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Analyzing the Link Between Interest Rate Management and Diversification in Nigeria

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Abstract

This paper examined the linkages between interest rate management and economic diversification in Nigeria. The study used annualized data from 1986 to 2017 and the error correction model (ECM) was employed to analyse our respective models. Our findings showed that interest rate was positively but not significantly associated with agricultural sector performance in Nigeria. The positive effect in the Nigerian case is contrary to theoretical expectations. Moreover, interest rate was found to be negatively related to manufacturing sector performance in the economy. However, the negative impact of cost of fund was significant in Nigeria. We conclude that the biting influence of interest rate was stronger on the Nigerian manufacturing sector, we therefore recommend that Nigeria authorities should apply direct monetary policy measures of the monetary authority and government policy interventions to some selected products that can strengthen her foreign exchange earnings in the manufacturing sector. Nigeria in addition should build economic partnerships with emerging markets and also Government openness to foreign investment ought to be above average.

Key words*:* *Interest rate management; Diversification; Nigeria.*

1. Introduction

The apex bank in an economy usually adopts monetary policies as a means of fixing interest rates and economic growth. This is achieved by either raising or reducing the rate of the interest on the money that they transmit to the other banks in the nation. Just as fuel is to a vehicle, economic growth is to an economy, government incentive helps in the conveyance and interest rates act as control. All of them have to be harmonized to achieve steady performance. Economies have cycles that are used as a way of measuring the fitness of such an economy and any gains that may have been made in the economy by employing several monetary and fiscal policies.

The correlation between interest rates and economic growth arises from the use of interest rates as a means for obtaining desired economic conditions. This implies that interest rates are indices for making the economy more stable by curbing unwanted factors like inflation and extreme consumption by consumers. You have to lower interest rates to stimulate an economy to grow, without fundamentally changing it.

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Meanwhile stakeholders with vested interest, such as economists, businessmen and businesswomen, the government and the various banks will come to various informed conclusions regarding the health of the economy after analyzing the periodic economic reports *o*bserved in the macroeconomic and microeconomic trends.

The most important part of Nigeria's economy was once agriculture and it provided jobs for more than 70 percent of the population until the discovery of oil. Thus, economic activities recorded huge signs of growth. With the discovery of oil, however, world oil price increases from 1973 produced rapid economic growth in transportation, construction, manufacturing, and government services. Thus this led to a great influx of rural people into the larger urban centres, agricultural production was stagnated to such an extent that cash crops such as palm oil, peanuts (groundnuts), and cotton were no longer significant export commodities (Akpan & Eboh,2018).

As a result, from about 1975 Nigeria was forced to import such common commodities as rice and cassava for domestic use. This system worked well because revenues from petroleum remained stable, but since the late 1970s, the agricultural sector has been in constant crisis because of the fluctuating world oil market and the country's rapid population growth.

2. Review of related literature

2.1 Conceptual clarification of interest rates and diversification

Interest rate is the amount of interest paid per unit of time expressed as a percentage of the amount borrowed. The cost of borrowing money, measured in naira, per year per naira, borrowed, is the interest rate. Interest rates differ mainly in term/maturity(Anyanwu,1997). Interest rates can either be nominal or real, nominal interest rate can be measured in naira terms, not in terms of goods. The nominal interest rate measures the yield in naira per year, per naira invested while the real interest rate is corrected for inflation and is calculated as the nominal interest rate minus the rate of inflation.

It is widely held that a diversified economy is less sensitive to the ups and downs associated with any particular industry because risk is spread more evenly across a number of industries. With diversification, even if some industries are suffering, other stronger industries will help the economy maintain healthy growth. The presence of many industries would be expected to offer opportunities for employment in growing sectors to compensate for employment losses in declining sectors. Some regional economists and policy makers regard diversification as employment insurance, with more diversified economies experiencing lower unemployment during cyclical downturns. It is also argued that the more diversified the economy becomes, the more resilient it becomes to external events and developments.

While diversity has often been promoted as a means to achieve the twin goals of economic stability and growth (Kort, 1979; Siegel et al., 1994), it has also been recognized that other aspects of a region's economic structure, such as regional comparative advantage and natural resources are also important. It is argued that indiscriminate diversification (i.e., diversity for the sake of diversity) will not necessarily bring economic growth and stability (Smith &Gibson,

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1998).

According to Chima (2017), citing the Managing Director of the International Monetary Fund (IMF), Christine Lagarde, stressed the need for Nigeria and other African countries to ensure that they diversify their economies in other to be able to withstand shocks.

2.2. Major Challenges to Diversification

A. Specialisation

There is evidence that at the early stages of economic development, where most African countries currently are, countries tend to leverage their natural endowments to boost economic gains from niche sectors. But as they prioritise new sectors, increase productivity and diversify their economies, they eventually reach relatively high levels of per-capita income. At this point of high development, countries then begin to specialise again. These findings add weight to the case for diversification, and serve as a caution against the hasty pursuit of specialisation when economic growth levels are not sufficiently high.

B. International Opportunities

Currently, Africa accounts for about 3% of the world's GDP with a share in global manufactured exports compared to zero. Integration in the global economy was weak a result of the failure of most countries in Africa to become competitive trading partners in a wider range of economic activities worldwide. Nevertheless, African countries can seek emerging opportunities such as building economic partnerships with emerging markets.

C. Trade Barriers

Intra-African trade is really dull, and its external trade volumes and destinations not well-diversified. To overcome the challenge, various African countries have made efforts to create common markets and there has been some success, including the launch of the COMESA customs unions and the Common Market of the East African Community (EAC), which will increase free movement of labour and goods among its members. This is essential because while Africa's exports to the rest of the world are usually concentrated around a few primary commodities, intra-African trade is more evenly distributed among fuels, non-fuel primary products and manufactured goods. As intra-regional trade grows, it can be expected that the range of exports will follow suit as well.

D. *Urbanization*

Africa's urbanisation has generally not been driven by either industrialisation or an agricultural revolution..Industrialisation and an industry-led agricultural transformation have been important drivers of urbanisation in other regions, such as Asia, making it possible to absorb labour moving from the rural to the urban and modern sectors of the economy and from low to high-productivity employment. However, Africa is experiencing urbanisation without industrialisation. Indeed it could be argued as over-urbanisation for the present level of economic development (Proctor, 2014).

Gollin *et al.* (2013) argued that the urban growth observed in Africa over the past few decades has been driven by natural resource exports rather than an industrial or agricultural revolution. Resource revenues are spent in the cities, whether by private recipients of resource rents or by governments.

E. Underemployment

Labour markets in sub-Saharan Africa are dominated by low formal public and private sector employment, low unemployment rates and a proportionately large active population. These together lead to high levels of underemployment with some 80 per cent of the labour force engaged in low-productivity agriculture or household enterprise activities. The process of structural change, which sees productivity grow within economic sectors through capital accumulation, technological change and so on, and labour movement across sectors, from low-productivity sectors to high productivity ones, increasing overall labour productivity in the economy, has been slow to take off (McMillan and Rodrik, 2011).

Advancement in agricultural productivity is likely to bring about significant social dividends because agriculture uses by far the most individuals and many workers will remain in the sector for a long time as it is more labour intensive than other sectors, such as manufacturing and mining Not minding the growing interest in and commitments to industrialisation as a transformative driver, agriculture is central to national and rural economic transformation and will remain so for decades to come. This basic part played by agriculture, not least given the growth in the actual numbers of households dependent on the sector and as a contributor to poverty reduction in the region, cannot be overemphasized (Proctor, 2014).

This calls for the role of agriculture, including the formal and informal occupations associated with value chain development, agro-industry and input provision, to be acknowledged and supported within national employment and human development (specifically education, including technical and vocational training) policies. It also calls for investment as a vehicle to create employment in rural areas and in small towns and secondary cities whose economic lives are closely related with agricultural activity. Even though sub-Saharan Africa has some prospects to become competitive in light manufacturing, the most viable option for export-led growth of employment is agriculture, including traditional cash crops such as cotton, coffee, cassava, cocoa and groundnuts.

2.3 Theory of interest rate

Loan Pricing Theory

Loan pricing means determining the interest rate for granting loan to creditors, be it individuals or business firms. It is one of the most important, however difficult task in lending funds to business firms & other customers. Because it is always very difficult to exactly know what the actual loan risk a particular loan application is. Generally the lender wants to charge a high enough rate to make sure that the loan will be profitable as well as it will covers enough compensation against the default risk. On the other hand loan price must be set low enough that helps the customers to find it easy for successful repayment of loan (Okoye & Eze, 2013).

Proper loan pricing has important implications for the national economy as well as the health of individual banks. For banks, appropriate loan pricing leads to better allocation of funds and thus, higher profits. Pricing is particularly important at the extreme ends of the credit quality spectrum. At one end, low-risk borrowers are likely to seek out more efficient sources of funds if banks price their loans too high. At the other extreme, if the riskiest borrowers are underpriced, they will capture a larger portion of a bank's funds and will very likely increase the volatility of a loan portfolio's returns. On the national level, the proper valuation of loans contributes to a more efficient allocation of funds in the entire economy.
Banks cannot always set high interest rates. Banks should consider the problems of adverse selection and moral hazard since it is very difficult to forecast the borrower type at the start of the banking relationship (Stiglitz and Weiss, 1987). If banks set interest rates too high, they may induce adverse selection problems because high-risk borrowers are willing to accept these high rates. Once these borrowers receive the loans, they may develop moral hazard behaviour or so called borrower moral hazard since they are likely to take on highly risky projects or investments (Chodecai, 2004). From the reasoning of Stiglitz and Weiss, it is usual that in some cases we may not find that the interest rate set by banks is commensurate with the risk of the borrowers.

2.4 Theory of diversification

The linear stage theory of Rostow(1960) called Rostow's Stage Theory of Growth, he proposed that all economies are within five (5) stages of economic growth and development: (1)the traditional society,(2) the precondition for takeoff into self-sustaining growth,(3) the stage of takeoff,(4) the drive to maturity and(5) the stage of high mass production and consumption. He posits that all advanced countries had passed through the “take off” stage into self-sustaining growth.

The under developing countries are still either in the traditional or 'pre conditional' stage and they need to follow a certain set of rules of development to take off in their turn into self-sustaining economic growth. He suggests that the main strategies of development that are necessary for any 'take off' stage are the mobilization of domestic and foreign savings in order to generate efficient investment to accelerate economic growth (Shitu, 2017). He further stated that countries can move their economies from traditional subsistence agricultural production to a more modern industrially diverse sector with services and manufacturing oriented.

Lewis in Shitu (2017), was one of the renowned advocates of structural change model with his two sector analysis. Lewis believes that the traditional agriculture subsistence sector is over populated with labour supply which is characterized by zero marginal labour productivity. He suggests that this surplus labour in the traditional sector could be withdrawn from the sector without loss of output to highly productive modern industrial sector to achieve economic growth. The failure of the Lewis model to meet the challenges of the realities of contemporary developing countries led to emergence of the international dependence revolution model that believe the developing countries are beset by institutional, political and economic rigidities both domestic and international and they are caught in a dependent and domestic relationship with the rich Western countries (Shitu, 2017).

2.5 Empirical review

Obamuyi and Olorunfemi (2011) examined the implication of financial reforms and interest rate on economic growth in Nigeria. Data over the period 1970-2006 were analyzed using the co-integration and error correction analytical techniques. The result indicates that financial reform and interest rate have significant positive impact on economic growth.

Jelilov (2016) examined the impact of interest rate on economic growth in Nigeria from 1990 to 2013. The result found that interest rate has a slight impact on growth; however the growth can be improved by lower interest rate which will increase investment. As a result he suggested that the Nigerian authorities should set interest rate policies that will boost economic growth. Therefore, proper measure should be taken in order to have a more rapid economic growth.

In a similar study, Okoye, Nwakoby &Modebe (.2015) sought to identify the effect of the interest rate liberalization policy of the Nigerian government (introduced in 1986 under the structural adjustment programme) on the performance of the industrial sector in Nigeria. The study shows evidence of significant positive impact of lending rate.

2.6 The Nigeria experience

It is a known fact across the globe that for a country to attain growth and development, its economy has to be diversified. Diversification does not occur in a void. A Mono-economy needs to give way to the productive development of various sectors of the economy. An economist and head of the International Trade Centre, Arancha Gonzalez, observed that “growth without diversification, technological improvement and increased productivity is easily reversed. All it takes is a dip in commodity prices.”(Chijioke, 2018).

Nigeria is a mono-economy but has a population of about 180 million, which is supposed to be her greatest advantage if properly harnessed. With a large population and growing middle class, there are 65 million economic active people in Nigeria (The World Bank, 2018). Nigeria is also endowed with both land and water linkages

Nigeria’s economic freedom score is 58.5, making its economy the 104th freest in the 2018 Index. Its overall score has increased by 1.4 points, with improvements in the labor freedom and judicial effectiveness indicators outpacing declines in fiscal health and monetary freedom. Nigeria is ranked 12th among 47 countries in the Sub-Saharan Africa region, and its overall score is above the regional average but below the world average.

Trade is moderately important to Nigeria's economy; the combined value of exports and imports equals 21 percent of GDP. Government openness to foreign investment is below average. Financial-sector reform is ongoing, but the State still influences the allocation of credit. Measures to improve access to finance for local small and medium-size companies have been introduced.

Policy interest rate in Nigeria increased from 12% in 2013 to 14% in 2017 (Focus Economics 2018).). The policy interest rate determines the levels for the rest of the interest rates in the economy, since it is the price at which private agents-mostly private banks-obtain money from the central bank. These banks will then offer financial products to their clients at an interest rate that is normally based on the policy rate.

2.7 The crux of the matter

Economic diversification is a process of enlarging the range of economic activities both in the production and distribution of goods and services. It does not essentially require increase in output but it improves stabilisation of economies by diversifying their economic stand. The issue of economic diversification should be seen from the point of view of sustainable development to make certain long-term stability of the economy. Viewed from this position, it has the capability to essentially build up an economy's adaptive ability and safeguard its long-term prospects in the face of weakening basic natural resources and the vagaries of economic fluctuations beneath the weight of competition in globalisation.

Economic diversification has the tendency to gather the necessary prerequisite for sustainable development like meeting the poor's fundamental needs which revolves about provision of job, food, health, clothing and shelter by opening various avenues of economic activity which houses broad range of people. It also propels social organisation, assortment of areas of economic activity and not over exploiting a single facet the spreading out of environmental ability to meet people's desires by improving the technology, of natural resources to the point of extinction and environmental degradation. Again, it creates a broad based economy that has the capacity to secure equity both inside and between generations (Zhang,*n.d.* in Anyaehie, & Areji, 2015).

In Nigeria, however, the large home market suffers from spatial fragmentation and moreover, the domestic market is inhibited by inadequate connective infrastructure thus reducing producers and firms' ability to attain wider markets (The World Bank, 2018).

3. Data and Methodology

The annualized data were obtained from the World Bank Database for Nigeria between 1986 and 2017. Our response variables comprise the performance of two major sectors upon which diversification is most emphasised were considered. They include the agricultural and the manufacturing sectors. The performance of the agricultural sector is represented by the agricultural value added relative to GDP while manufacturing sector performance is proxied by manufacturing value added as a share of GDP. On the other side of our model is interest rate

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which is our main independent variable. Moreover, selected variables of control are included in the model and include broad money supply in ratio of GDP and inflation rate. Our models are analysed using the error correction model (ECM). Key post-estimation tests are conducted to verify the validity of our results as well as the stability of our respective models.

Our baseline regression models are represented as follows:

$$AGSP_t = \beta_0 + \beta_1 INT_t + \beta_2 BMS_t + \beta_3 INF_t + \varepsilon_t ------------------(1)$$

$$MSP_t = \beta_0 + \beta_1 INT_t + \beta_2 BMS_t + \beta_3 INF_t + \varepsilon_t ------------------(2)$$

Equation (1) models the relationship between interest rate and agricultural sector performance while Equation (2) estimates the linkage between interest rate and the manufacturing sector performance. *AGSP* is agricultural sector performance proxied by agricultural, forestry and fishery value added as a share of GDP. *MSP* is manufacturing value added as a share of GDP. *INT* is interest rate, *BMS* is broad money supply relative to GDP, *INF* is inflation rate while ε is stochastic term. β_0 is the intercept and β_{1}- β_3 are parameter estimates.

We go ahead to derive the error correction model (ECM) by modifying Equations (1) and (2). This allows us to adjust for the error correction process and enable us determine the speed of adjustment towards long-run equilibrium relationship. The ECM estimators can be represents thus:

$$AGSP_{t,j} = \beta_0 + \sum_{i=1}^{k1} \beta_{1i,j} \Delta INT_{t-1,j} + \sum_{i=0}^{k2} \beta_{2i,j} \Delta BMS_{t-1,j} + \sum_{i=0}^{k3} \beta_{3i,j} \Delta INF_{t-1,j} + ECT_{t-1,j} + \mu_t - (3)$$

$$MSP_{t,j} = \beta_0 + \sum_{i=1}^{k1} \beta_{1i,j} \Delta INT_{t-1,j} + \sum_{i=0}^{k2} \beta_{2i,j} \Delta BMS_{t-1,j} + \sum_{i=0}^{k3} \beta_{3i,j} \Delta INF_{t-1,j} + ECT_{t-1,j} + \mu_t - (4)$$

Where:
Δ is differencing operator and *ECT* is error correction term

4.0 Data Analysis and Discussion

4.1 Descriptive Statistics

Table 1 Descriptive Statistics for Nigeria

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Variable	Mean	Median	High	Low	Std. Dev.	Obs.
AGSP	30.55679	32.0108	47.0955	19.99025	6.811435	32
MSP	19.72544	16.44453	51.59687	6.451566	11.83079	32
INT	19.0475	18.06625	31.65	9.959167	3.930196	32
BMS	22.89615	21.12571	43.26613	13.23075	6.274598	31
INF	20.16343	12.54718	72.8355	5.382224	18.53114	32

Tables 1 present the statistical description of variables for Nigeria. It can be observed Nigeria's average agricultural and manufacturing sector outputs relative to GDP were 30.56% and 19.73%, respectively. These trends were also reflected in "highs" and "lows" positions.

4.2 Unit Root Test

Table 2. Unit Root Test Results for Nigeria

Variables	ADF-Stat	5% critical value	P value	Inference
AGSP	-6.452411	-2.967767	0.0000	1(1)
MSP	-5.243988	-2.967767	0.0002	1(1)
INT	-6.256171	-2.963972	0.0283	1(1)
BMS	-4.987250	-2.967767	0.0004	1(1)
INF	-2.285422	-1.956406	0.0245	1(1)

Results of unit root tests are presented in Table 2 shows that all the variables are stationary at first difference hence, are integrated of order one. Having found that our pairs of series are cointegrated, we are guided to estimate Equations (1) and (2) using the error correction model.

4.3.1 Table 3 Regression Estimate: Agricultural Sector

NIGERIA
Dependent Variable: **D(AGSP)**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(INT)	0.047106	0.258990	0.181885	0.8571
D(BMS)	0.422267	0.145896	2.894297	0.0078
D(INF)	0.010977	0.053042	0.206946	0.8377

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ECT(-1)	-0.283284	0.141795	-1.997837	0.0567
C	-0.319929	0.862506	-0.370930	0.7138
	R2=0.83. DW=1.84, F-stat. = 20.07			

Table 3 presents the dynamic estimation of Equation (3) which modeled the linkage between interest rate and agricultural sector performance (AGSP) in Nigeria. The results indicate that interest rate relation with AGSP did not conform to theoretical expectation that increase in interest rate should negatively affect performance of the real sectors. Our results thus show that interest rate has positive but insignificant impact on AGSP. When interest rate rises by 1%, AGSP increases by 4.71%. therefore, the regressors are jointly significant in determining AGSP in Nigeria.

4.3.2 Table 4 Regression Estimate: Manufacturing Sector

NIGERIA
Dependent Variable: **D(MSP)**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(INT)	-0.437947	0.199484	-2.195399	0.0376
D(BMS)	0.550111	0.108919	5.050630	0.0000
D(INF)	0.046854	0.042971	1.090376	0.2859
ECT(-1)	-0.126193	0.070232	-1.796810	0.0845
C	-1.100638	0.648931	-1.696080	0.1023
	R2=0.59. DW=2.14, F-stat. =8.86			

The dynamic estimation of Equation (4) is presented in Table 4. We analysed the relation between interest rate and the manufacturing sector performance (MSP) in Nigeria. Results show that interest rate has significant negative impact on MSP. 1% increase in interest rate brings about 43.79% declines in manufacturing output in Nigeria. Broad money supply, however, exerted significant positive impact on MSP while inflation is positively but not significantly related to MSP. The error correction term (ECT) has the right sign but its p-value is greater than 5% level of significance. This entails that there is no long-run association between MSP and the independent variables.

5. Conclusion

We analysed the relative effect of interest rate on diversification in the context of Nigeria. In the developing economies, the critical reference to diversification is primarily viewed from the perspective of the real (or activity) sector of a domestic economy. Based on this standpoint, we selected the agricultural and the manufacturing sectors performance as proxies for diversified economy. Our findings showed that while interest rate was positively but not significantly associated with agricultural sector performance in Nigeria. The positive effect in the Nigerian case is contrary to theoretical expectation. This outcome could be due to direct monetary policy measures of the monetary authority and government policy interventions which are intended to cushion the effect of high cost of fund for the sector. Interest rate was found to be negatively related to manufacturing sector performance, however, the negative impact of cost of fund was significant, with a percentage change in interest rate leading to about 44% decline in the manufacturing output. Consequently, we conclude that the biting influence of interest rate was stronger on the Nigerian manufacturing sector, so authorities should apply direct monetary policy measures of the monetary authority and government policy interventions to some selected products that can strengthen her foreign exchange earnings in the manufacturing sector. Nigeria in addition should building economic partnerships with emerging markets and also Government openness to foreign investment ought to be above average.

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