INSTITUTIONAL REFORMS, INTEREST RATE POLICY AND THE FINANCING OF THE AGRICULTURAL SECTOR IN NIGERIA

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Abstract

This study empirically investigates the impact of interest rates and some macroeconomic variables on agricultural performance in Nigeria by employing co-integration and an error correction mechanism (ECM) technique with annual time series data covering the period 1980 to 2011. The results reveal that there is a negative relationship between agricultural value added, interest rate spread, and inflation in the country. By implication, the study deduces that the higher the level of inflation and interest rate spread in the country, the lower the level of agricultural value added will be.

Keywords: Institution, Interest rates, Agricultural sector, Co-integration, Error correction mechanism

Introduction

The drive to industrialize by many developing countries has often been highly damaging to agriculture, especially in the poorest countries such as those of sub-Saharan Africa. With a backward and run-down agricultural sector, with little or no rural infrastructure, many countries today face a food crisis of immense proportion. Agricultural output must be increased for the benefit of rural and urban dwellers alike. The possible way forward among others, include the provision of finance. Farmers need access to cheap finance and not to be forced to borrow at sky-high interest rates from local moneylenders. This can be achieved by setting up rural banks specializing in the provision of finance to small farmers. These could be nationalized institutions, or the government could give incentives to private banks to expand into the rural sector. See Sloman, 2006.

A significant phenomenon is that fragile and difficult environments characterize third world agriculture (Chambers et al 1989). Although African farmers have increased

production at even more rapid rates during the past decade, they have done so mainly by cultivating more land and not, for the most part, by using more fertilizer, better practices, or improved varieties of crops. Consequently, although crop yields in sub-Saharan Africa (SSA) were nearly equal to those in South Asia in the 1960s, they are now far lower, and the gap is even greater between SSA and other developing regions. Thus, while agricultural output is growing in Africa, productivity is not. A major result of this low agricultural productivity has been the serious erosion of the competitiveness of African agricultural products on world markets. For example, Africa's share of total world trade fell from 8 per cent in 1965 to about 2 per cent in 2000 (African Development Bank, 2002).

As observed by Anyawu et al (2010), one of the objectives of agricultural credit policies over the years was to make adequate credit available to the farmers at the right time and at affordable cost. Various measures have been adopted in pursuance of this objective in the recent past. These include purveyance of credit to the agricultural sector at concessionary interest rate, establishment of agricultural finance institutions, introduction of funding schemes, etc. Despite government efforts to ensure the provision of credit through the various mechanisms embarked upon, credit to the agricultural sector remained low, as it did not result to increased allocation of credit to the agricultural sector during the period before 1999.

Also, in the recent time in Nigeria, following the Central Bank of Nigeria (CBN) (2010), annual growth rate of agriculture dropped from 55.2 per cent in 2002 to 7.4 per cent in 2006. It, however, fell further to a mere 6.2 per cent by the end of 2009. According to the African Economic Outlook (2011), however, the Nigeria agricultural sector has performed remarkably well, with an estimated growth rate in 2010 exceeding 6.0 per cent, reflecting the good weather conditions that boosted crop production. The government's effort to address protracted issues of inadequate credit and Scheme (CACS) has also benefited agricultural expansion as in 2009/2010, the government made 200 billion Nigerian Naira (NGN) available at low interest rates to farmers and other practitioners in the agricultural sector. As such, what role has institution played in the financing of the agricultural sector in Nigeria. And how has interest rate policy impacted on agricultural production in the country? This study thus seeks answers to the foregoing questions.

Nevertheless, most researches along this line of thought were concentrated on the manufacturing sub-sector in economies other than Nigeria. A review of the cross-sectional studies, according to Sachs (2003), shows that while there is a consensus in the literature that institutional quality matters for growth, the literature is quite ambiguous about the relative importance of "institutions" vis-à-vis other factors, including manufacturing growth,

geography and trade. Yet, a related study, Adebiyi and Obasa, (2004) focused on the manufacturing sub-sector in Nigeria but left many issues unattended. The present study, therefore, finds relevance in extending the scope of Adebiyi and Obasa (2004) by examining the financing of the agricultural sector in Nigeria for the period 1980 to 2011. Objectively, the study seeks to investigate the relationship that links institution, interest rate policy and the agricultural sector in the country.

The rest of the paper is structured as follows: section two treats the theoretical issues and literature review as an overview of institutional support and financing of the agricultural sector in Nigeria is discussed in the third section. Data and methodology occupy the fourth section while the fifth section concludes the study.

Theoretical Issues and Literature Review

Institution and Institutional Reforms

There is a vast literature on national policies, institutions and economic growth. There is, however, considerable disagreement about which policies are most linked to economic growth. While some focus on openness to international trade and fiscal policy, others focus on macroeconomic policies and on financial development. Using the latest econometric technique, it has been found that national policies are strongly correlated with economic growth (Alesina 1997).

The literature on the linkage between economic policies and macroeconomic outcome is extensive. Along this line, for example, the positive contributions of trade openness and human capital formation to GDP growth have been exhaustively analyzed and documented as having the negative relationship between inflation and high economic growth. It should be noted that policies are not more effective than the institutions that underlie them. Recent work considering the roles of both institutions and policies on economic performance has found that institutions are the dominant factors with little independence (if any) of policies (Rodrik, Subramanian and Trebbi 2002).

In essence, North (1990) offers that “Institutions are the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction.” He goes on to emphasize the key implications of institutions since, “In consequence they structure incentives in human exchange, whether political, social, or economic.” Other scholars include in their definition of institutions organizational entities, procedural devices, and regulatory frameworks (Williamson, 2000). Yet, Johannes Juttings (2003) has been of the opinion that in most of the recent articles, institutions are defined in a broader sense, linking

various different measures of institutional quality to development outcomes from various angles and disciplines.

Institutions defined as stable recurring patterns of behavior help determine what policies are chosen and how they are executed. It is glaring in most cases that where institutions are weak or ineffective, policy is likely to be the same. Too often government organizations in Africa are just that – organizations that do not command the respect, loyalty, and dedication that characterizes an institution in the full sense of the term (Goldsmith, 1998). It is very clear that policies stand or fall according to the institutional support that they receive. It is not simple in practice to separate policy from institutions since in reality the two concepts overlie each other (Ajayi, 2003).

Thus, institutional reforms in Nigeria in the current dispensation take shape around the financial environment such that while Nigeria's financial markets have shown considerable improvement, financing conditions, especially for businesses and firms, remain weak as financial institutions continue to maintain a cautious approach to credit extension.

Interest Rates Policy in Nigeria

The 1970s saw different interest rates for different sectors through to the mid 1980s. The preferential interest rates were based on the assumption that the market rate, if universally applied, would exclude some of the priority sectors. Interest rates were, therefore, adjusted periodically to promote an increase in the level of investment in the different sectors of the economy. For example, agriculture and manufacturing sectors were accorded priority, and the commercial banks were directed (by the central Bank) to charge a preferential interest rates (vary from year to year) to al loans and advances to small-scale industries.

One main component of the Structural Adjustment Program (SAP) in Nigeria and the deregulation measures that followed it is the deregulation of the financial sector of the economy especially the deregulation of interest rates. This institutional arrangement has had various impacts on the different sectors of the economy especially the agricultural sector, Nigerian agriculture is largely subsistence and access to adequate funds have been a major bottleneck.

In the early part of the last decade, the government of Nigeria was pursuing a market-determined interest rate regime, which does not permit a direct state intervention in the general direction of the economy. The market demand and supply was the driving force of resource allocation. Thus, the formal lending policy did not give special interest rate concession to the agricultural sector. The interest on loan was based on the risk factor of the

sector or sub-sector that the loan was meant for. However, as depicted in Table 1, the level of interest rate in the country oscillates around 6.8 in the period 1970-1979 to 17.9 in 2005.

Table 1. Interest Rate Regime and Total Credit to the Agricultural Sector 1970-2006 (₦'Million)

Year	Interest Rate	Merchant Bank	Commercial Banks	Community Banks	Total
1970-1979	6.8	-	89.9	-	89.9
1980-1989	12.9	250.4	1593.7	-	1844.1
1990-1999	22.5	5557.8	27703.6	371.7	33633.1
1999-2006	19.9	25790.8	208463.8	654	234908.6
1999	21.3	25485.2	118518.3	1007.2	145010.7
2000	18	26096.4	146504.5	1613.7	174214.6
2001	18.3	-	200856.2	77.6	200933.8
2002	24.4	-	227617.6	390.5	228008.1
2003	20.5	-	242185.7	625	242810.7
2004	19.1	-	261558.6	483.1	262041.7
2005	17.9	-	262005.5	69.9	262075.4

Source: CBN Statistical Bulletin, and Anyawu et al (2010)

Also, the CBN has pursued a policy of quantitative easing in the aftermath of the global financial and economic crises in order to lessen the impact of the crises on the Nigerian economy. Nonetheless, there is continuing underperformance of key monetary aggregates – a factor that had underpinned the CBN's decision to implement the quantitative easing policy. The major challenges are still negative growth in credit to the private sector, high lending rates and a widening interest-rate spread despite declining interbank rates and a relative surplus liquidity in the banking system.

As part of its quantitative easing policy, the CBN guaranteed interbank transactions. This has contributed to a downward slide in interest rates. For example, the weighted average interbank call rate, which stood at 2.89 per cent at end‑2009, declined to 1.50 per cent at end-2010, compared with the monetary policy rate (MPR) of 6.00 per cent. The low and declining interbank rate was evidence of surplus of funds in the banking system. Notwithstanding the declining interbank rates, the interest-rate structure of commercial banks showed high lending rates. The average lending rate increased slightly to 23.3 per cent at end-2010 from 23.1 per cent at end-2009. In addition, deposit rates declined from an average 6.13 per cent in 2009 to an average 5.53 per cent in 2010. Thus, the spread between the average lending rate and the average deposit rate widened in 2010 reflecting inefficiencies in cost management, and unrealistic profit expectations and targets in commercial banks.

In 2010, the CBN instructed commercial banks to publish and submit their risk-based interest-rate pricing model to the CBN on a regular basis. The banks will also be required to provide a statement showing the relationship between the MPR and their prime and maximum lending rates. They will be required as well to disclose the maximum rate they

charge to their customers. The pricing model would thus also disclose the basis for the spread and provide visibility on the relative efficiency of banks.

Although aggregate domestic credit in the Nigerian economy continues to grow, its composition suggests that the private sector is being crowded out. In 2010, (net) aggregate domestic credit grew by 15.96 per cent and reversed the sharp decline of about 55.6 per cent recorded in 2009. (Net) credit to the government, which grew by 17.84 per cent, was the major contributor to the growth in (net) aggregate credit in 2010, while credit to the private sector declined by about 10.0 per cent. The substantial growth of (net) credit to government reflects the risk aversion of Deposit Money Banks and suggests a possible crowding out of private-sector credit.

On the other hand, the monetary authorities have been successful in maintaining stability in domestic prices. The rate of inflation decreased in 2010 to the annual average of 13.7 per cent from 12.5 per cent in 2009. The stability in domestic prices in 2010 can be attributed to a number of factors, including the continuing monetary contraction, the delay in the passage of the 2010 federal budget and the improvement in the supply of petroleum products. There is nonetheless a real threat of inflationary pressure in the near-to-medium term, in particular, an inflation risk due to high energy prices as the economy rebounds.

The exchange rate of the Naira has remained relatively stable in all segments of the Nigerian foreign-exchange market. Towards the end of 2008, the Naira had plunged in value by about 20 per cent. This sharp decline required the CBN to enact currency controls. Relative stability in the exchange rate of the naira was restored in 2009, and the CBN returned to its policy stance of a liberalized foreign-exchange market. At an average exchange rate of NGN 146.87 to the US dollar at end-2009, the naira depreciated by only 2.05 per cent in 2010 to NGN 149.87 to the US dollar.

Brief Review of Empirical Literature

The link between institutions and economic development of nations has commanded much attention in theoretical and empirical research since the emergence of the endogenous growth theories. It is now being increasingly recognized that institutional quality (e.g. economic and legal institutions) matter for economic growth, just as other factors such the resource endowment and technical skills. Adebiyi (2004) contends that institutions have direct and indirect benefits on economic growth and development.

La Porta et al (1998) opine that economic freedom, political Rights and press freedom are highly correlated to economic growth. Just as Barro (1997) in a cross country study concludes that economic and political institutions are important factors that explain

differences in growth across countries. Also, in a study of OECD countries Khalil et al (2007) maintains that more than 80 per cent of the variation in GDP per capita in the OECD countries can be explained by both economic and legal determinants. The study yet posits that " counties can develop faster by enforcing strong property rights, fostering an independent judiciary, attacking corruption, dismantling protecting political rights and civil liberties" (Khalil et al 2007).

According to Omojimite (2012), the agricultural sector in Nigeria is one of the leading sectors in the country in terms of its contributions to income, employment, foreign exchange earnings and domestic food supply. Nigeria with its several ecological zones and climatic conditions supports the cultivation of a wide variety of food and tree crops. Farming in Nigeria is largely dualistic in structure, with a predominantly traditional subsistence segment and a small modern, fairly mechanized commercial segment. Farming systems are many and are fashioned by traditions, land availability and weather conditions. The common systems include but not limited to: crop rotation, mixed cropping, shifting cultivation, terrace farming, sole cropping and irrigated farming.

Thus, the study carried out by Omojimite (2012) on the relationship between institutions, macroeconomic policy and the growth of the agricultural sector in Nigeria finds significant evidence in support of the hypothesis that institutions matter in economic growth especially the growth of the agricultural sector in Nigeria. It, therefore, recommends that government should liberalize interest rates to the agricultural sector and strengthen institutional support to the sector particularly in terms of subsidized inputs and extension services to farmers.

Also, Udah and Obafemi (2011) examine the impact of financial sector reforms on agricultural and manufacturing sectors in Nigeria using the VAR methodology. The results indicate that bank credit to the private sector as a ratio of GDP has a positive effect on manufacturing and agricultural sectors in the short run, medium term and long term. The findings of the study provide a strong evidence to confirm that the reforms in the financial sector succeeded in deepening the financial system, albeit the success achieved so far is below the threshold needed to spur the development of the manufacturing and agricultural sectors. However, it is important to sustain the reform efforts in the country in order to achieve the underlining objectives as they were.

Overview of Institutional Support and Financing of the Agricultural Sector in Nigeria

The World Bank-assisted Agricultural Development Projects (ADPs) and the River Basin Development Authorities (RBDAs) were among the institutional support agencies

established to promote the sustainable development of Nigeria's agricultural sector. The ADPs, which started operation with three pilot projects in 1975, had increased to ten by 1985, and further increased to thirty-one by 1993. Their activities were all-embracing, covering four integrated components of agriculture, including adaptive research, agriculture extension, input supply and rural infrastructure development. In contrast, the number of RBDAs was reduced from eighteen to eleven during the period and their functions restricted to water resource management and development.

In accordance with the new focus, all the RBDAs were expected to dispose of all their non-water assets and withdraw from all activities involving direct production. Also, during the period, a unified extension in services system was adopted to ensure the orderly development of a sustainable agricultural sector, with particular emphasis on the smooth transfer of research findings from research institutes to Nigerian farmers. The ADPs and the Agricultural Project Monitoring and Evaluation Units (APMEU) were restructured to form the unified extension services to Nigerian farmers. The rapid expansion of the ADPs to all states of the federation was designed to ensure effective extension services to the farmers in rural areas, and enhance the distribution of agricultural inputs and infrastructure development.

Unfortunately, the expanded mandates of the ADPs overstretched their resources as the level of required funding could not be sustained to support their activities. The federal and state governments failed to meet their financial obligations to the ADPs, precipitating the non-release of the World Bank's counterpart funding. As might be expected in the circumstances, the lag between research findings and their adoption by Nigerian farmers has increased rather than decreased.

Government intervention in the agricultural sector was informed by the need for national food security to ensure sustainable access to, and availability and affordability of good quality food for all Nigerians. Other objectives of government included the production of agricultural raw materials for the industrial sector and the export market, promotion of the value-chain approach in the agricultural sector, enhancement of farm income and reduction of poverty.

The government continued to provide support to farmers under the Fertilizer Market Stabilization Program. The Federal Government provides the sum of ₦22. 30 billion as its 25 per cent subsidy contribution to the procurement and distribution of 900,000 tonnes of fertilizer to the states and the Federal Capital Territory (FCT), valued at ₦89. 31 billion. Also, the budgetary allocation from the federal government to the sector increased from ₦35.

8 billion in 1990 to ₦51. 47 billion in 2001. The percentage of this allocation in the total capital expenditure was, however, a far cry from the 25 percent stipulated by the Food and Agricultural Organization (FAO) as shown in table 2. In the same vain, however, the total credit made available in the banking sub-sector to the agricultural sector increased from ₦89. 9 million in the period 1970-1979 to around ₦262, 075 million in the year 2005 as presented in Table 1.

Table 2. Budgetary Allocation to Agriculture (₦'Billion)

Year	Agriculture GDP (₦'Million)	Total Capital Expenditure (₦'Million)	Total Capital Expenditure on Agriculture	Capital Expenditure on Agriculture (% of Total)	FAO* Stipulation (%)
1990	35.8	24.05	1.6	6.65	25
1991	36.5	28.34	1.22	4.3	25
1992	37.3	39.76	0.94	2.37	25
1993	37.8	54.5	1.82	3.35	25
1994	38.6	70.92	2.18	3.07	25
1995	40	121.14	2.41	1.99	25
1996	41.7	158.68	3.89	2.45	25
1997	43.5	269.65	6.25	2.32	25
1998	45.25	309	4.33	1.4	25
1999	47.6	498	8.88	1.78	25
2000	48.99	239.5	6.91	2.89	25
2001	51.47	438.7	5.76	1.31	25

Source: Nnanna et al (2010)

The period 1999-2007 witnessed an increase in credit to the agricultural sector. This was attributed to the various mechanisms put in place by government to provide credit to the farmers. Such mechanisms include the Presidential Initiatives and the Agricultural Credit Support Scheme (ACSS).

Access to affordable credit continued to receive attention as the CBN monitored and encouraged the disbursement of funds under the ₦200 billion Commercial Agricultural Credit Scheme (CACS). As of December 2010, the Bank had released ₦96. 81 billion to eleven participating banks for disbursement to 86 projects/promoters which included eighteen state governments.

In order to further improve the lending environment in the agricultural sector the CBN, in collaboration with other stakeholders, initiated the Nigerian incentive-based Risk Sharing System for Agricultural Lending (NIRSAL). The Rural Finance Institution Building Program (RUFIN) commenced operations during the year. The program has the potential of impacting positively on the capacity of rural financial institutions to meet the credit requirements of rural farm communities. The program was being implemented in twelve selected states through a loan ofUS$27. 2 million from IFAD, a grant of US$0. 5 million

from the Ford Foundation and counterpart funding from the Federal Government and the participating states.

As part of efforts to help Nigeria diversify its economy, China has recently increased its volume of agricultural imports from Nigeria. By end-2010, Nigeria had exported about 80 000 tonnes of cassava to China, with orders to supply another 102 000 tonnes. China is also importing sesame seed from Nigeria and has indicated willingness to buy more Nigerian agricultural produce. In addition, there are currently over 400 Chinese agricultural experts in Nigeria involved in the construction of small earth dams.

Data and Methodology

The Data Set

The data set for this study consists of annual time series obtained from the publications of International Financial statistics (IFS), World Bank, and National bureau of statistics (NBS), Central Bank of Nigeria (CBN) *Statistical Bulletin*, and *Annual Report and Statement of Account.* While interest rate spread was computed from lending and deposit interest rates. The variables considered are interest rate spread (IRS); exchange rate (EXR); domestic bank credit to the agricultural sector (CAS); inflation rate (INF); and agricultural value added (AVA).

Model Specification

The independent variables for this study include interest rate (IRS); exchange rate (EXR); domestic bank credit to the agricultural sector (CAS); and inflation rate (INF). However, these explanatory variables are important for the fact that they in one way or the other affect general activity (output and revenue) in the agricultural sector. Agricultural value added (AVA) is, however, used as the dependent variable. Thus, following Adebiyi and Obasa (2004), the model for this study takes the form as specified in equation (1) below.

$$AVA = \beta_0 + \beta_1 IRS + \beta_2 EXR + \beta_3 CAS + \beta_4 INF + \varepsilon \quad (1)$$

where $\beta_i > 0$, $\forall\, i = 0, 4 \,\&\, 5$ and $\beta_i < 0$, $\forall\, i = 1, 2 \,\&\, 3$. ε= error term

Methodology

This study employs co-integration technique (Adebiyi, 2004 & Komolafe, 1996) and the Granger causality tests as suggested by Granger (1969, 1986) to estimate the model, and determine the causality between agricultural value added and the independent variables. Although the series are co-integrated, this was confirmed after the unit root test on each variable was carried out to avoid spurious regression. An error correction model was later on estimated to confirm the speed of adjustment to equilibrium by the series.

Empirical Results and Discussion

Since carrying out regression on non-stationary time series data would lead to spurious regression outcomes, we employed the widely used Augmented Dickey-Fuller (ADF) test (Dickey and Fuller, 1979) to ascertain the stationarity of the data (see Kolawole, 2012). This is conducted at the level and at the first difference as depicted in table 3. Aside from AVA and EXR that were stationary at level with intercept, we find that other variables are stationary at first difference. As such, the series are I (1) series.

Having affirmed the stationarity of the series, it was essential to determine the causality using the Granger causality test as defined by Granger (1969). The results, however, fail to support any strict causality between the variables despite the lag length of 2. That is to say that the variables are exogenous of one another. The unrestricted co-integration trace and maximum Eigen value tests indicate one (1) co-integrating equation at 5 per cent level for the series. Also, co-integration is revealed in the agricultural value added model which implies that there is a long-run relationship between the regressand and its explanatory variables. The speed of adjustment to equilibrium in its current period will, however, take a long time. Furthermore, given the parsimonious model the coefficient of the error correction term is significant at 1 per cent with a negative sign. This result, therefore, justifies the use of an ECM specification of the model. Thus, by inference there is a negative relationship between agricultural value added (AVA) and each of the regressors.

Table 3. Augmented Dickey-Fuller Unit Root Test Results for all the Variables

Variable	Stage	Critical Value	1%	5%	10%
AVA	Level with Intercept	-4.049503*	-3.670170	-2.963972	-2.621007
IRS	1st Difference	-6.134048*	-2.644302	-1.952473	-1.610211
EXR	Level with Intercept	-4.328008*	-3.679322	-2.967767	-2.622989
CAS	1st Difference	-5.513608*	-2.650145	-1.953381	-1.609796
INF	1st Difference	-5.745403*	-2.644302	-1.952473	-1.610211

Note: In the above table, * indicates significance @ 1% level.

Conclusion

This paper employs the ECM model to examine the relationship that subsists among agricultural value added, interest rate spread, exchange rate, credit to the agricultural sector and inflation in Nigeria. The findings reveal clearly that causation between agricultural value added and credit to the agricultural sector; and between agricultural value added and inflation could not be established in the Nigerian context, at least at the conventional 1% and 5% levels of significance, such that an agricultural value added cannot be influenced by the both of credit to the agricultural sector and inflation but by an inverse relation with the both of interest rate spread and exchange rate. In essence, as causality cannot be established, causation between agricultural value added, the credit to the agricultural sector and inflation

in Nigeria is weak and insignificant, and as such if the levels of interest rate spread and the exchange rate are increased, the size of agricultural value added will decline in the country.

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