Effects of Financial Service Delivery and Trade Openness on Economic Growth in Nigeria (1970-2010): Implications for Nigerian Agricultural Trade Development

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Abstract

The study identified the major long-run determinants of economic growth in Nigeria with emphasis on financial services delivery and trade liberalization. It also discussed the trend of financial services performance, economic growth and trade openness in the economy alongside the policy implications of the findings for agricultural transformation in Nigeria. It relied on time series data spanning over 41 years (1970-2010), obtained from World Bank and Central Bank of Nigeria. Unit root tests were performed after which the bound testing for co-integration (Autoregressive Distributed Lagged [ADRL]) model was used. The results indicated a combination of downward and upward swinging trend of economic growth rate and financial services performance from 2004 to 2010. Agricultural growth, financial service performance and trade openness appeared to be moving in similar directions. The ARDL model estimated had an estimated F-ratio of 25.47, ($p<0.05$ with upper value of 5.966) signifying that there is co-integration among the series. The empirical results of the long-run model obtained by normalizing the explanatory variables on the log of real GDP indicated that financial services delivery (M2) indicated a significant positive relationship with economic growth (real GDP) at $p <0.05$. It was recommended that the Federal Government of Nigeria and its Central Bank should pursue implementation of effective macro-economic policies along with momentous improvements in the structure and functioning systems of governance for stabilising economic growth along financial liberalisation reforms among other recommendations. Need to also use the financial service sector to improve agricultural growth via increased access of farmers to long-term loans was recommended.

Key Words: Financial service performance, trade liberalization, co-integration, bounds testing

evidenced by inadequate roads and inefficient, expensive, and congested port facilities.

1. Introduction

According to Cromer (2012) Nigeria displays the characteristics of a dual economy: one dominant sector (oil) with poor links to the other sectors of the economy, and a typical developing economy heavily relying on agriculture and trade. Trade in Nigeria faces myriads of challenges ranging from lack of consistent policy support to poor infrastructure

Private entrepreneurs lack capacity and access to credit, bereft of regulatory frameworks and poor enforcement of existing laws. Despite the Government's economic reform efforts over the last past years, its capacity to overcome these persistent obstacles to growth has a long way to go (Sanusi, 2010 & Cromer, 2012). Nigeria's trade

policy has been adjudged to be at a crucial turning point (Walkenhorst & Cattaneo, 2006). Nigeria had operated a very restrictive import regime that yielded enormous transfers to domestic producers while encouraging strong anti-export bias. Yet, in its current poverty alleviation strategy, Nigeria subscribed to deeper trade integration as a strategy for fostering economic growth and poverty alleviation. Border tariffs were being reduced, trade regulations were reviewed and ambitious restructuring programmes for customs services and port infrastructure were launched. The reforms envisaged far-reaching changes to trade regimes that promised to create new opportunities through improvement of efficiency of production and consumption, with requirements for adjustment of domestic producers to the new and highly competitive economic environment, the World Bank report added (Walkenhorst & Cattaneo, 2006). It is however unclear in empirical terms how these reforms have contributed to economic growth in the country over time.

The trade reform efforts, which were supported with revenue from increased oil production and high oil prices, contributed significantly to the nation's macroeconomic growth, including reduced inflation and increased GDP growth, which remained steady in 2011 at 7.2 percent (Central Bank of Nigeria, 2011 & Cromer, 2012). While significant, this growth rate was insufficient to raise the majority of Nigerians out of poverty, especially under a high population growth rate of 3 percent, with over half of its citizens living on less than $2 per day. Crude oil exports accounted for 95 percent of the nation's export revenue and 85 percent of government revenue, while agriculture—which employed 70 percent of Nigerians—accounted for only 2.6 percent. Unemployment is also a growing concern, with up to 3 million young people entering the labour market each year.

Even though there were recorded impacts of reforms on growth it was observed that meaningful sustainable growth and development was yet to be achieved, as Nigeria ranked among the poorest countries in the world (Nurudeen and Usman, 2010 and UNDP, 2011). According to UNDP (2011), Nigeria's Human Development Index (HDI) score for 2011 was 0.459—in the low human development category—positioning the country at 156 out of 187 countries and territories. In addition, many Nigerians have continued to wallow in abject poverty, while more than 50 percent live on less than US$2 per day. The Central Bank governor, Sanusi (2010), noted that Nigerian population grew by about 150 per cent between 1963 and 2006, i.e. approximately 3.75 per cent per annum.

The financial service sector is one sector that has the potentials of contributing towards attainment of sustainable growth and development in Nigerian economy. However, it is still unclear how the sector has fared in the face of economic reforms that include trade liberalization to impact on the economic growth of the country. The financial service sector growth can positively affect the growth in the agricultural sector. A sound and efficient financial system is an important factor to stimulate economic growth and development (Udah, 2011). Financial sector assist in mobilizing savings, fostering productive investment and improved risk management. During the first few years of Nigerian economic reforms, Udah indicated from available statistics that the share of the banking system's credit to the private sector improved significantly from 34 percent in the 80s, on the average before the reform, to about 49 percent in the '90s and early part of 2000. However, the larger part of the credit to the private sector was mainly on short term investment. The depth of the financial sector measured by broad money supply (M2) to GDP ratio (M2/GDP), contrary to expectation, did not

improve in the early years of the reform (1990s). It nosedived from 32.6 percent on the average in the '80s to 26 percent in the '90s.

In 2006, the Nigerian financial sector recorded a deepening with an increase in broad money supply (M2) to GDP ratio (M2/GDP) up from 16.4 percent at the end of 2005 to 16.9 percent in 2006. The banking system capacity to finance economic activity was strengthened with a higher rate of credit to the private sector as a ratio of GDP than the preceding year. Credit to the private sector as a ratio of GDP was 23.1 per cent at the end of 2006. In 2008, financial sector further deepened as the ratio of broad money supply (M2) to GDP increased to 37.7 per cent from 21.1 per cent in 2007.

In spite of these various reforms in macroeconomic management with a few exceptions, the country has continued to witness fluctuations in major macroeconomic aggregates, sluggish economic growth and development (Udah, 2011). Against this backdrop, this study was conducted to explore the status of financial service delivery (M2), trade openness, agricultural sector growth and real GDP growth in Nigeria. The study also ascertained the relationship between economic growth and two major hypothesized drivers in this study, M2 (as proxy for financial service delivery) and trade and openness (TOP). Results gave evidence for discussing the implications of the financial service delivery for Nigerian economic transformation with a rider on agricultural transformation drive.

Literature Review

Atif et al (2010) investigated the impact of financial development and trade openness on GDP growth in Pakistan with the aid of annual data covering the period 1980-2009. They used the bound testing approach of co-integration. Their results confirmed the validity of trade led growth and financial led growth hypothesis in Pakistan. Their resulted showed a co-integrated relationship between economic growth, trade openness and financial development in both the short- and long-runs. Winters (2002) observed that trade liberalization was beneficial because it afforded a country the opportunity to trade in larger markets thereby significantly reducing the risks associated with trading in smaller markets. Winters et al (2004) opined that one of the consequences of international trade was its tendency to expose the participating countries to foreign shocks, but the intensity or otherwise of these shocks depended on the nature of existing institutions, trade policies and the absorptive capacity of the country of the shocks. Dollar and Kraay (2001 and 2002) emphasized the positive effect of trade liberalization on economic growth and poverty reduction. Dollar and Kraay (2001 and 2002) studies supported the view that trade openness positively affected economic growth and development by postulating that foreign trade increased the domestic income of participating countries. This, according to them, is because trade liberalization allowed domestic entrepreneurs to learn new ways of utilizing or producing quality inputs quicker at lower cost, thus increasing total factor productivity and human capital accumulation. The role of trade in economic growth in Nigeria cannot be fully accounted for without mentioning the link between agricultural growth, trade and economic growth rate. Research has shown that beyond the supply of food and fibre, agriculture has provided important market-mediated linkages by providing labour for an urbanized industrial labour force, widening markets for industrial output and through provision of export earnings to pay for imported capital goods (Oguchi, 2007 & CBN, 2006). Oguchi (2007) observed that apart from being a major contributor to the GDP in the sixties, the sector

facilitated the growth of the Nigerian economy by facilitating poverty alleviation, employment and income generation, as well as a reduction in rural-urban migration.

Adewuyi (2006) used the Data Envelop Analysis to quantify the contribution of factor productivity to real GDP output growth. He found that albeit, total factor productivity rose during the period of Structural Adjustment Programme (SAP), the growth could not be sustained in the post-SAP era. To the best of our knowledge no Nigerian case study had attempted to investigate the dynamic relationship between trade openness, service delivery and economic performance.

Udah (2011) observed that export diversification index, external reserves, government expenditure on economic and social services and financial sector variables were statistically significant factors that influenced economic growth in Nigeria. The observed effect of financial service sector on economic performance conforms with Iwukemjika et al (2009)'s observation. They however noted that much effect came through its credit supply to the private sector of the economy. On an international basis, they added, Nigeria's credit penetration (credit to the private sector/GDP) measured against a natural international peer group and the US, showed that in 2006, Nigeria's credit penetration was 14 percent, confirming that its banking system remains significantly less penetrated than its peers. However, Nigeria's credit penetration improved to 24 percent in 2007 and the reform programme initiated should help to further reduce the deficit to the likes of Brazil and Russia (Iwukemjika et al, (2009).

Theoretical Framework
Adam Smith argued that the existence of idle resources of land and labour leads to the use of excess resources in producing surplus goods for exports and thus venting a surplus

productive capacity that would otherwise been unused (Udah, 2011). This implies that trade promotes efficient international allocation of resources. David Ricardo theory of comparative advantage suggests that trade optimizes production through specialization. John Stuart Mill argued that trade liberalization expands domestic market, induces innovations and increase productivity, have educative effect in instilling new ideas and in the transfer of technology, skills and entrepreneurship (Nyong, 2005).

The dualistic-development thesis (as cited in Sanusi, 2010), postulates that the world is made up of dual societies- rich nations and poor nations. Even in developing countries, pockets of wealth abound within broad areas of poverty. This school of thought embraced four key arguments: (i) different sets of conditions of which some are "superior" and others "inferior" can co-exist in a given space; (ii) This coexistence is chronic and not merely transitional; (iii) The degrees of superiority or inferiority do not show any signs of diminishing, but have an inherent tendency to increase; and (iv) the interrelations between the superior and inferior elements are such that the existence of the superior elements does not pull up the inferior ones.

Corden's (1971) supply driven model replaces the demand driven model of Staple growth theory by emphasizing on the growth of factor supplies and productivity. Corden (1971) maintained that nations that engage in international trade are most likely to benefit from trade. He classified these benefits into four, namely, the static gains from trade leading to increase in income, the capital accumulation effects arising from investing the static gains from trade, the substitution effect resulting from possible fall in relative prices of investment goods.

This study is equally anchored on the modern development theory studies which views the evolution of growth, relative income

inequalities and their persistence in unified models. In many of these models, financial market imperfections play a central role, influencing key decisions regarding human and physical capital accumulation as well as occupational choices. For instance, in theories stressing capital accumulation, financial market imperfections determined the extent to which the poor could borrow to invest in schooling or physical capital. In theories stressing entrepreneurship, financial market imperfections determined the extent to which talented but poor individuals could raise external funds to start their projects. Thus, the advancement of financial development, growth, and intergenerational income dynamics are closely intertwined. Finance exert influence on the efficiency of resource allocation throughout the economy as well as on the comparative economic opportunities of individuals from relatively rich or poor households (World Bank, 2007).

This crucial focus on the financial sector in modeling economic relationships has been supported with the historical development of perspectives on the relationship between economic growth and income inequality. It was long held that the early stages of economic development would inevitably be associated with inequality and wealth concentrations. Adducing to the fact the rich people's marginal propensity to save is higher than that of the poor, theoreticians hypothesized that the need to finance large, indivisible investment projects in the process of development meant that rapid growth would need wealth concentration, which would result in a fundamental trade-off between growth and social justice. On a more general note, Kuznets (1955, 1963), as cited in World Bank (2007), held that this trade-off implied that inequality would increase in the early stages of development until the benefits of growth spread throughout the economy.

Theoretical Model: Bound Testing Approach

The use of the bounds technique is based on three validations. First, Pesaran, Shin and Smith (2001) advocated the use of the ARDL model in estimating level relationships because the model suggests that once the order of the ARDL has been indicated, the relationship can be estimated with OLS. Second, the bounds test enables a mixture of I(1) and I(0) variables as regressors, that is, the order of integration of appropriate variables may not necessarily be the same. Therefore, the ARDL technique has the advantage of not requiring a specific identification of the order of the underlying data. Third, the technique is appropriate for small or finite sample sizes (Pesaran et al., 2001).

Following Pesaran et al. (2001), Atif , Jadoon, Zaman, Ismail and Seemab (2010) assembled the vector autoregression (VAR) of order p, denoted VAR (p), for the following growth function:

$$Z_t = \mu + \sum_{i=1}^{p} \beta_i z_{t-i} + \varepsilon_t \quad \text{...........................(1)}$$

where z_t is the vector of both x_t and y_t, where y_t is the dependent variable defined as economic growth (GDP), x_t is the vector matrix which represents a set of explanatory variables and t is a time or trend variable. According to Pesaran et al (2001), y_t must be I(1) variable, but the regressor, x_t , can be either I(0) or I(1). The long-run equations are estimated by using the following Equation (2) and by checking the significance of the variables in lag level forms jointly using F-statistic, i.e., Ho is b1 = b2 = 0. If the F-statistic is significant, we may say that there may exist a long-run relationship between the variables.

The ARDL Representation (for the Two-variables Case)

$$\Delta y_t = \beta_0 + \beta_1 y_{t-1} + \beta_2 x_{t-1} + \sum_{i=1}^{n} \beta_3 \Delta y_{t-i} + \sum_{i=1}^{n} \beta_4 \Delta x_{t-i} + \varepsilon_t$$

$$\text{...(2)}$$

The number of lagged differences is determined by using AIC or SBC. It can be checked by using the general to specific methodology, i.e., checking the significance levels of all the differenced variables jointly at each lag. For example, if we regress the equation including 4 lags (lagged differences) of each variable and check all the terms of lag 4 jointly using F-statistic, and if it is insignificant, then we have to regress again using 3 lags and continue this process until it shows statistically significant results.

After the final estimation, the joint significance of the lagged variables was checked. In this equation it will be $b_1 = b_2 = 0$. If it is significantly different from zero, then it shows that there exists a long-run relationship among the variables. After this step we can move onto the error correction equation.

The critical values tabulated in Table CI (iii) by Pesaran et al. (2001) will be used to evaluate the computed F-statistic following Atif et al (2010). According to these authors, the lower bound critical values assume that the explanatory variables, x_t, are integrated of order zero, or I(0), while the upper bound critical values assumed that x_t are integrated of order one, or I(1). Hence, if the computed F-statistic is less than the lower bound value, the null hypothesis would not be rejected; we conclude that there is no long-run relationship between food production index and its determinants. Conversely, if the computed F-statistic is greater than the upper bound value, then dependent variable and its determinants share a long-run level relationship. On the other hand, if the computed F-statistic falls between the lower and upper bound values, the results will be deemed as inconclusive.

RESEARCH METHODS
Area of Study: Nigeria is the most populous country in Africa with a population estimated at 162,265,000 by mid-2011, population living below poverty line of $2 per day of 84 percent,

Gross National Income per capita of US $2,070 (Population Reference Bureau, 2011). According to CBN (2010) the GDP of Nigeria stood at approximately US$4.9 billion (N775.4 billion) using 1990 basic prices.

Nigerian agricultural products include cocoa, palm oil, , corn, rice, livestock, groundnuts, cotton, yams, cassava, sorghum and millet. Crude oil export remained the major source of revenue. The industry types in the country include textiles, cement, food products, footwear, metal products, lumber, beer, detergents and car assembly (CBN, 2007).

Data Source and Methodological Framework: Secondary data, mainly time series data from Central Bank of Nigeria's (CBN) Annual Report and Statistical Bulletin which contained data from National Population Commission. The researchers purposively selected 1978 to 2010 i.e. a sample of 33 years, for ease of accessing data that will cover all the variables or series within the period in view.

The series were first tested for unit roots at their levels and first differences with the aid of Augmented Dickey Fuller and Philips Perron tests (following Gujarati, 2006 & Greene, 2008). The results are presented in Appendix 1. When it was observed that some of the series were not I(0) but rather became stable at I(1) the researchers applied the bound co-integration testing approach as adopted by Pesaran et al (2001). Standard econometric diagnosis such as Breusch-Godfrey serial correlation LM test, Jacque-Bera normality test and Ramsey RESET specification test were conducted following Studenmund (2001) and Patterson (2000), Gujarati (2006) and Greene (2008).

The use of the bounds technique was based on three major validations. First, Pesaran et al. (2001) recommended the use of the ARDL model for estimating level relationships because the model held that once the order of the ARDL is recognised, the relationship can be estimated by OLS. Second, the bounds test

allows a mixture of I(1) and I(0) variables as regressors, that is, the order of integration of appropriate variables should not necessarily be the same. Therefore, the ARDL technique has the advantage of not requiring a specific identification of the order of the underlying data. Thirdly, the technique is quite suitable for small or finite sample size.

Moreover, the bounds testing technique employed in this study is robust for small sample study. The bound testing approach is applicable even when the explanatory variables are endogenous (Alam and Quazi, 2003). The ARDL cointegration test, assumed that only one long run relationship exists between the dependent variable and the exogenous variables (Pesaran, et al, 2001, assumption 3). The bound test is basically computed based on an estimated unrestricted error-correction models (UECM) or error correction version of autoregressive distributed lag (ARDL) model, by Ordinary Least Square (OLS) estimator, noted Pesaran et al. (2001). Thus, the bound test developed by Pesaran et al (2001) is basically the Wald test (F-statistic version of the bound testing approaches) for the lagged level variables in the right-hand side of Unrestricted Error Correction Model (UECM). In other words, we test the null hypothesis of non-cointegrating relation (Ho: δ1= δ2= δ3=…= δn=0) against the alternative hypothesis (HA: δ1≠ δ2≠ δ3≠…≠ δn≠0) (a long-run relationship exists). The estimated F-statistic value will then be evaluated using the critical values tabulated in Table CI (iii) of Pesaran et al. (2001). Thus the lower bound critical values assumed that the explanatory variables xt are integrated of order zero, or I(0), while the upper bound critical values assumed that xt are integrated of order one, or I(1). Therefore, if the computed F-statistic is less than the lower bound value, then the null hypothesis is not rejected and we conclude that there is no long-run relationship between GDP growth and its determinants. Conversely,

if the computed F-statistic is greater than the upper bound value, then GDP growth and its determinants share a long-run level relationship. On the other hand, if the computed F-statistic lies between the lower and upper bound values, then the results are considered inconclusive. The researcher must therefore conduct a test to ascertain the order of integration before making a conclusive inference in this circumstance.

Following Pesaran et al. (2001), Atif, Jadoon, Zaman, Ismail and Seemab (2010) and Ellahi (2011) we aggregate the vector autoregression (VAR) of order p, denoted VAR (p), for the following function:

$$Z_t = \mu + \sum_{i=1}^{p} \beta_i z_{t-i} + \varepsilon_t \qquad \text{.........................(3)}$$

where z is the vector of both x and y, where y is the dependent variable defined as real GDP (Realgdp), xt is the vector matrix representing a set of explanatory variables i.e., trade openness (TOP), financial development (M2) and t is a time or trend variable. According to Pesaran et al. (2001), yt must be I(1) variable, but the regressor xt can be either I(0) or I(1). Then a vector error correction model (VECM) was further developed as follows:

$$\Delta z_t = \mu + \alpha t + \lambda z_{t-1} + \sum_{i=1}^{p-i} \gamma_t \Delta y_{t-i} + \sum_{i=1}^{p-1} \gamma_t \Delta x_{t-i} + \varepsilon_t$$
$$\text{...(4)}$$

where Δ is the first-difference operator. The long-run multiplier matrix as:

$$\lambda = \begin{bmatrix} \lambda_{YY} \lambda_{YX} \\ \lambda_{XY} \lambda_{XX} \end{bmatrix} \qquad \text{........................} \qquad (5)$$

The diagonal elements of the matrix are unrestricted, so the selected series can be either I(0) or I(1). If , then Y is I (1). In contrast, if , then Y is I(0).

The vector error correction mechanism (VECM) approaches described above are imperative in the testing of at most one cointegrating vector between dependent variable and a set of regressors . To derive the model, the postulations made by Pesaran et al. (2001) in Case III, that is, unrestricted intercepts and no trends was followed.

The general co-integration hypothesis function

Trends of Economic Growth Rates, Trade Openness and Financial Service Delivery in Nigeria (1970 -2010): The graph presented in Figure 1 indicates a fluctuating economic growth rate in Nigerian economy over the period in review. It could be observed that Nigerian economy started declining in 1970 shortly after the civil war that
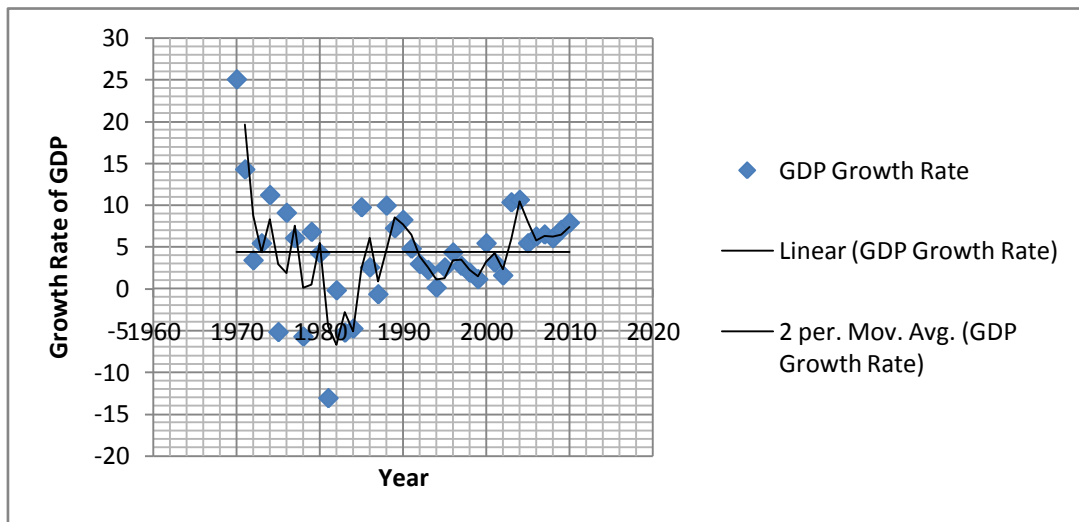
ravaged her economy. The economy reached

Figure 1. Trend of GDP Growth Rate in Nigeria from 1970-2010 (Source: By authors based on data from Central Bank of Nigeria, 2010)

can, therefore, be stated as the following unrestricted error correction model (UECM):

$\Delta\,(Realgdp)_t = \beta_0 + \beta_1(realgdp)_{t-1} + \beta_2\,(\text{TOP})_{t-1} + \beta_3\,(\text{M2\_Grwt})_{t-1} + \beta_4(\text{elctsgdp})_{t-1} + \beta_5 \sum_{i=0}^{q} \Delta\,(realgdp)_{t-1} + \beta_6 \sum_{i=0}^{r} \Delta\,(TOP)_{t-1} + \beta_7 \sum_{i=0}^{s} \Delta\,(M2\_Grwt)_{t-1} + \beta_8 \sum_{i=0}^{t} \Delta\,(elctsgdp)_{t-1} + \varepsilon_t$ ....(6)

Where Δ is the first-difference operator and εt is a white-noise disturbance term. Realgdp = ireal GDP in millions of naira, while TOP = Trade and Openness represented by total trade (Import + Export) as a share of GDP. Financial service delivery or performance is measured by M2 growth rate (M2_Grwt).

3. Results and Discussion

an all time low level around 1983 during the civilian regime (Second Republic) headed by Alhaji Shehu Shagari who introduced some austerity measures as a way of rebounding the economy. The growth period that follows which was upward till 1990 indicated that economic reforms appeared to be yielding some positive results. In 1986 the then military regime introduced Structural Adjustment programmes (SAP) which was more disposed to liberalization of the economy. It seems the reform programme paid off as the economy bounced back again and maintained upward growth till late 90s when it started falling again. However this trend was short-lived as the growth rate started another gradual upward trend coinciding with economic reform eras in the financial sector and trade in 2000 and

above. In mid-2000s the economy nosedived and picked up again around 2007. Since then the growth had been looking upward. It is doubtful however whether this will be sustainable.

governments in Nigerian history introduced several financial and trade reform policies.

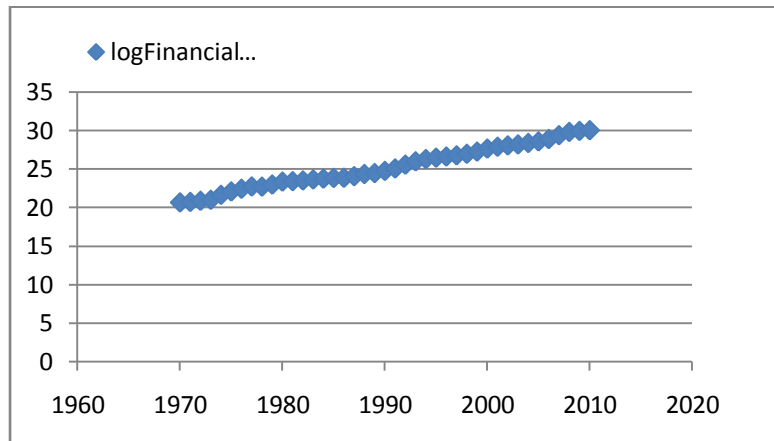However, agricultural sector of the economy did not appeared to be isolated from the

Figure 2. Trend of Financial Service Performance in Nigeria from 1970-2010 (Source: By authors based on data from Central Bank of Nigeria, 2010).
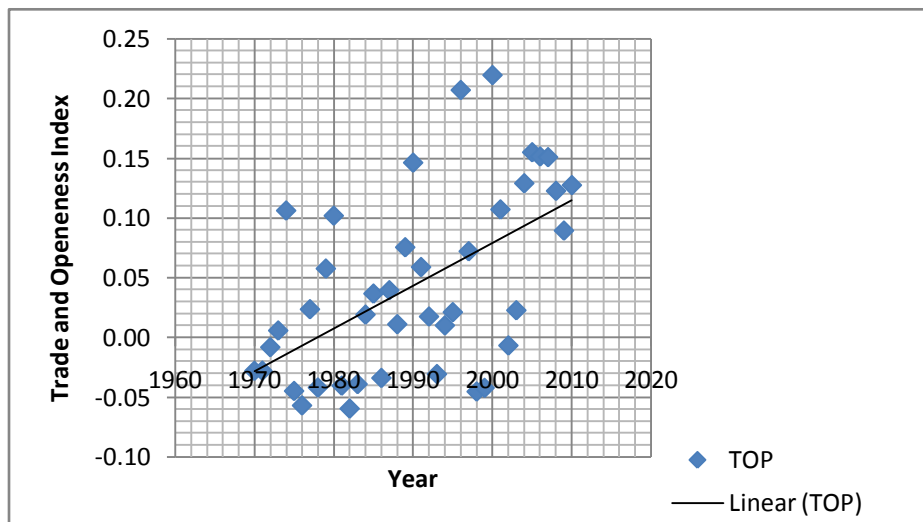

Figure 3. Trend of Financial Service Performance in Nigeria from 1970-2010 (Source: By authors based on data from Central Bank of Nigeria, 2010)

A look at figure 2 and figure 3 indicate that financial service sector has been steadily growing in a linear fashion. The financial service sector shares with trade openness (See Figure 3) which was also looking up over the entire period of study on the average. One is not surprised at this development as various

changes in macroeconomy of Nigeria over the period of study. From evidence indicated in Figures 4 and 5 it is clear that agricultural growth rate appears to be moving in the same direction with financial sector growth trends as well as trade openness and real GDp growth rate. This may not ve surprising as agriculture remains the most important non-oil sector in

Nigerian economy. The financial service sector advances loan to the private sector which benefits agriculture thereby stimulating the growth of the agricultural and other sectors of Nigerian economy. It is however feared that the financial service sector may not impact positively on agricultural growth on the long-run due to its disregard for farmers requesting for long term loans. Agricultural production requires long period of waiting for recoupment of investment thus making it a candidate for

Udah added that the depth of the financial sector measured by broad money supply (M2) to GDP ratio (M2/GDP), contrary

to expectation, did not improve in the initial years of Nigerian economic reform (1990s). It declined from 32.6 per cent on the average in the 1980s to 26 per cent in the 1990s. Such developments can mare or make food production (agricultural production) level in the country thereby worsening or improving the
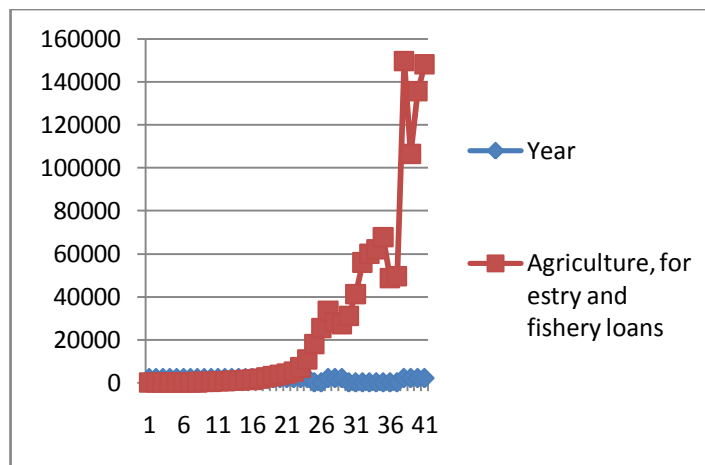

Figure 4. Trend of Loans Advanced to Agriculture, Forestry and Fishery over the period in Review in millions of naira (based on Data from CBN, 2010).
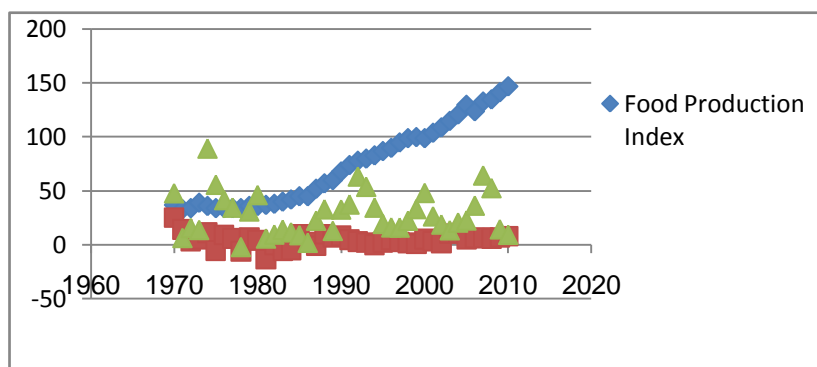

Figure 5: Rate of growth of real GDP compared with growth rates of M2 and food production indexe over the period in review (1970-2010). Source: Computed by authors based on CBN (2011) data.

long term loans to be able to impact sustainably on farmers' productive drives. Unfortunately it had been observed by Udah (2011) that the bulk of the credit to the private sector was mainly on short term investment.

food security situation in the country.

The similarity in movements of the food production index and those of financial service sector as well as economic growth rate should

inform policies aimed at boosting agriculture

and food security. It could seen from Figure 5 that these three variables appear to be moving in the same directions. This is in agreement with World Bank (2007) that finance influences not only the efficiency of resource allocation throughout the economy but also the

Table 1. Results of Unit Root Tests using Augmented Dickey Fuller and Philips Perron Tests

VARIABLE OR SERIES	ADF STATISTICS AT LEVELS	ADF 1st DIFFERENCE STATISTICS	PP LEVELS STATISTICS	PP 1st DIFFERENCE STATISTICS	REMARK
Real GDP	1.704 (NS)	-5.476 ***	1.949 (NS)	-5.472***	I(1)
M2_Growth	-4.155***	NA	-3.981***	NA	I(0)
TOP	-0.375(NS)	-2.211***	-1.188 (NS)	-4.758***	I(1)

Note: The null hypothesis is that the series is non-stationary, or contains a unit root. The rejection of the null hypothesis is based on MacKinnon (1996) critical values. The lag length are selected based on SIC criteria, this ranges from lag zero to lag two. *, ** and *** indicate the rejection of the null hypothesis of non-stationary at 1%, (t critical = -3.605593), 5% (t critical -= -2.9369) and 10% (-2.607) significant level, respectively.

Table 2: Estimated Model Based on Equation (3)
Dependent Variable: Log (GDP)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Intercept	0.063	0.077	0.823NS	0.416
(REALGDP)-1	-9.42E-07	0.000	-3.976***	0.000
(TOP)-1	0.007	0.021	0.341NS	0.735
(M2_GRWT)-1	0.004	0.002	2.492**	0.018
D(REALGDP)-1	0.000	0.000	11.703***	0.000
D(TOP)-1	-0.021	0.028	-0.761NS	0.452
D(M2_GRWT)-1	0.001	0.001	0.757NS	0.454

R-squared	0.83
Adjusted R-squared	0.80
S.E. of regression	0.63
Akaike info criterion	2.09
Log likelihood	-34.81
F-statistic	27.07***
Prob(F-statistic)	0.000

comparative economic opportunities of individuals from relatively rich or poor households (such as poor rural farm households). However, more quantitative analysis are needed to capture the real econometric relationships between these macroeconomic variables. This will remain a subject for future research.

Evaluation of the Roles of Trade Liberalization and Financial Service Sector Performance as Drivers of Economic Growth in Nigeria (1970-2010)

Results of Unit Root tests are presented in Table 1. The rsult indicates that the series are mixtures of I(0) and I(1). Since the are mixtures of I(0) and (1) we are justified in using bounds testing approach to cointegration advanced by Pesaran et al (2001).

The estimates of Equation (4) using the ARDL model is reported in Table 2. Using Hendry's general-to-specific method, the goodness of fit of the specification, that is, R-squared and adjusted R-squared, is 0.82 and 0.76 respectively. The implication of these is that the 56 percent variation in food production index was explained by the independent variables in the model.

The robustness of the model has been confirmed by several diagnostic tests such as Breusch- Godfrey serial correlation LM test, Breusch-Pagan-Godfrey test for heteroscedasticity, test for multicollinearity and model stability test using CUSUM test (See the diagram in figure 6). All the tests disclosed that the model has the desirable econometric properties, the model's residuals are serially uncorrelated, homoskedastic, devoid of severe multicollinearity and statistically stable. Therefore, the outcomes reported are serially uncorrelated, stable in series and homoskedastic. Hence, the results reported are valid for reliable interpretation.

Model criteria / Goodness of Fit:

R-square = 0.83; Adjusted R-square = 0.80; Wald F-statistic = 657.058 [0.000]***

Diagnostic Checking:

Results of the model's diagnostic checks are as follow: LM-2 (Breusch-Godfrey Serial Correlation LM Test:) = 1.329 [0.729]; Heteroskedasticity Test: Breusch-Pagan-Godfrey= 1.848 [0.119], Multicollinearity Test: Average uncentred Variance Inflation Factor (VIF) = 4.210 .

In Table 3 the results of the bounds co-integration test demonstrate that the null hypothesis of no co-integration against its alternative is easily rejected at the 1% significance level. The computed F-statistic of 27.07 is greater than the upper critical bound value of 5.06, thus indicating the existence of a steady-state long-run relationship among real GDP, TOP and M2.

The estimated coefficients of the long-run relationship between GDP, TOP and M2 are expected to be significant, that is:

Dlog(realgdp) = -9.42E-07 + 0.0001(TOP) + 0.0002**(M2_growt) ……………………(5)

Equation (5) and Table 4 indicate that financial service sector performance had positive impact on economic growth in Nigerian economy. If there is one unit increase in trade liberalisation, economic growth and financial sector service performance increases by 0.0001 percent and 0.0002 percent respectively. This analysis demonstrates that, in the long-run financial led growth hypothesis does hold in Nigeria, as the variable is positive and demonstrated a significant effect on economic growth over the period in review. The finding is in tandem with those of Udah (2011), Atif et al (2010) and World Bank (2007). It is not surprising however that the long run coefficients were very low. These may be as a result of relatively short period of each reform which had always been truncated by

instability in government over the years in the country's history. Consequently increases in

real GDP as a result of these two variables

This study had described the trend and demonstrated the similarities in behaviour of trade openness, financial sector service delivery and economic growth vis a vis
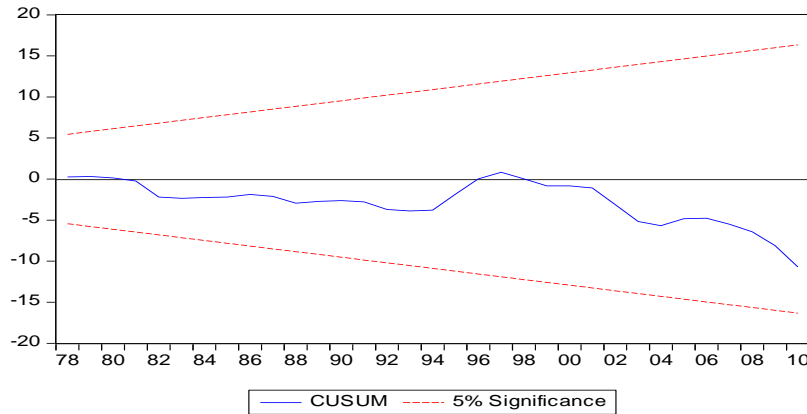

Figure 6: Results of Test for stability of the model. It could be seen that the CUSUM line did not go outside the two extreme critical lines, indicating that the model is statistically stable at 5% level.

Table 3: Bounds Test for Cointegration Analysis

Critical value	Lower Bound Value	Upper Bound Value
1%	3.74	5.06
5%	2.86	4.01
10%	2.45	3.52

Note: Computed F-statistic: 5.508 (Significant at 0.05 marginal values).Critical Values are cited from Pesaran et al. (2001), Table CI (iii), Case 111: Unrestricted intercept and no trend.

Table 4: Long-Run Coefficients

Variable	Normalized Coefficients	Remark
(REALGDP)-1	1	Significant at $p < 0.01$
(TOP)-1	0.0001	Not Significant even at $p > 0.10$
(M2_GRWT)-1	0.0002	Significant at $p < 0.05$

have not been too strong though that of the financial service sector exhibited a statistically significant relationship.

5. Conclusion

agricultural growth in Nigerian economy over the period in review. It was observed that the three variables were moving in similar manners implying that the policies of trade openness, financial service delivery could impact on economic growth as well as

agricultural growth. The implication of these findings is that efforts to alleviate hunger in Nigeria and boost agricultural production (in line with the current government's agricultural transformation agenda) can be meaningful if the financial sector is encouraged to improve its performance in advancing loans to the agricultural sector of Nigeria. There are also signals from the findings that agricultural growth can benefit from trade openness if export and policies are improved to encourage farmers to take advantage of the gains from international trade. The econometric tests conducted on the time series used for this study validated the fitness of the model using various criteria. The model was co-integrated, stable and devoid of serial correlation. The empirical results of the long-run model indicated a significant positive relationship with economic growth (real GDP) at 5 percent level of statistical significance. All these affirm our model as fit for policy making. It is therefore recommended that the Federal Government of Nigeria and its Central Bank should pursue implementation of effective macro-economic policies along with momentous improvements in the structure and functioning systems of governance for stabilising economic growth along financial liberalisation reforms among other recommendations. Need to also use the financial service sector to improve agricultural growth via increased access of farmers to long-term loans is hereby recommended. This is more so when one notes that agriculture is the largest sector of the Nigerian economy with GDP contribution of about 40%. According to FinIntell (2016), the necessary key for successful reform is to turn agriculture into a business that makes money, with a focus on investments as opposed to aid and development. The prospects for the agricultural sector is high, owing to the growing demand for food driven by a large population and growing incomes under a regime of higher prices due to demand in the international market. FinTell further noted that the Federal Government, through the Ministry of Agriculture announced a supportive program towards creating a Nigerian agricultural sector worth $256 billion by 2030.

The pathway to unlocking the growth potential of agriculture in Nigeria is to improve the lot of small scale farmers. By empowering the millions of small holder farmers who have access to millions of hectares, access to appropriate inputs, sufficient financing will be enhanced and that will significantly boost productivity. Following FinTell (2016), we also recommend the Agricultural Franchise Model for Nigeria. Under this model the small holder farmer becomes a franchisee of a larger farm, with access to all the necessary inputs. This model can minimise the risks associated with investing in the sector and thereby stimulates the financial sector (service sector) to invest in the Nigerian Agricultural Sector.

References

Adewuyi, A. O. (2006). Openness total factor productivity growth dynamics: evidence from Nigeria, The Nigerian Journal of Economic and Social Studies, 48:1-30.

Atif, R. M; Jadoon, A; Zaman, K; Ismail, A; & Semab, R. (2010). Trade liberalisation, financial development and economic growth: evidence from Pakistan (1980-2009). Journal of International Academic Research 10: 2.

Central Bank of Nigeria, C. B. N. (2006). Statistical Bulletin, 2005. Abuja : CBN.

Central Bank of Nigeria, C. B. N. (2008). Statistical Bulletin, 2008. Abuja : CBN.

Central Bank of Nigeria, C. B. N. (2011). Statistical Bulletin, 20010. Abuja : CBN.

Corden, W. M. (1971). The effect of trade on the rate of growth, in Trade and balance of payments, Jagdish N. Bhagwati et al (eds) Amsterdam.

Cromer, S. (2012). A closer look at Nigeria: security, governance, and trade. Retrieved on 1/10/2012 from http://www.humanrights.gov/2012/04/0

3/a-closer-look-at-nigeria-security-governance-and-trade/

Dollar, D. & Kraay, A (2002). Trade, growth and poverty, Journal of Economic Literature, 60: 1865-80.

FinIntell (2016) Sectoral Analysis of Nigeria's Economy. Retrieved on 04/06/2016 from http://www.myfinancialintelligence.com/ banking-and-finance/sectoral-analysis-nigeria%E2%80%99s-economy

Food and Agricultural Organization, FAO (2010). Improving infrastructure and trade-related capacities for market access. Comprehensive African Agricultural Development Programme (CAADEP). Retrieved on 21st July, 2011 from http://www.fao.org/docrep/005/y6831e/ y6831e00.htm#TopOfPage

Greene, W. H. (2008). Econometric analysis, 5th edition. New Delhi: McGraw Hill.

Gujarati, D. N. (2006). Essentials of econometrics. 3rd Edition. New York: Mc-Graw Hill.

Iwukemjika, E., Odigie, F. I., Duru, C., Idogho, P., Okoh, A., Odusote, L., Adesanya, A. & Salami, A. (2009). Nigeria. Retrieved on 1/10/2012 from http://fic.wharton.upenn.edu/fic/africa/Ni geria%20Final.pdf

Nurudeen, A. & Usman, A. (2010). Government expenditure and economic growth in Nigeria, 1970-2008: A disaggregated analysis. Business and Economics Journal, 4.

Nyong, M. O. (2005), International economics: theory, policy and applications. Wusen Press Limited Calabar-Nigeria.

Oguchi, C. B. (2007). The role of agriculture in economic growth: the Nigerian experience, An M.Sc. project proposal submitted to the Department of Economics, University of Nigeria Nsukka.

Patterson, K. (2000) An Introduction to Applied Econometrics Macmillan:184-5

Pesaran, M.H., Shin, Y. & Smith, R. (2001) Bounds testing approaches to the analysis of level relationships, Journal of Applied Econometrics, 16, 289-326.

Romer, P. M. (1994). The Origins of Endogenous Growth. The Journal of Economic Perspectives 8 (1): 3.

Sanusi, L. S. (2010). Growth prospects for the Nigerian economy. Convocation lecture by Mr Sanusi Lamido Sanusi, Governor of the Central Bank of Nigeria, at the Igbinedion University Eighth Convocation Ceremony, Okada, Edo State, 26 November 2010. BIS Review 166/2010.

Solow, R. M. (1956). A contribution to the theory of economic growth. The Quarterly Journal of Economics, 70 (1): 65-94. Retrieved on 6th June, 2012 from : http://links.jstor.org/sici?sici=0033-5533%2819560 2%2970%3A1%3C65% 3AACTTTO%3E2.0.CO%3B2-M

Studenmund, A.H. (2001). Using econometrics - a practical guide, Addison-Wesley-Longman :193-95.

Udah, E. B. (2011). Openness, resilience and economic performance in Nigeria: An empirical investigation European Journal of Social Sciences 26: (4) 545-560. Available at http://www.europeanjournalofsocialscie nces.com

United Nations Development Programme (2011). Human Development Report 2011. Sustainability and Equity: A Better Future for All. Explanatory note on 2011 HDR composite indices, Nigeria. Retrieved on 6th June from hdrstats.undp.org/en/countries/profiles/ NGA.html

Walkenhorst, P & Cattaneo, O. (2006). Trade, Diversication and Growth in Nigeria. Munich Personal RePEc Archive (MPRA). Retrieved on 1/10/2012 from http://mpra.ub.uni-muenchen.de/23735/1/MPRA_paper_23735.pdf

Winters, A. L. (2002). Trade Liberalization and Poverty: What are the links?, The World Economy, 25: 1337-1367.

Winters, A. L., McCulloch, N. & Mackay, A. (2004). Trade Liberalization and Poverty: The Evidence so far, Journal of Economic Literature, 42: 72-115.

World Bank (2007). Finance for all? Policies and pitfalls in expanding access. Retrieved on 1/10/2012 from http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/EXTPRRS/EXTFINFORALL/0,,menuPK:4099731~pagePK:64168092~piPK:64168088~theSitePK:4099598,00.html