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Is liberalizing finance the game in town for Nigeria ?

Saidu Sulaiman¹ and Mansur Masih²

Abstract

Stemming from the McKinnon-Shaw's advocacy for financial liberalization in "less-developed countries" and its attendant unresolved intellectual gymnastics, the authors primarily attempt to model the relationship between; financial liberalisation and economic growth on the one hand and financial liberalisation and investment on the other. With an array of rich variable mix, necessary variable interaction terms, and improvement on some past researches whilst inculcating the Autoregressive Distributed Lag (ARDL) methodology, the study establishes the long-run and short-run relationship between financial liberalisation, investment and growth in a time series framework. Secondly, Granger causality is also employed to determine the direction of causality between financial development and economic growth. The results obtained suggest that there is a positive long-run equilibrium relationship between financial liberalisation; investment and growth. The study also finds a causal relationship between financial development and economic growth in Nigeria. This might mean that the financial liberalisation process in Nigeria has stimulated financial development leading to significant contribution to economic growth. The results might lay credence to the view that financial development plays a crucial role in the process of economic development, as such, reducing government inefficiencies might be a choice policy in freeing resources for the development of financial institutions.

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“.....Nevertheless, it remains the only game in town as far as successful economic development is concerned” (McKinnon 1989, p.53).

Introduction and Motivation

Whether or not financial repression³, negatively affects investments and ultimately growth in any economy remains an economic conundrum. Pioneering and championing the intellectual discourse, McKinnon (1973) and Shaw (1973), and their disciple Fry (1989, 1995) submit vehemently that financial liberalisation will help an economy by further deepening its financial sector, enhancing distributive efficiency and augmenting state policy. In short, they advance and postulate that liberalising the financial system is key to achieving rapid economic growth cum investment. Whilst some real world evidential experience for some countries e.g. South Korea, Japan and Taiwan support this assertion (Gibson and Tsakalotos, 1994), somewhat greater circumstantial evidence in Turkey, Chile, Argentina, Bolivia, Uruguay and numerous African countries (Diaz-Alejandro 1985, Moretti 1992, Capoglu 1990, Pill and Pradhan, 1997, Khalid 1999, Ariff and Khalid 2000,; Giovannini,1983 & 1985) suggests otherwise, where financial liberalization has resulted in plummeting growth rates, crucial financial distress, gross macroeconomic instability accompanied with dangerously high interest rates, high inflation rates and sharp exchange rate depreciation and almost total collapse of financial intermediation.

It is no news that the Nigerian state has implemented financial liberalization since the early 1980's in a bid to strengthen the economy and position it towards accelerated economic

³ Financial repression, a term ascribed to and supposedly coined by McKinnon (1973) and Shaw (1973), denotes a multiplicity of government regulations, laws, and other non-market restrictions which tend (combine) to impair the optimum functionings of the financial intermediaries and paraphernalia of an economy.

growth, however, her experience could be dubbed a mixed grill judging by the conclusions of various studies; (Ikhide and Alawode, 2002; Akpan, 2004; Orok-Duke et al, 2009; Nzotta and Okereke, 2009; Okpara, 2010). Building and improving on these earlier studies some of which suffer methodological deficiency (limited data and omitted variable bias), inadequate rigor (descriptive statistical analysis), misleading results and inferences, the authors examine Nigeria's experience with financial liberalisation using updated data and including more variables in a time series analysis. Specifically, by employing sufficient econometric analysis, the authors try to establish the relationship between financial liberalisation and economic growth as well as between financial liberalization and investment.

The study will present a theoretical framework, a literature review, spell out the methods to be used in confirming the scientific guesses, represent the result of the empirics or estimations and conclude with some comments.

Objective of the study

The study seeks to confirm the following conjectural statements;

- A.) Financial liberalisation enhanced economic growth in Nigeria.
- B.) Financial liberalisation increased domestic investment in Nigeria.

Financial Liberalization: Theory, Literature, Experience and Evidence

Financial liberalisation in some quarters is widely thought about as a crucial and inevitable means of accelerating economic development. Rigorously and broadly, it refers to a set of policy prescriptions and reforms designed at deregulating the domestic financial market and opening of the capital account of a country with the view of moving towards a more market-oriented system (Gibson and Tsakalotos, 1994; Johnston and Sundararajan, 1999). . According to Williamson and Mahar (1998), financial repression the antithesis of financial liberalization is manifested in so called less developed countries in the following dimensions; a.) the

government, not market, determine(d/s) who receive(d/s) credit. b.) The government, not market, determine(d/s) interest rates. c) The government determine(d/s) whether new institution would be allowed to enter the financial sector. d) The government laid down details of banks' operations such as who they hired and what salaries were paid. e) The government owned financial institutions. f) The government decide(s/d) who would be allowed to borrow and lend abroad, and on what terms.

Protagonist views and researches on financial liberalization are discussed below under following headings.

The McKinnon-Shaw Hypothesis

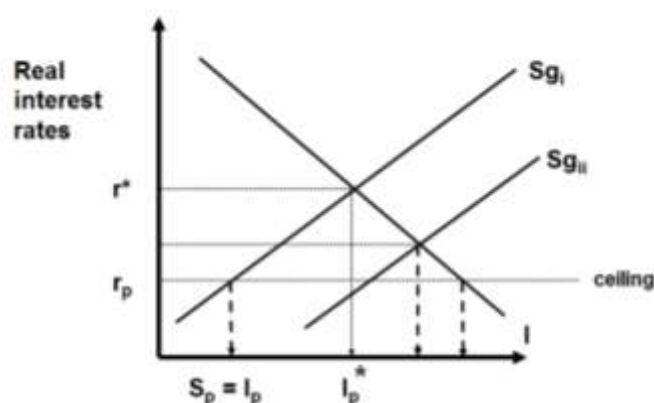
McKinnon (1973) and Shaw (1973) observed the key features of financial systems in LDCs. They noted that the financial systems of LDCs have little institutional diversity i.e. centred on commercial banks and that these banks have miniscule stock of alternative financial instruments. They opine that there exist a strong relationship between the financial system and the governments, with banks often financing government expenditures deducing that, "in fact", the financial system is (over)regulated by the government and this restricts the ability of the banks to lend to potential high returns investment.

Further, they say observe that in many LDCs, government impose extensive restrictions on the operations of banks and that these restrictions can take a number of forms such as interest rate ceilings which are low (and in real terms, sometimes negative), liquidity requirements which effectively force the banks to fund government activities on favourable terms, reserve requirements which force banks to hold reserves at the central bank at low or even zero rates, and active intervention favouring particular sectors or firms inter alia. As such, these restrictions reduces the profitability of banking activities and can be thought of as a "tax" on banks. The "tax" can be effectively a major source of government revenues replacing other

forms of revenue. Collectively, it is these restrictions imposed by the government they call financial repression.

According to McKinnon and Shaw, financial repression explains the key features of LDCs financial structure; flow of funds through the organised sector (banks) is reduced and informal curb markets, which are not subject to control, grow at the expense of the formal system. Therefore, financial repression is viewed as a central part of the failure of LDCs to grow more vigorously; both saving and investment are reduced and the investment that does take place is not the highest return (see Sen and Vaidya, 1997). Similarly, Stiglitz and Weiss (1989) indicate that financial repression reduces the screening and monitoring functions of financial institutions. Moreover, agents are forced into activities, for example, holding more extensive stocks of money than they need for lack of access or confidence in the banks. Figure 1 presents the argument of McKinnon (1973) and Shaw (1973) in more details.

Illustration 1: The McKinnon-Shaw Framework



Sg_i represents the flow of savings associated with different growth rates g_i (that is, conditioned on a particular growth rate), I is the investment demand schedule, interest rate r_p represents the interest rate (in real terms) ceiling. At r_p , the saving rate is S_p and although desired investments are I_p^* actual investments are limited to I_p . The investments which do take place

are rationed according to some, usually non-economic, rule (for example, political) or a preference for riskier investments.

Now consider if the interest rate ceiling is removed; r rises to r^* and, nevertheless, investment rises to I_p^* and savings rises to I_p^* (where $S=I$). Therefore, despite higher real interest rates both savings and investment rise promoting economic growth through a rise in the allocative efficiency of investment. Furthermore, higher levels of economic growth shifts the savings function to S_{g_i} and, thus, the long-term rate of interest is lowered, raising investment and savings further.

The clear policy implications of the foregoing includes the removal of interest rate ceilings and the removal of other "taxes" on banks by removing onerous regulations which hinder the financial market from operating competitively. In addition to increased savings (as emphasised by McKinnon), investment and growth, the removal of interest rate ceilings will deepen integration of the financial and other sectors (as emphasised by Shaw), raise the efficiency of investment and government policy will be improved.

Financial Liberalisation, Savings, Investment, Allocative Efficiency and Economic Growth

As hitherto highlighted, the key measure of financial liberalisation is the removal of restrictions on interest rate. This will in turn increase savings as savings is assumed to be responsive to interest rates and the higher savings rates will finance a higher level of investment (Shrestha, 2005). This view is supported by Reinhart and Tokatlidis (2001) when they opine that financial liberalisation should be expected to lead to higher saving rate as well as higher levels of and more profitable investment. Higher real interest rates tend to attract more savings from households to bank deposits and this makes more loanable funds available for investment. The interest rate represents the price of borrowed money or the opportunity cost of lending money for a given period of time. During this period, the real value of financial

assets can be reduced by inflation and lenders want to be compensated for an expected reduction in the purchasing power of these assets. The real interest rate is thus the rate adjusted with a due compensation for the anticipated inflation (see Bascom 1994, pp. 10; Shrestha 2005, pp. 29).

Several channels through which financial liberalisation can lead to economic growth have been highlighted in the literature. For example, the cost of capital is substantially reduced as foreign investors, maximising the gains of diversification that comes with financial liberalisation, drive up domestic equity prices. This is supported by the argument of Bekaert and Harvey (2000) and Henry (2000) who indicate that the cost of capital reduces after major regulatory reforms. A reduction in the cost of capital increases investment, and if the increased investment is efficient, it will foster economic growth. Similarly, Galindo et al (2002) find that financial liberalisation reduces the cost of capital which in turn enhances the growth rates of economic sectors that for technological reasons depend heavily on foreign finance. However, they conclude that this result is subject to the quality of institutions supporting credit markets.

In a similar argument, Lucas (1990) posit that integration enables capital flows from rich economies to poor economies since the latter has relatively lower capital-labour ratios which should generate higher returns to capital. This increased capital inflow contributes positively to equity prices. In addition, increased access to foreign capital as a result of capital flows should complement limited domestic saving in poor countries and addresses the constraint on investment. This will in turn enhance growth in poor countries and also allow residents of richer countries to get higher returns on their savings invested abroad (Prasad and Rajan, 2008). In this way, an excess of saving over investment in one country finds an outlet in another, leading to efficient allocation of scarce capital (see Obstfeld 1994; Acemoglu and Ziliboti 1997; Klein and Olivei 1999; Levine 2001; Bonfiglioli 2008). However, following the spate of recent financial crises, some researchers argue that the gains of financial liberalisation

have been undermined because capital inflows have been wasted on inappropriate consumption and unproductive investment.

According to Kose et al (2006) liberalisation and integration of the financial system act as a catalyst for certain collateral benefits which could lead to an increase in GDP growth and reduction in consumption volatility. For example, financial liberalisation could generate technology spillover and foster corporate governance and other forms of organisational expertise from advanced economies to poor economies thereby enhancing economic growth. Similarly, financial liberalisation could impose discipline on macroeconomic policies since it increases the potential costs that come with weak policies and improve the gains of good ones. However, while the empirical evidence supports this view, it remains sparse. In contrast, financial liberalisation may impede economic growth in the presence of distortions. It may precipitate financial crisis and misallocation of capital, which are harmful for macroeconomic performance (Bonfiglioli, 2008; Eichengreen, 2001).

Furthermore, the evidence on the relationship between financial liberalisation and economic growth is mixed. For example, Bekaert and Harvey (2000) using regression of average annual per capita GDP growth on a number of variables observe that the financial liberalisation indicator displays a consistently positive and statistically significant coefficient. In fact, they show that financial liberalisation leads to an increase in per capita GDP growth of anywhere from 1.5% to as large as 2.3% per year. Similarly, Fowowe (2008) finds significant positive relationship between financial liberalisation and economic growth. Using a panel data of 19 Sub-Saharan African countries with two indexes to measure financial liberalisation, he concludes that the relationship is positive. This is consistent with the findings of Hermes and Lensink (2005) that use a dataset for measuring financial liberalisation for a sample of 25 developing countries over the period 1973-1996. Their result suggests a positive relationship between financial liberalisation and economic growth measured by per capita GDP growth. Also, Quinn (1997) uses data over the period 1960-1989 for 66 countries and finds a

statistically significant positive relationship between his financial liberalisation indicator and growth.

In contrast, a number of other studies have found little or no evidence supporting the link between financial liberalisation and economic growth. For example, Rodrik (1998) uses data for about 100 countries for 1975-1989 to analyse the relationship between financial liberalisation and economic growth. He regresses the growth rate of GDP per capital on a binary indicator of financial openness constructed by the IMF, controlling for determinants drawn largely from the empirical literature on economic growth. His result suggests no association between financial openness and growth and questions whether capital flows spur economic growth. In addition, mixed findings on the relationship between financial liberalisation and economic growth have been reported by other studies such as Kraay (1998), Klein and Olivei (1999), Reisen and Soto (2001) and, Khalid (2004).

It should be noted, however, that even studies that do find a positive relationship between financial liberalisation and economic growth suffer from potential endogeneity, which ultimately may be difficult to control for if one relies on macroeconomic data. Using disaggregated data may be a plausible solution; however, for most countries this type of data is often largely unavailable.

Talking about allocative efficiency, Bekaert et al (2001) clarifies that financial liberalisation can enhance allocative efficiency through the development or deepening of the financial system and improved market efficiency. This view was corroborated by Wurgler (2000) who provides an empirical link between financial development and efficiency of credit allocation. Financial liberalisation can also generate international competition which would improve the functioning of domestic financial systems, thereby increasing savings and allocation (Klein and Olivei, 1999; Levine, 2001). Similar several researches and studies such as (Shrestha 2005, Kukukenova 2011) McKinnon 1973; Shaw 1973). Galindo et al (2007) Laeven (2002) support this proposition Nevertheless, it is worthy of note that some researches most notably Stiglitz

and Weiss (1981) warn that liberalisation does not end inefficiencies of credit rationing due to asymmetries in information which reduces allocative efficiency in free credit markets.

Somewhat retracting on his hitherto unguarded generalization and “labelization” of the benefits of financial liberalization, upon realization of the failure of financial liberalization experience of some countries, McKinnon (1991) argues that sequencing is key in any financial liberalization process, that it is not just enough to simply dislodge interest rate ceiling, it has to be done sequentially. In other words there are somewhat important preconditions. This approach indicates that there are macroeconomic prerequisites to liberalisation (McKinon 1982; 1991). He vehemently contends that the order and sequencing of the liberalisation process is very crucial in reaping the potential benefits of financial liberalisation while avoiding its downside. Gibson and Tsakalotos (1994) Krugman and Obstfeld (2003) echo such views. They maintain that there is indeed an optimal path for liberalising the domestic real sector, the domestic financial sector, the external real sector and the external financial sector and that following the wrong path would encourage reckless lending by domestic financial institutions as their ability to borrow abroad is increased, consequentially, any slowdown in the economy will trigger capital flight, exposing domestic banks to insolvency, particularly, domestic banks will be unable to compete efficiently with foreign banks because they are still highly repressed which works to increase the cost of intermediation. Corroboratingly, if a developing country decides to open the financial system before liberalising the domestic real sector, then there is the tendency for credit to flow to industries which are only considered profitable because relative prices are distorted. (Gibson and Tsakalotos, 1994).

Nevertheless, the correct order of liberalising the domestic financial sector and the external real sector is, however, not entirely clear. This is because liberalising the domestic financial sector before trade can cause credit to again flow to tradeables sector which is only profitable because of barriers to trade. Similarly, if trade is liberalised before the domestic financial sector, then this could impede the competitiveness of domestic industries in world markets.

Notwithstanding to McKinnon, financial liberalization... remains the only game in town.

Methods(s)

The empirical link between financial liberalisation and economic growth as well as investment is estimated using the Ordinary Least Square-based Autoregressive Distributive Lag (ARDL) model (approach to cointegration) which circumvents most of the econometric problems such as endogeneity that often beset many empirical studies (Pesaran and Pesaran, 1997). Granger Causality test will be used to complement the ARDL estimation approach. The time series analysis covers the annual period of 1970-2009 and is largely based on secondary data. The data used in this study are obtained from different sources, including various publications of the Central Bank of Nigeria (CBN) statistical bulletins and annual reports, National Bureau of Statistics (NBS), World Bank World Development Indicator (WDI) database, IMF International Financial Statistics (IFS) database and Africa Development Indicators database. The data for civil liberty is from the Freedom House while data for the financial liberalisation index used in this study is from the Chinn-Ito index. A summary statistics of the data set is presented in table A3 in appendix A. Unit root tests are also conducted for all the variables used in this study.

Measuring Financial Liberalisation

The literature is awash with different indexes constructed to capture the extent of financial openness (liberalization) in an economic over time, as such, a multiplicity of measures have

been employed in studies investigating the effect of financial liberalisation. However, such measures have been found not to completely capture the complexity of real world capital controls (see Edison and Warnock, 2001; Edwards, 2001; Chin and Ito, 2006). In this study Chin-Ito index otherwise called the KAOPEN⁴, constructed by Chinn and Ito (2002, 2006, and 2007) is adopted.

KAOPEN is a de jure measure of financial liberalisation that is based on the binary dummy variables that arrange into a systematic code the restrictions on cross border financial transactions reported in the International Monetary Fund's (IMF's) Annual Report on Exchange Arrangement and Exchange Restrictions (AREAER). It is the first principal component of four types of restrictions on cross border capital transactions reported in AREAER which includes: the presence of multiple exchange rates, restrictions on current account and capital account transactions, as well as requirements on surrender of export proceeds (see Chinn and Ito, 2007, pp. 5).

KAOPEN has been found to overcome the limitation noted above and it is robust in that it measures the intensity and extensity of capital controls. Another advantage of this index is that it has a wide coverage of over 180 countries and a long time period from 1970 to 2009.

Econometric Growth Model

In analysing the relationship between financial liberalisation and economic growth, the following baseline model is estimated:

$$\text{GRGDP}_t = \lambda_0 + \lambda_1 \text{FINLIB}_t + \lambda_2 \text{FDEPTH}_t + \lambda_3 \text{RINTEREST}_t + \lambda_4 \text{INVEST}_t + \lambda_5 \text{INFLATION}_t + \lambda_6 \text{GOVEXPEN}_t + \varepsilon_t \quad (1)$$

Where,

GRGDP = annual growth rate of real GDP

⁴ KAOPEN is also referred to as the Chinn-Ito Index.

FINLIB = financial liberalisation index (KAOPEN)

FDEPTH = financial depth proxied by credit to the private sector

RINTEREST = real rate of interest

INVEST = investment measured as ratio of investment to GDP

INFLATION = inflation rate based on consumer price index

GOVEXPEN = government expenditure as a ratio of GDP

ϵ_t is the white noise with mean 0 and variance σ^2 and it is normally distributed and λ_0 to λ_6 are the coefficients of the respective variables.

The dependent variable; the growth rate of GDP measures economic growth and it is determined by the right hand variables which are largely drawn from the literature on financial liberalisation and economic growth. As mentioned above, the financial liberalisation index used throughout this study is the index, KAOPEN constructed by Chinn and Ito. This index has an ambiguous a priori sign owing to the unsettled debates on financial liberalisation and economic growth in the economic literature some of which have been highlighted in this study. Similarly, the sign of the coefficient of the financial depth measure is ambiguous a priori.

The real interest rate is included to capture the effect of interest rate liberalisation on economic growth. It is expected that the coefficient of the real interest rate would be positive. A positive relationship between real interest rate and economic growth will support the hypothesis on interest rate liberalisation postulated by McKinnon (1973) and Shaw (1973).

The rationale for the inclusion of inflation is to capture the effect of macroeconomic stability as well as the effect on various components of money. Inflation affects the holding of financial assets by agents and tends to encourage the holding of currency and discourage the holding of quasi-money (Ikhide, 1992; Odhiambo, 2005). English (1999) argues that when the rate of inflation is high, households tend to substitute purchased transaction for money balances

thereby enhancing savings and providing funds for investment and economic growth. In this case the relationship between inflation and economic growth is positive. A summary of the theories on the relationship between inflation and growth by Vikesh and Subrina (2004) also indicates that the relation can be positive. They argue that if a firm, for example, has entered a contract to supply goods at a future date at an agreed price, then output will not decline even if overall prices of goods in the economy have risen. The producer is under obligation to honour the contract made with the consumer. By contrast, uncertainty about the profitability of investment projects in the future could arise as a result of high inflation in the economy and this could have a negative impact on economic growth. This is especially the case if high inflation comes with increased price variability (Misati and Nyamongo, 2011). Thus, there is uncertainty surrounding the prediction of the inflation rate a priori.

Furthermore, economic theory suggests that the relationship between factor accumulation (investment) and economic growth is expected to be positive. For government expenditure as a ratio of GDP, the relationship with economic growth is ambiguous a priori; the direction of the relationship largely depends on whether government expenditure crowds in or crowds out investment. On the one hand, government expenditure can erode the efficient allocation of resources or crowd out resources that are available for more efficient and profitable sectors of the economy, consequently resulting in a negative impact on growth. However, if the government decides to focus its expenditure on nonrivalrous and nonexcludable public services, investment will be enhanced thereby fostering economic growth.

Additionally Additively, two interaction terms; FL*CIVLIB and FL*INFLATION are created. (CIVLIB) Civil liberty stands as an institutional variable while (INFLATION) inflation rate stands as macroeconomic stability variable. The interactions were created owing to the fact that recent discourse on financial liberalization has seen economists and researchers alike pinpoint macroeconomic instability as an undermining factor and a crises vulnerability multiplier as far as financial liberalisation impact is concerned. They also point fingers at the

institutional framework of/in a country as a crucial factor if the benefits of financial reforms to be reaped. Still on the created interaction terms, the study makes use of only one dimension of institution whereas some other studies used the index constructed by the International Country Risk Guide (ICRG)⁵ which is more encompassing. In the same vein, only one aspect of policy variable is adopted in capturing macroeconomic instability unlike Asante (2000) who create an index for macroeconomic instability using the first principal component of inflation rate, external debt as a percentage of GDP, moving coefficient of variation of real exchange rate and black market premium. The use of only one variable to capture either of institution or macroeconomic environment is largely due to non-availability of data and as such a caveat that results would have to be interpreted with caution. A significant financial liberalisation variable combined with a negative and statistically significant FL*INFLATION term would indicate that financial liberalisation only fosters economic growth in an economy with sound macroeconomic environment while a positive and significant FL*CIVLIB term will provide support that financial liberalisation is effective only in an environment with quality institution.

Econometric Investment Model

Economic theory advice that financial liberalisation enhances efficient allocation of resources and provides the platform for harnessing savings to achieve high returns investment. A more liberalised financial system is thus viewed to stimulate capital accumulation that will accelerate economic growth. To examine the relationship between financial liberalisation and investment, we analyse the following relationship:

$$INVEST_t = \gamma_0 + \gamma_1 FINLIB_t + \gamma_2 FDEPTH_t + \gamma_3 LENDINGRATE_t + \gamma_4 GOVEXPEN_t + \gamma_5 TDCB_t + \gamma_6 EXTDEBT_t + \epsilon_t$$

(2)

Where,

⁵ The ICRG starts from 1984 whereas this study covers the period from 1970 to 2009.

INVEST = Domestic Investment measured as ratio of investment to GDP

LENDINGRATE = real lending rate

TDCB = total deposit of commercial banks

EXTDEBT = ratio of debt service to export of goods and services

ϵ_t is the white noise and γ_0 to γ_6 are the coefficients of the respective variables. Other variables are as defined above.

In the above equation, the coefficient of the financial liberalisation index is ambiguous a priori following the arguments presented earlier in this study. This is also the case for the financial depth indicator. The real lending rate is expected to be negatively linked to investment. This is because investors tend to invest less when interest rates increase, because the cost of borrowing funds increases. Moreover, firms often have to devote a substantial portion of their resources to paying interest on existing debt, thereby eroding the amount of funds available for meaningful investment.

For reasons mentioned earlier, the effect of government expenditure is ambiguous. An increase in the total deposit of commercial bank is expected to increase investment as more funds are made available to investors. External debt is expected to be harmful to investment and should therefore have a negative coefficient. This is because debt obligations can suck up a substantial amount of important resources that could be harnessed to drive investment; increased debt service moves resources away from economically productive uses.

Stationarity Test

One of the most popular tests for stationarity (unit root test) is the Augmented Dickey-Fuller (ADF) test, a parametric approach originally proposed by Dickey and Fuller (1979, 1981). However, it has been shown, through Monte Carlo simulations, that the ADF test has very low power. According to Pesaran and Pesaran (1997), although the ADF has good power characteristics as compared to other unit root tests in the literature, it is nevertheless not very powerful in finite samples (pp. 213). In fact, if the order of augmentation of the ADF test is large relative to the sample size, the test has been found to have almost no power.

Furthermore, the ADF test, though is able to accommodate error autocorrelation (Peseran & Pesaran, 1997), does not discriminate clearly between stationary and non-stationary series with a higher degree of autocorrelation (West, 1988) and is sensitive to structural breaks. Hence, this study supplements the ADF test with the semi-parametric approach of Phillips and Perron (1988). The Phillips-Perron (PP) test of stationarity has been found to give robust estimates in the presence of serial correlation and time dependent heteroskedasticity.

The results of the ADF test with intercept as well as with intercept and trend are presented in table 1 below while the PP test is captured in table A2 in appendix A. The results of the unit root tests using the ADF test statistics indicates that 8 out of the 12 variables are integrated of order one I(1), which implies they are non-stationary. Four of the variables, namely INFLATION, RINTEREST, CIVLIB and TDCB are integrated of order zero I(0), meaning they are stationary. The PP tests also suggest that 9 variables are I(1) while 3 variables are I(0). Moreover, while CIVLIB is I(0) under the ADF test it is shown to be I(1) under the PP test. However, the estimation method employed in this study is valid irrespective of whether the regressors are I(0) or I(1). Therefore, we can conclude that our variables satisfy a basic requirement for the analysis used in this study.

TABLE 1: Results of Unit Root Test of Variables - ADF Test

Series	ADF test- Intercept		Conclusion	ADF test-Intercept & Trend		Conclusion
	Level	1 st Difference		Level	1 st Difference	
GRGDP	-2.086	-4.784***	I(1)	-2.334	-4.615***	I(1)
FINLIB	-1.478	-5.388***	I(1)	-1.786	-5.353***	I(1)
INVEST	-1.538	-6.164***	I(1)	-2.619	-4.456***	I(1)

INFLATION	-3.612***	-	I(0)	-3.561**	-	I(0)
RINTEREST	-3.430**	-	I(0)	-3.521*	-	I(0)
LENDINGRATE	-1.560	-6.805***	I(1)	-1.899	-6.763***	I(1)
GOVEXPEN	-2.201	-7.551***	I(1)	-2.350	-7.446***	I(1)
EXTDEBT	-1.108	-5.818***	I(1)	-0.629	-6.164***	I(1)
CIVLIB	-3.261**	-	I(0)	-3.286*	-	I(0)
OPEN	-1.885	-7.244***	I(1)	-2.004	-7.293***	I(1)
FDEPTH	0.363	-4.259***	I(1)	-0.148	-4.399***	I(1)
TDCB	-3.951***	-	I(0)	-3.914***	-	I(0)

Note: **, * indicate 1% and 5% significance levels respectively.

The ARDL Approach

The ARDL approach was developed by Pesaran and Shin (1995), Pesaran et al (1996), Pesaran and Pesaran (1997) and Pesaran et al (2001). A number of recent studies have used the ARDL approach as a better approach to cointegration than such methods as Engle and Granger (1987), Johansen (1991, 1995), Phillips and Hansen (1990) and Johansen-Juselius (1990). The ARDL approach has been recognised to have a number of distinctive merits.

First, the ARDL approach is valid irrespective of whether the underlying variables are purely I(0), purely I(1) or fractionally integrated. Second, the long run and short run components of the model can be estimated simultaneously using the ARDL approach. As noted by Banerjee et al (1993) the ARDL approach can be used to obtain a dynamic error correction model (ECM) through a simple linear transformation of the model. The ECM combines the short run dynamics with the long run equilibrium without losing long run information (Shrestha,

2005). Moreover, it allows for the inclusion of deterministic or exogenous regressors in the model (Marashdeh, 2005). Third, unlike most cointegration approach, the ARDL approach is robust in small samples (such as this study). Fourth, it is robust against econometric issues such as weak exogeneity, simultaneous equation bias, serial correlation and endogeneity as it has been found that its long run estimates and test statistics remain valid even in the presence of these issues (see Pesaran and Shin, 1995; Gounder, 2001). Fifth, unlike most conventional methods which are sensitive to the non-normality of the data, the ARDL approach is valid for analysing non-normal data. Sixth, to capture the data generating process in a general-to-specific modelling framework the ARDL approach uses sufficient number of lags (Shrestha, 2005).

The ECM is a representation of a cointegrated system that makes explicit the idea of moving together over time. To illustrate, consider the model:

$$(3) \quad Y_t = \beta + \omega X_t + \psi Z_t + W_t$$

Where Y_t , X_t and Z_t represent different time series and W_t is white noise; β , ω and ψ are the parameters. The ECM involves estimation of the following version of equation (3):

$$(4) \quad \Delta Y_t = \beta_0 + \sum_{i=1}^p \omega_i \Delta Y_{t-i} + \sum_{i=1}^p \psi_i \Delta X_{t-i} + \sum_{i=1}^p \xi_i \Delta Z_{t-i} + \delta_1 Y_{t-1} + \delta_2 X_{t-1} + \delta_3 Z_{t-1} + u_t$$

In the above equation ω , ψ and ξ are the short run coefficients of the ARDL model while the δ 's capture the long run relationships. The maximum lag to be used is represented by p . The ARDL model estimates $(p + 1)^k$ number of regressions to obtain optimal lag length for each variable, where k is the number of variables in the equation. Because annual data are used in this study, we select 2 as the maximum order of the lags to be used⁶.

⁶ For quarterly data, 4 is selected as the maximum lag (see Peseran and Pesaran, 1997).

The ARDL approach involves two stages for estimating the long run relationship between the variables. The first stage involves testing the null hypothesis of non-existence of the long run relationship given by:

$$H_0: \delta_1 = \delta_2 = \delta_3 = 0$$

This hypothesis is tested against the alternative of the existence of a cointegration relationship, that is, the δ 's are jointly different from zero. This is achieved by computing the F-statistic. However, this F-statistic has a non-standard distribution irrespective of whether the variables are stationary or non-stationary. The computed F-statistic is compared to two sets of critical value band tabulated by Pesaran and Pesaran (1997). The upper bound assumes that all the variables are I(1) while the lower bound assumes all the variables are I(0). The null hypothesis is rejected in favour of the alternative hypothesis if the computed F-statistic is greater than the upper bound, thus, establishing that the variables are cointegrated. In contrast, if the F-statistic is less than the lower bound we fail to reject the null hypothesis of no cointegration. The result is inconclusive if the F-statistic falls within the two critical values (ibid, pp. 304).

In the second stage of the ARDL estimation procedure, the long run coefficients are estimated with the associated short run ECM. The lag selection criteria of the model can be based on Akaike's Information Criterion (AIC) or Schwartz-Bayesian Criterion (SBC). However, in this study we select the model based on SBC as this statistic has been found to have a parsimonious specification that selects the smallest possible lag length (Pesaran and Smith, 1998).

Furthermore, to establish the reliability and appropriateness of our model we conduct diagnostic tests and stability tests. Serial correlation, functional form, normality and heteroscedasticity tests are examined using the diagnostic tests⁷. The stability test utilizes the

⁷ The diagnostic tests is based on the Lagrange Multiplier test of residual serial correlation, Ramsey's Reset test using the square of the fitted values for functional form, test of skewness and kurtosis of residuals for normality test, and regression of squared residuals on squared fitted values for heteroskedasticity test.

cumulative sum of recursive residuals (CUSUM) and the cumulative sum of squares of recursive residuals (CUSUMSQ) proposed by Brown et al (1975). The estimation is conducted using Microfit 4.0.

RESULTS AND INTERPRETATION

The first step in the ARDL estimation approach is to test the joint significance of the lagged level using the F-statistic which implies the existence of a long run relationship among the variables. The results of the F-statistic with the associated ARDL model selected based on SBC for the five regressions are reported in table 2.

TABLE 2 : F-test for the Existence of a Long Run Relationship among Variables

Regression	Number of regressors	ARDL Model Selected	The calculated F-statistics
1	6	(2,2,0,1,1,0,1)	5.707***
2	7	(2,2,0,1,1,0,1,0)	5.160***
3	8	(2,2,0,0,1,0,1,0,2)	4.179**
4	9	(2,2,0,0,2,2,2,2,1)	3.524**
5	8	(2,2,0,0,2,0,1,0,1)	3.872**
6	9	(2,0,0,0,2,0,1,0,1,2)	3.261*
7	6	(1,0,0,1,0,0,0)	3.673**
8	7	(1,1,0,1,2,0,2,2)	6.271***
9	8	(1,1,2,2,1,0,2,2,2)	6.017***

Note: *, **, *** denote significance at 10%, 5% and 1% levels respectively. The relevant critical value bounds are obtained from Pesaran and Pesaran (1997, pp. 478). The numbers in parenthesis separated by commas are the lags for the variables in the equation listed in the same order.

The results show that we reject the null of no cointegration amongst the variables at the 1% significance level for regressions 1, 2, 8 & 9, at the 5% level for regressions 3-5 and 7, and at the 10% level for regression 6. Thus, we conclude that there is a long run relation between the variables used in all the regressions.

Financial Liberalisation and Economic Growth

Here, we estimate the long-run relation between financial liberalisation policy and economic growth. As indicated earlier, the baseline economic growth model used in this study is given below. Our variable of interest is FINLIB and five other control variables are selected based on the existing literature. The results of the long run coefficient estimates based on the equation below and its modifications are presented in table 3.

$$GRGDP_t = \lambda_0 + \lambda_1 FINLIB_t + \lambda_2 FDEPTH_t + \lambda_3 RINTEREST_t + \lambda_4 INVEST_t + \lambda_5 INFLATION_t + \lambda_6 GOVEXPEN_t + \varepsilon_t$$

Regression (1) indicates that the financial liberalisation index is positive and has a statistically significant (at the 1% level) effect on real GDP growth. This implies that there is a significant long run effect of financial liberalisation on economic growth. In particular, a unit change in the financial liberalisation index leads to about 5.9% increase in real GDP growth, after controlling for the other variables. Similarly, the financial depth measure carries a positive sign, which shows that a more developed financial system leads to higher economic growth in Nigeria. However, it has an insignificant coefficient.

TABLE 3 : Estimated Long Run Coefficients of the Growth Model

Dependent Variable: Growth Rate of Real GDP						
REGRESSOR	(1)	(2)	(3)	(4)	(5)	(6)
INTERCEPT	30.321 (8.062)	32.323 (8.120)	42.689 (5.896)	60.139 (4.509)	20.747 (4.369)	27.667 (2.642)
FINLIB	5.965*** (4.664)	6.088*** (4.897)	19.192*** (3.049)	34.899*** (3.305)	7.177*** (5.092)	10.882 (1.587)
FDEPTH	0.129 (1.677)	0.145* (1.917)	0.136* (1.869)	0.146** (2.632)	0.171** (2.170)	0.189** (2.307)
RINTEREST	-0.249*** (-3.670)	-0.234*** (-3.538)	-0.098 (-1.442)	0.015 (0.271)	-0.160** (-2.771)	-0.111 (-1.600)
INVEST	0.417*** (3.680)	0.409*** (3.734)	0.496*** (4.343)	0.587** (2.538)	0.780*** (3.165)	0.846*** (3.452)
INFLATION	-4.941*** (-4.087)	-4.281*** (-3.367)	-5.174*** (-2.940)	-8.593** (-2.235)	-5.330*** (-4.263)	-4.642*** (-3.067)
GOVEXPEN	-2.075*** (-6.436)	-2.262*** (-6.515)	-2.562*** (-6.937)	-2.869*** (-5.487)	-2.534*** (-4.969)	-2.827*** (-5.258)
OPEN		-0.037 (-1.288)	-0.101** (-2.602)	-0.191*** (-4.680)	-0.004 (-0.155)	-0.022 (-0.572)

CIVLIB					2.628** (2.735)	1.212 (0.560)
FL*INFLATN.			-4.16** (-2.158)	-9.309** (-2.832)		
EXTDEBT				0.118E-3 (0.008)		
FL*CIVLIB						-0.845 (-0.578)
No. of Obs.	38	38	38	38	38	38
Adjusted-R ²	0.58	0.59	0.62	0.76	0.65	0.65
F-statistic	4.935***	4.817***	4.824***	5.813***	5.304***	5.061***
Serial Correl.	F=0.037	F=0.345	F=0.262	F=0.588	F=0.196	F=0.395
Funct. Form	F=3.838*	F=1.798	F=3.069*	F=0.736	F=4.264*	F=0.879
Normality	LM=0.600	LM=0.548	LM=0.554	LM=0.070	LM=1.255	LM=1.210
Heteroscedas.	F=0.045	F=0.402	F=0.066	F=0.255	F=0.003	F=0.002
DW-statistic	1.913	1.811	1.770	2.302	2.071	2.132

Note: *, **, *** denote significance at 10%, 5% and 1% levels respectively.

The coefficient of the real interest rate carries a negative sign and is significant. This suggests that, as the cost of borrowing increases, the incentive of firms to invest reduces, hampering economic growth. However, this result contradicts the Mckinnon-Shaw argument. Investment has the expected positive sign and is significantly related to Nigeria's economic growth. The coefficient of inflation is negative and significant and implies that bad macroeconomic environment is detrimental to economic growth in Nigeria. Similarly, government expenditure exerts a negative and significant impact on economic growth. This is consistent with the neoclassical argument that increased government size tend to crowd out private investment, thereby impeding growth.

It is worth noting that regression (1) has a relatively high adjusted-R² of 0.58 indicating that our model accounts for about 58% of the variation in Nigeria's economic growth. Also, the regression passes all the diagnostic tests except functional form test which it fails marginally

at the 10%. Moreover, the CUSUM and CUSUMSQ plots presented in appendix B indicate that our model is not misspecified and there is no structural instability. Furthermore, the F-statistic of the joint significance of the regressors is significant at the 1% level.

The estimated ECM of the selected ARDL model is presented in table 4. The ECM shows the speed of adjustment to remove disequilibrium in the model following a disturbance. The ECM is negative as expected and significant at the 1% level, establishing the existence of a short run relationship. However, the result of the ECM model suggests that there is an overshooting of GDP growth (the coefficient of the ECM term should be negative and significant with a value between 0 and -1) in the year following a shock. The ECM also shows that a change in financial liberalisation index (ΔFINLIB) has a statistically significant and positive effect on the change in the growth rate of GDP ($\Delta\text{GDP GROWTH}$). This implies that a change in the financial liberalisation index is associated with a change in the growth rate of GDP in the short-run. However, the change in the lag of FINLIB, i.e., $\Delta\text{FINLIB1}$ has a negative impact on the growth rate of GDP.

Following the arguments in the extant literature on trade and growth, we introduce the trade variable OPEN in regression (2). Our results suggest that the financial liberalisation index is positive and statistically significant both in the long-run and short-run. However, the coefficient on OPEN is negative, indicating that trade openness exerts a negative impact on economic growth. A plausible explanation for this is when the export of a country does not generate sufficient income to support its import. However, the coefficient of OPEN is insignificant. It should be noted that regression (2) satisfies all the econometric tests and has a relatively high adjusted- R^2 .

Previously, we highlighted that macroeconomic instability has been advanced as one of the reasons why the benefit of financial liberalisation has been undermined. Thus, in regression (3), we introduce an interaction term between the financial liberalisation index and the

macroeconomic instability variable to test the hypothesis that macroeconomic stability is a prerequisite for financial liberalisation to enhance growth. As mentioned earlier, we use the rate of inflation to capture the state of the macroeconomic environment. The result shows that the financial liberalisation index is positive and significant while the interaction term is negative and significant. This indicates that the effect of financial liberalisation on growth is decreasing with the level of macroeconomic instability and is consistent with the hypothesis that the effectiveness of financial liberalisation is conditioned upon macroeconomic stability.

The financial depth measure and investment are positive and significant. The coefficients of the real interest rate, inflation and government expenditure are negative and significant while trade openness is negative and becomes significant. In addition, regression (3) passes all the diagnostic tests, model specification and structural stability tests and the ECM is negative and significant at the 1% level.

TABLE 4 : Error Correction Representation of the Selected ARDL Growth Model

Dependent Variable: Δ Growth Rate of Real GDP						
Regressor	(1)	(2)	(3)	(4)	(5)	(6)
Δ INTERCEPT	47.821 (6.466)	52.110 (6.448)	69.378 (5.332)	121.131 (4.229)	33.472 (3.803)	43.115 (2.526)
Δ GDP GROWTH1	0.326*** (3.051)	0.339*** (3.196)	0.288** (2.752)	0.448*** (3.824)	0.241** (2.354)	0.251** (2.426)
Δ FIN. LIB	7.172** (2.269)	7.985** (2.507)	18.781* (2.050)	42.402*** (3.486)	3.958 (1.382)	16.96 (1.577)
Δ FIN. LIB1	-7.001** (-2.743)	-6.346** (-2.468)	-12.967*** (-3.187)	-33.720*** (-3.212)	-6.502** (-2.418)	
Δ F.DEPTH	0.203 (1.696)	0.233* (1.934)	0.221* (1.895)	0.294** (2.606)	0.276** (2.160)	0.294** (2.277)
Δ RIR	-0.285*** (-2.930)	-0.251** (-2.516)	-0.160 (-1.432)	0.031 (0.270)	-0.258** (-2.730)	-0.174 (-1.598)
Δ INVESTMENT	-0.045 (-0.229)	-0.075 (-0.385)	0.002 (0.011)	-0.177 (-0.830)	-0.216 (-1.154)	-0.161 (-0.831)

Δ INVESTMNT1				-0.595* (-1.748)	-0.563* (-1.741)	-0.546* (-1.733)
Δ INFLATION	-7.793*** (-3.805)	-6.901*** (-3.224)	-8.409*** (-2.823)	-12.202*** (-3.248)	-8.600*** (-4.055)	-7.233*** (-2.989)
Δ INFLATION1				7.016* (1.766)		
Δ GOVEX	-2.579*** (-5.103)	-2.711*** (-5.319)	-3.126*** (-5.934)	-3.121*** (-5.056)	-2.516*** (-4.671)	-2.791*** (-4.675)
Δ GOVEX1				0.966* (1.981)		
Δ OPEN		-0.059 (-1.273)	-0.165** (-2.586)	0.027 (0.260)	-0.007 (-0.155)	-0.035 (-0.567)
OPEN1				0.239** (2.186)		
Δ INSTITUTION					1.388 (0.945)	-1.503 (-0.560)
Δ FL*INFLATIO N			-3.488 (-1.279)	-9.204** (-2.811)		
Δ FL*INFLATIO N1			1.990** (2.323)	8.755** (2.838)		
Δ DEBT				-0.113*** (-3.151)		
Δ FL*INSTITUT.						-2.520 (-1.181)
Δ FL*INSTITUT. 1						-1.032** (-2.714)
ECM _{t-1}	-1.577*** (-8.905)	-1.612*** (-9.108)	-1.625*** (-9.477)	-1.617*** (-11.651)	-1.613*** (-9.731)	-1.558*** (-9.374)
No. of Obs.	38	38	38	38	38	38
Adjusted-R ²	0.79	0.79	0.81	0.88	0.82	0.82
F-statistic	16.732***	15.609***	14.453***	17.001***	15.721***	14.615***

Note: *, **, *** denote significance at 10%, 5% and 1% levels respectively.

In regression (4) we introduce external debt into our model in order to ascertain the robustness of our results. The results are similar, suggesting that our results are robust to alternative specifications of the model. In particular, the coefficient on our financial liberalisation index is positive and significant both in the long- and short-run. Similarly, other variables maintain the same sign except the real interest rate which becomes positive, however, with an insignificant impact.

Furthermore, in order to test whether better institutional environment is a requirement for financial liberalisation to be effective in Nigeria, we first introduce in regression (5) the institution variable and then incorporate in regression (6) the financial liberalisation-institution interaction term. Recall that civil liberty is used in this study as a proxy for institution. The estimated long run relationship is captured in table 5.2. Regression (5) indicates that the coefficient on institution is positive and significant; suggesting that institution exerts a positive impact on economic growth in Nigeria in the long-run. Moreover, the financial liberalisation index has a positive and significant coefficient. However, in regression (6) the financial liberalisation index becomes insignificant when the interaction term is incorporated while the interaction term is negative and insignificant which implies, surprisingly, that financial liberalisation is not conditioned on better institution. The coefficients of the real interest rate, inflation rate and government expenditure are negative and statistically significant while financial depth and investment are positive and significant. Trade openness has a negative but insignificant coefficient.

Regressions (5) and (6) are not subject to any econometric problems and they both satisfy the diagnostic tests as well as the model specification and structural stability tests. Table 5.3 presents the ECM representation of the model and it indicates that the ECM is negative and significant at the 1% level for both regressions.

Financial Liberalisation and Investment

One of the hypotheses of financial liberalisation is that financial liberalisation leads to a more efficient allocation of capital and helps in harnessing savings which would in turn increase investment. By reducing transaction costs and removing liquidity constraint faced by investors, a more liberalised financial system should lead to increased capital accumulation which in turn would enhance economic growth. In order to analyse this relation, we estimate equation (2) given in the previous chapter:

$$\text{INVEST}_t = \gamma_0 + \gamma_1 \text{FINLIB}_t + \gamma_2 \text{FDEPTH}_t + \gamma_3 \text{LENDINGRATE}_t + \gamma_4 \text{GOVEXPEN}_t + \gamma_5 \text{TDCB}_t + \gamma_6 \text{EXTDEBT}_t + \epsilon_t$$

The estimated long run and ECM coefficients are presented in tables 5 and 6 below. Our baseline investment model is captured in regression (7) and incorporates the financial liberalisation index along with five control variables. The result indicates that the financial liberalisation index carries a positive and significant coefficient, which implies that financial liberalisation has a positive long-run impact on investment in Nigeria. In particular, a unit increase in the financial liberalisation index leads to about 1.4% rise in investment. This result supports the financial liberalisation hypothesis of McKinnon and Shaw. In addition, financial liberalisation has a positive and significant effect on investment in the short-run as captured by the ECM in table 6.

TABLE 5: Estimated Long-Run Coefficients of the Investment Model

Dependent Variable: INVESTMENT			
REGRESSOR	(7)	(8)	(9)
INTERCEPT	15.348 (3.938)	13.081 (3.947)	17.208 (6.358)
FINLIB	1.362*** (5.399)	1.587*** (6.675)	1.433*** (7.268)
FDEPTH	0.356 (0.230)	0.605 (0.475)	1.595 (1.582)
LENDING RATE	-0.780*** (-3.540)	-0.335* (-1.786)	-0.547*** (-3.479)
GOVEXPEN	-2.129*** (-4.620)	-2.271*** (-6.210)	-2.438*** (-7.112)

TDCB	0.239*** (2.963)	0.138** (2.578)	0.188*** (4.197)
EXTDEBT	-4.600*** (-4.374)	-4.664*** (-6.570)	-4.363*** (-7.529)
CIVLIB		0.606** (2.430)	0.892* (1.943)
INFLATION			-0.023 (-1.434)
No. of Obs.	38	38	38
Adjusted-R ²	0.88	0.95	0.96
F-statistic	34.815***	41.407***	44.987***
Serial Correl.	F=2.062	F=2.253	F=1.806
Funct. Form	F=1.394	3.125*	F=0.099
Normality	LM=1.192	LM=1.639	LM=1.665
Heteroscedas.	F=4.071*	F=0.001	F=0.151
DW-statistic	2.350	2.447	2.509

Note: *, **, *** denote significance at 10%, 5% and 1% levels respectively.

TABLE 6: Error Correction Representation of the Selected ARDL Investment Model

Dependent Variable: Δ INVESTMENT			
REGRESSOR	(7)	(8)	(9)
Δ INTERCEPT	10.157 (3.425)	9.494 (3.127)	14.384 (5.097)
Δ FIN. LIB.	0.901*** (3.951)	0.776*** (4.314)	0.467** (2.595)
Δ FDEPTH	0.235 (0.233)	0.439 (0.479)	0.945 (0.673)
Δ FDEPTH1			-3.937*** (-3.176)

Δ LENDING RATE	-0.205 (-1.217)	-0.040 (-0.291)	-0.181 (-1.435)
Δ LENDING RATE1			0.189 (1.373)
Δ GOV. EXPEN	-1.409*** (-3.544)	-1.248*** (-3.704)	-0.832** (-2.653)
Δ GOV. EXPEN1		-0.514** (-2.695)	
Δ TOT. DEP. OF BANKS	0.158*** (3.007)	0.100** (2.510)	0.157*** (3.820)
Δ EXT. DEBT	-3.044*** (-4.947)	-1.635* (-1.999)	-1.403* (-1.794)
Δ EXT. DEBT1		2.493*** (2.964)	2.901*** (3.763)
Δ INSTITUTION		-0.082 (-0.972)	-0.405** (-1.963)
Δ INSTITUTION1		-0.431*** (-5.311)	-0.900*** (-4.731)
Δ INFLATION			0.009 (1.171)
Δ INFLATION1			0.023*** (3.050)
ECM _{t-1}	-0.662*** (-5.362)	-0.726*** (-6.406)	-0.836*** (-8.029)
No. of Obs.	38	38	38
Adjusted-R ²	0.50	0.77	0.84
F-statistic	6.329***	12.903***	15.215***

Note: *, **, *** denote significance at 10%, 5% and 1% levels respectively.

Similarly, the financial depth indicator is positive, which implies that financial deepening increases investment in Nigeria. However, it has an insignificant coefficient. The coefficient on the lending rate is negative and statistically significant, which indicates that the lower the lending rates the higher the investment. This result corroborates with the theoretical view that higher cost of borrowing discourages investment. Government expenditure has a negative and significant coefficient which shows that government expenditure crowds out investment and thereby reduces growth. The total deposit of commercial banks has the expected positive sign and is statistically significant while external debt carries a negative and statistically

significant coefficient. This implies that the burden of external debt contributes negatively to investment.

Furthermore, regression (7) explains about 88% of the variation in investment in Nigeria. The regression also satisfies the model specification test and passes all the diagnostic tests but fails the heteroscedasticity test at the 10% level. However, this does not affect the reliability of our results because it has been found that when variables of different orders are estimated within the same regression it is natural to detect heteroscedasticity (Shrestha 2005, pp. 125). In addition, the stability test result (see appendix B) shows that the model is stable over time. Finally, the ECM has a negative and statistically significant coefficient. The ECM indicates that about 66% of the disequilibrium of the previous year's shock is adjusted back to the long-run equilibrium in the current year.

In regression (8) we incorporate institution into our model in order to capture the impact of the institutional environment on investment. Our result shows that institution has a positive and significant coefficient. This suggests that better institutional environment promotes economic growth in Nigeria. In addition, the coefficient on the financial liberalisation index is positive and significant. Similarly, in regression (9) we introduce inflation into our model to the impact of the macroeconomic environment. The result remains robust to alternative specifications of our model. The coefficient on inflation is negative, indicating that macroeconomic instability discourages investment. However, the impact is insignificant.

The ECM for both regressions (8) and (9) are correctly signed and statistically significant at the 1% level, and shows a return to long-run equilibrium after a shock. In addition, both regressions have very high explanatory power and satisfy all the diagnostic tests. Finally the models do not suffer from model misspecification and they are stable as shown by the stability test (see appendix B).

Causality Test on Financial Development and Economic Growth

Complementing the study is an attempt by the authors to comment on the causal relationship between financial development and economic growth. In order to establish this relationship in the context of the Nigerian economy, we employ the Granger Causality test introduced by Granger (1969). Granger causality addresses the question of whether past values of one variable help in forecasting another variable. For example, if past values of Y help to forecast X, then it implies that Y Granger causes X.

In this analysis, we use our variable for financial depth (FDEPTH) to capture the overall level of financial development in Nigeria. The basic requirement for the Granger causality test is that all variables have to be stationary. Recall that the orchestrated unit root test indicates that the proxy of economic growth (GRGDP) and FDEPTH are non-stationary. Thus, we use the first difference of our variables in this analysis. The simple model of Granger Causality is expressed as follows:

$$\Delta\text{GRGDP}_t = \sum_{i=1}^n \beta_i \Delta\text{GRGDP}_{t-i} + \sum_{j=1}^n \gamma_j \Delta\text{FDEPTH}_{t-j} + \varpi_{1t} \quad (5)$$

$$\Delta\text{FDEPTH}_t = \sum_{i=1}^n \alpha_i \Delta\text{FDEPTH}_{t-i} + \sum_{j=1}^n \rho_j \Delta\text{GRGDP}_{t-j} + \varpi_{2t} \quad (6)$$

In equation (5), the current value of GRGDP is associated with past values of itself and past values of FDEPTH. Similarly, equation (6) indicates that the current value of FDEPTH is related to past values of itself and past values of GRGDP.

With this model, inference about granger causality involves tests on coefficients. Thus the null hypothesis in (5) is $\gamma_j = 0$, which implies that ΔFDEPTH does not Granger cause ΔGRGDP . In equation (6) the null hypothesis is $\rho_j = 0$, which means that ΔGRGDP does not Granger cause ΔFDEPTH . We employ the Chi-square to determine the rejection rule. Table 7 below presents the result of the Granger causality test.

TABLE 7 : Granger Causality Test

Null Hypothesis	Chi-square	Probability
Δ FDEPTH does not Granger cause Δ GRGDP	14.526***	0.006
Δ GRGDP does not Granger cause Δ FDEPTH	2.293	0.682

Note: *** denotes significance at 1% level.

As shown in table 7, only the first case displays a statistically significant Chi-square, which suggests that we reject the null hypothesis for this case. This shows that financial depth Granger causes economic growth. Therefore, we conclude that financial development causes economic growth in Nigeria for the period 1970 to 2009. The causality is unidirectional, running from financial development to economic growth. The results suggest that the financial sector is important in the economic growth of Nigeria. Financial intermediation and institutional financial reforms should therefore be enhanced in order to accelerate Nigeria's economic growth.

SUMMARY OF THE FINDINGS AND CONCLUSION

As a matter of summation, the study has investigated the relationship between economic growth, investment and financial liberalization in Nigeria. Generated results indicate that there exists a significant long-run relationship between financial liberalisation and economic growth. The hypothesis that financial liberalisation has enhanced economic growth in Nigeria is not rejected. This result is consistent with the findings of Fowowe (2008) and Okpara (2010). Similar results were found by Chaudhry (2010) in the case of Pakistan. Also, results further show that financial liberalisation is only effective in a stable macroeconomic environment. However, institution has been found not to play a significant role in enhancing the impact of financial liberalisation in Nigeria.

So also, study analysis finds that financial liberalisation leads to increased investment in the case of the Nigerian economy. This is consistent with the McKinnon-Shaw hypothesis which

argues that interest rate deregulation following financial liberalisation increases savings which in turn raises investment. This provides further evidence to support the arguments of the proponents of financial liberalisation. Thus, investment is a cogent channel through which financial liberalisation promote economic growth in Nigeria.

Still on summary, there exists a causal relationship between financial development and economic growth in Nigeria, with financial development Granger causing economic growth. This result supports the cointegration analysis of the growth models, which indicate that financial depth exerts a positive and statistically significant effect on the growth rate of real GDP. This result is also consistent with the findings of Eita and Jordaan (2007) and Akinlo and Egbetunde (2010).

Overall, given the continuous reforms being implemented in Nigeria and the impetus towards maintaining a stable macroeconomic environment, it is suspected that the financial sector reforms will continue to exert a positive impact on the Nigerian economy.

Conclusively, in order to consolidate the gains of financial liberalisation in Nigeria bearing in mind that financial liberalization is not a stand-alone policy in the country, appropriate macroeconomic policy, institutional development, and structural reform might be crucial to creating the stable economic space for a successful financial liberalisation process. In the same vein, there might be the need to stabilise the performance of the financial system in Nigeria through appropriate use of fiscal and monetary measures, political stability, better supervision and prudential regulations. Furthermore, since financial deepening seems important to economic growth in Nigeria, measures should be taken to reduce government inefficiencies in order to release resources for the development of financial institutions.

Since the financial liberalisation process in Nigeria is concurrently run with other programmes and not in a vacuum, future studies might also pertinently look at the effects of such

programmes thereby creating an isolation effect which might forge further economic understanding ‘as the dividends derivable from financial reforms might hinge on the financial ambience being “well behaved” ‘throughout’ the liberalisation process (Pill and Pradhan 1997).

Financial liberalization is indeed the game but **not** the only game in time as far as successful economic development is concerned at least for Nigeria.

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