The F-statistic for equation 1 is above the upper bound at the 99% significance level. This suggests the existence of a long-run relationship between the variables included in this equation⁵. We can therefore reject the null hypothesis of no cointegration for equation 1, and conclude that a long-run relationship exists between economic growth and the explanatory variables. For equation 2, the F-statistic falls below the upper bound at the 90% significance level and we cannot reject the null hypothesis of no cointegration for this equation. We can now proceed to estimate the long run coefficients for equation 1.

Table 4. Statistic for cointegration tests

Model	F-statistics
equation 1	5.1976*
equation 2	2.4064

Notes: the critical value bounds are from Table F in Pesaran and Pesaran (1997) (with an intercept and no trend).

They are 2.425-3.574 at the 90% significance level, 2.850-4.049 at the 95% significance level and 3.817-5.122 at the 99% significance level.

* denotes that F-statistic falls above the 95% upper bound and ** denotes above the 90% upper bound.

The long run coefficients are presented in equation 3 below and we see that in the long run, financial liberalisation has had a positive impact on economic

⁵ The ARDL method, unlike other cointegration methods such as Johansen, does not give the number of cointegrating relations but simply shows if a long-run relationship exists or not (Pesaran and Pesaran, 1997, p. 310-311).

growth in Nigeria. The coefficients imply that financial liberalisation has improved growth by as much as six-tenths of a percentage point. This result, considering the fact that there was a banking crisis about 5 years after the liberalisation of the financial sector, suggests that financial liberalisation might be beneficial in the long run. Possible reasons for this could be that public confidence in banks has been sufficiently raised in the long-run, thereby increasing savings and consequently investment and growth. This is more so, given that prudential regulation was considerably tightened, distressed banks were closed down, and erring bank officials were successfully prosecuted by the government in the aftermath of the banking crisis, thus cleaning the banking sector of unscrupulous elements. The result could also be explained by the fact that the macroeconomic environment was quite uncertain at the initial stages of financial liberalisation and agents would have preferred to save in real assets to hedge against inflation. The uncertainty and volatility have reduced with time and this could have stimulated agents to convert their real assets into savings thereby providing more loanable funds. Another explanation is that financial liberalisation can result in excessively high interest rates that, coupled with increased lending devoid of proper screening, especially to insolvent agents, can cause financial fragility in the short-run. In the long run, banking supervision is expected to be tightened up, interest rates will have stabilised to discourage insolvent agents, and the banks' ability to screen potential borrowers will have improved, thereby improving allocation of funds to productive investment. Our results therefore support studies such as Kaminsky and Schmukler (2002), Loayza and Ranciere (2004), and Tornell and Westermann (2004) who found that financial liberalisation increases the incidence of financial fragility in the short run. In the long run however, financial liberalisation increases the stability of financial markets and enhances economic growth.

The implications of the above finding are that proper sequencing is crucial for the success of financial liberalisation. Ikhide and Alawode (2002) attributed the banking crisis that occurred in Nigeria after the financial liberalisation to poor sequencing. They noted that countries where financial liberalisation has succeeded have had 3 things in common: a stable macroeconomic environment; strong and effective supervision of banks; and gradual interest rate deregulation. The authors then identified 4 steps required for a proper sequencing of financial liberalisation: (i) restoring macroeconomic and financial stability; (ii) developing indirect instruments of monetary policy; (iii) promoting competition among banks; and (iv) removing direct controls. As is evident from Table 2 Nigeria's financial liberalisation deviated from this optimal sequencing and Ikhide and Alawode note that this was responsible for the bank-

ing crisis. However, after the crisis, the corrective measures implemented by the government stabilised the financial sector and created an enabling environment for economic growth to be enhanced.

$$YGROW = -2.82 + 0.59FINDEX + 0.33EXGROW + 0.08DEBT + 0.02GOVCON \quad (3)$$

(-0.69) (1.92)*** (2.21)** (0.56) (0.12)

* indicates that a coefficient is significant at the 1 percent level, ** at the 5 percent level, and *** at the 10 percent level.

It would be interesting to see the short-run dynamics and how quickly equilibrium is restored in the model. This is shown in equation 4, which contains the error correction representation of the ARDL model. We see from this equation that the results for financial liberalisation are in line with those obtained in equation 3 above and changes in financial liberalisation have had a positive impact on changes in growth. Short-run changes in export growth have also resulted in increased changes in growth.

We then turn to the error correction term (ecm-1), which measures the speed of adjustment and this is negative and statistically significant. This value further corroborates the cointegration tests and indicates a high speed of adjustment to equilibrium after a shock. The error correction term has a value of -0.79 and this coefficient implies that about 79% of the previous year's deviation from long-run equilibrium will be corrected within a year.

The diagnostic statistics show that the model performs well. The adjusted R² is 0.81, which implies that the explanatory variables explain 81 percent of the variation in growth rates. Also, the F statistic shows that the explanatory variables are jointly significant.

$$\Delta YGROW = -2.21\Delta C - 0.48\Delta YGROW(-1) - 0.4\Delta YGROW(-2) + 2.08\Delta FINDEX +$$

(-0.81) (-2.04)*** (-2.69)** (2.02)***

$$0.15\Delta EXGROW + 0.06\Delta DEBT + 0.02\Delta GOVCON - 0.79ECM(-1)$$

(3.53)* (0.65) (0.12) (-2.62)** (4)

* indicates that a coefficient is significant at the 1 percent level, ** at the 5 percent level, and *** at the 10 percent level.

Adj. R² = 0.81

F = 18.21 [0.000]

Figures 1 and 2 present the cumulative sum (CUSUM) and cumulative sum of squares (CUSUMSQ) graphs to test for model specification. The null hy-

Figure 1. CUSUM Test for Equation 1

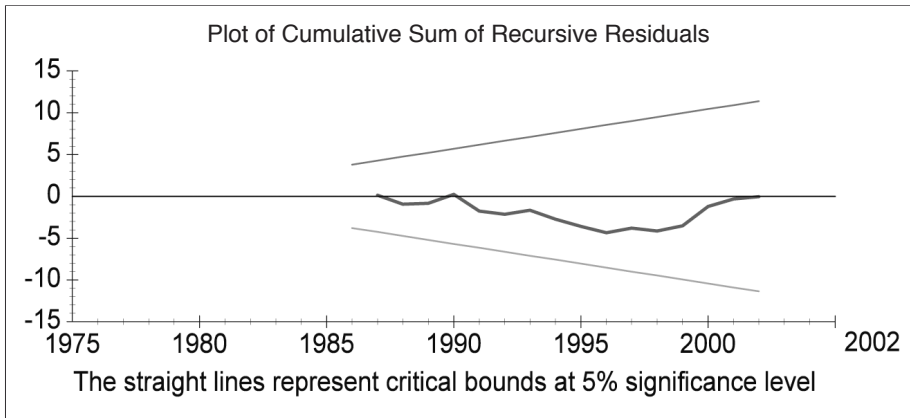
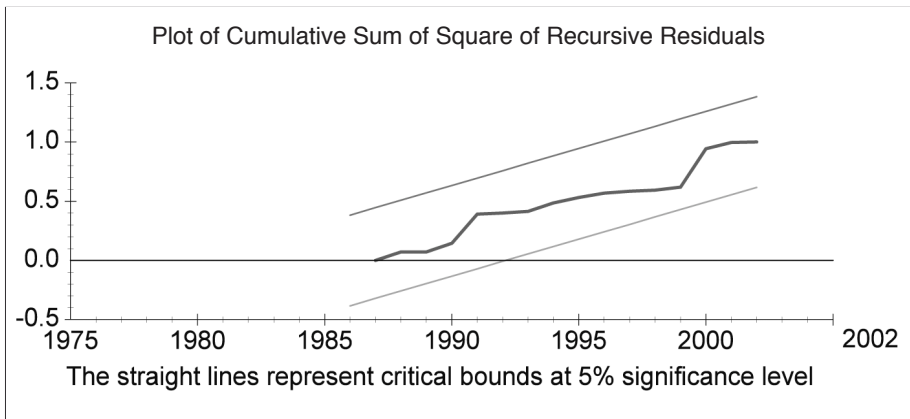


Figure 2. CUSUMSQ Test for Equation 1



pothesis of these tests is that the regression equation is correctly specified. The pair of straight lines in each figure indicates the 5 percent significance level and if the plotted CUSUM and CUSUMSQ graphs remain inside the straight lines the null hypothesis of correct specification of the model can be accepted, otherwise the null hypothesis is rejected and it can be concluded that the regression equation is misspecified. We see from the two figures that the CUSUM and CUSUMSQ plots stay within the lines indicating the 5 percent level of significance and we can therefore conclude that equation 1 has been correctly specified.

5. CONCLUSION

In this paper we have conducted an evaluation of financial liberalisation in Nigeria. We improved earlier studies by developing an index that tracks the gradual progression made by different financial reforms. Our results therefore give a better indication of how specific financial liberalisation policies have affected economic growth. Also, we employed cointegration techniques to estimate the long-run relationship between economic growth and financial liberalisation.

Our results offer a new insight into how financial liberalisation has affected economic growth in Nigeria. We find that a positive relationship exists between economic growth and financial liberalisation in the long-run. Considering the fact that there was a banking crisis in the immediate aftermath of financial liberalisation, the results are in line with the idea that, though financial liberalisation could cause financial fragility in the short-run, in the long-run, it will improve economic performance (Kaminsky/Schmukler 2002; Loayza/Ranciere 2004; Tornell/Westermann 2004). A possible reason for this could be that the tightening of prudential regulation and the closing down of distressed banks has increased public confidence in banks. The result could also be explained by the fact that the macroeconomic uncertainty and volatility at the initial stages of financial liberalisation has been sufficiently reduced in the long run, thereby stimulating savings.

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Résumé

La théorie de la libéralisation financière demande la libéralisation des marchés financiers pour assurer une allocation de l'investissement plus efficace et, par conséquent, une amélioration de la croissance économique. L'expérience du Nigeria avec la libéralisation financière a commencé en 1987 mais le résultat a été une crise financière cinq ans plus tard. En se servant d'un index qui décrit les politiques liées à la libéralisation financière, cet article évalue empiriquement l'impact de la libéralisation financière sur la croissance économique au Nigeria. Les résultats montrent que la libéralisation a exercé un effet positif significatif dans le long terme, en supportant la conviction que même si la libéralisation financière peut entraîner une fragilité financière dans le court terme, elle renforce la croissance dans le long terme.

