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## Is Central Bank of Nigeria Pursuing Preferential Development Finance? Some Parametric and Non-Parametric Evidence



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### Abstract

*As encompassing as the development finance interventions of the Central Bank of Nigeria are, there appears to be a preference for the agricultural sector and the manufacturing sub-sector. The study applied the parametric ANOVA and the non-parametric Kruskal-Wallis Tests, to inferentially determine whether this is, indeed, the case. Findings, however, indicate that the intervention intensity is equal for all sectors, implying the Bank adopts a holistic, rather than preferential, approach to its development finance practice. This strategically engenders, among others, uniform development, inclusive growth and economic diversification. The interventions should be sustained and their coverage extended to other crucial sub-sectors such as mining & quarrying and education, given their strong potential for employment generation, human capital development and deepening of socio-economic inclusiveness.*

**JEL Classification:** E51, E58

**Keywords:** central bank; development finance; monetary policy; intervention; preferential; preferred sectors.

### 1.0 Introduction

The developmental function of the Central Bank of Nigeria (CBN) is tangential to the achievement of its core mandates of ensuring monetary and price stability, maintaining external reserves to safeguard the international value of the naira, and ensuring sound and stable financial system (when we consider financial system development as the ratio of private sector credit to gross domestic product (GDP), and the Bank's developmental function as improving access to credit, among other forms of finance). It also fosters its mandate of acting as banker and economic and financial adviser to the government when, for instance, it supports public policies by funding special purpose vehicles such as the Nigerian Bulk Electricity Trading Plc., to meet various government commitments.

By this function, the Bank is at liberty to intervene in the financial market by targeting micro, small and medium enterprises (MSMEs) and large enterprises for investment and production. This function is motivated by several developmental imperatives. These include, promoting inclusive growth and job creation; economic diversification; reducing capacity underutilisation; conserving and shoring up foreign exchange reserves by curbing high import bills; and enhancing the effectiveness of, and responsiveness to, monetary and credit policy actions by attracting and retaining more economic agents, such as households and firms, in the formal financial system.

During the era of direct control or economic regulation, the CBN adopted sectoral credit allocation and interest rate administration as monetary policy instruments to stimulate the productive sectors of the economy, stem inflationary pressures, encourage investments and achieve overriding policy objectives such as promoting the flow of credit to the preferred sectors (Tule et al. 2015; Udeaja and Udoh, 2014; Ojong et al, 2014). The credit allocation policy classified the economy into preferred, less-preferred and unclassified sectors, with specified minimum credit limits (Udeaja and Udoh, 2014; Ojong et al, 2014). The successes and failures of these policies abound in the literature (CBN, 2016; Ojong et al, 2014; CBN, 2011; Ajayi and Ojo, 2006).

Following economic liberalization and the advent of the Structural Adjustment Programme (SAP), 'preferred sector' status of the productive sectors was discontinued. According to Anyanwu (2010), the enforced funding from the banks ceased, while the market-determined interest rates tended to exclude these sectors, especially agriculture, from the credit market. Presently, the huge MSME funding gap estimated at US\$158.13 billion ( 48 trillion), low credit to the private sector to GDP ratio of 17.63 per cent (low financial deepening), persistently low credit to

SMEs of less than 1 per cent of total banks' loans and advances, and the skewed sectoral credit distribution of banks, all necessitated pragmatic intervention in the market in favour of needy sectors (Bruhn et al, 2017; CBN, 2018a).

In the last ten years, CBN has aggressively intervened by sustaining or introducing financing programmes and schemes that reduce credit rationing or offer relatively low-interest and long-tenored financing for MSMEs. Given the frequent reference to agriculture and manufacturing as the target candidates for these interventions (CBN, 2018b; CBN, 2011). With the large concentration of interventions directly targeting both, it becomes interesting to determine whether, knowingly or unknowingly, there is still a financing preference for them, or whether a holistic approach is being adopted by the Bank. If a sector-preferential policy is in place, the favoured sectors will dominate the entire intervention basket or suite in terms of intensity of financing over time.

Establishing sectoral dominance, in this case, would be synonymous with the application of statistical inference methods. That is, testing the null hypothesis of no difference in the mean intensity of intervention by the CBN between the sectors of the economy over time, against the alternative that there is. In other words, the null hypothesis that there is no sectoral preference in the CBN's development finance function, against the alternative that such a preferential policy based on sector exists. For purposes of this study, intervention intensity is the totality of financing from the CBN, whether induced by credit guarantee and other policy actions of the Bank, or by direct funding (on-lending) through participating financial institutions (PFIs).

The paper proceeds as follows: Section two is the literature review and conceptual issues, which include sectoral credit allocation and preferred sectors, administrative interest rates, credit to SMEs, sectoral credit distribution of banks and overview of CBN's development finance interventions. Section three presents the methodology or analytical procedure, while section four discusses the results, findings and implications. Section five concludes the study with recommendations.

## 2.0 Literature review and conceptual issues

### 2.1 Sectoral Credit Allocation and Preferred Sectors

The sectoral credit allocation policy was a direct monetary policy instrument adopted by the Bank in the 1981-85 period (CBN, 2011). It classified the economy into preferred (agriculture, solid minerals, exports and manufacturing); less-preferred (real

estate, public utilities, transport and communications, finance and insurance, government, import and domestic trade); and other sectors, with specified minimum credit limits (Udejaja and Udoh, 2014; Ojong et al, 2014). According to CBN (2016), the monetary authorities deployed direct tools such as credit ceilings and controls and administration of interest and exchange rates, among others, to achieve price stability and allocate financial resources to preferred sectors such as agriculture and manufacturing at concessionary interest rates.

Ojo (1992) stated that the preferred sectors were to receive 75 – 79 per cent of banks' loans and advances. In the early 1980s, the cap on specific banks' credit to the preferred sectors was pegged at 30 – 40 per cent of cumulative loans and advances, but was trimmed down to 7 per cent by 1985 (Ajayi and Ojo, 2006). Between 1981 and 1983, the policy mandated commercial banks to utilise 56 per cent of their total credit in funding the production sub-sectors of the preferred sectors, namely agricultural production, mining, manufacturing, agro-allied industries and construction, while the services sub-sector was to receive 12 per cent (Soyibo and Adekanye, 1992).

The policy prescribed permissible aggregate credit expansion ceilings and selective credit controls to encourage indigenous businesses, small-scale enterprises and the rural areas (CBN, 2011). The required minimum ratio of loans and advances of commercial banks to indigenous entrepreneurs was raised from 70 per cent in 1980 to 90 per cent in 1984. Besides, by 1982, banks were to mandatorily lend not less than 30 per cent of their rural deposits to their rural customers. This ratio was increased to 40 per cent in 1985 (Ojo, 1992).

With respect to merchant banks, the policy changed the distribution of their assets portfolio with a view to inducing long term lending. For instance, in 1980, a minimum of 40 per cent of their credit was to be of medium and long-term nature, while a maximum of 20 per cent was to be channelled to short term projects. In 1985, the ratio of medium to long-term credit was raised to 50 per cent (Ojo, 1992). Apart from these banks, and in furtherance of the preferential policy, development finance institutions (DFIs) have been established by government with the mandate to channel credit to specific sectors (CBN, 2000). These DFIs are the Bank of Agriculture (BOA) for agriculture, Bank of Industry (BOI) for industry (including manufacturing), Federal Mortgage Bank of Nigeria (FMBN) for real estate, and the Nigerian Export-Import Bank (NEXIM) for exports.

According to Udejaja and Udoh (2014), agriculture gained as its share of credit grew from 2.6 per cent in

1975 to 10.8 per cent in 1985 even as its contribution to GDP expanded from 20.6 per cent in 1980 to 32.7 per cent in 1985. However, the controls were ineffective because it was difficult to keep banks within the stipulated targets. In this regard, Ikhida (1996) noted that although 75 per cent of credit was supposed to go to the preferred sectors, the commercial banks achieved 69.1 per cent while the merchant banks only achieved 62.8 per cent of their 79 per cent limit. He concluded that both types of banks, it would seem, extended more credit to the non-preferred sectors during the period, with the merchant banks faring worse. According to CBN (1996), the policy, which was inconsistent with the principle of a deregulated financial sector, seemed to have made some impact even though its prolonged use engendered distortions and inefficiencies.

The sector-specific credit allocation targets were reduced to four sectors in 1986, and two in 1987. From October 1996, all mandatory credit allocation mechanisms were abolished (CBN(undated)). However, the CBN (2010) alluded to the preferred sectors concept when it endorsed complimentary policies put in place, especially the revised guidelines for loan loss provisioning for the "preferred sectors" and the SME Credit Guarantee Scheme, among others. While this may have been a reference to the importance of the sectors in discourse, which included agriculture and manufacturing, it left policy analysts wondering if a policy reversal, akin to the interest rate deregulation policy reversal in 1994, was in the offing.

## 2.2 Administrative interest rates

The sectoral allocation of credit was accompanied by a concessionary interest rate policy. The fixed interest rate regime was intended to provide cheap credit to the preferred sectors of the economy, including SMEs (CBN, 2003a, CBN, 2003b), and encourage the upsurge of small-scale industrialization which is a catalyst for economic development (Udoka and Roland, 2012). The concessionary rates were typically below the minimum rediscount rate. They averaged about 7.25 per cent in 1978-85, which was outpaced by inflation, resulting in negative interest rates (Ojong et al, 2014).

The policy regime produced adverse consequences, with nominal interest rates dropping to their lowest before 1986 (CBN, 2016). According to the CBN, apart from the fixed interest rates trailing inflation and causing financial disintermediation and misallocation of resources, the policy objective of improving investment and growth in the real sector was not achieved. Eventually, the preferred sectors were unable to access funding owing, partly, to the inability of banks to mobilise sufficient loanable funds at the concessionary interest rates, as exemplified by the

directive to banks to lend to agriculture at 7 per cent in 1984, whereas average savings deposit rate was 9.5 per cent (Ojong et al, 2014).

With the introduction of SAP in 1986, the Bank implemented a series of financial reforms to enhance competition, reduce distortion in investment decisions and evolve a sound and more efficient financial system. The major reforms were deregulation of exchange and interest rates, removal of preferred sector credit allocation and free entry into banking business subject to fulfilment of several conditions (Asekome and Aihie, 2014; Ogwuma, 1993; Ojo, 1993). Interest rate was deregulated in August 1987 as part of the SAP package (Adofu and Alhassan, 2018). Although there was a slight policy reversal in 1994 with the pegging of deposit rates at 12 – 15 per cent and the introduction of 21 per cent ceiling on lending rates, flexible interest rate regime was resumed in October 1996 (Amassoma et al, 2011; Okpara, 2010; Omole and Falokun, 1999).

## 2.3 Credit to SMEs and sectoral credit distribution of banks 2009 – 2018

In the decade immediately following the 2007-2008 global financial crisis, commercial banks' loans to small-scale enterprises (or SMEs) as a proportion of total credit to private sector, increased from 0.17 per cent in 2009 to 0.26 per cent in 2018 (Figure 1). On the basis of sub-periods, it averaged 0.15 per cent between 2009 and 2013, rising to an average of 0.20 per cent in the 2014-2018 lustrum.

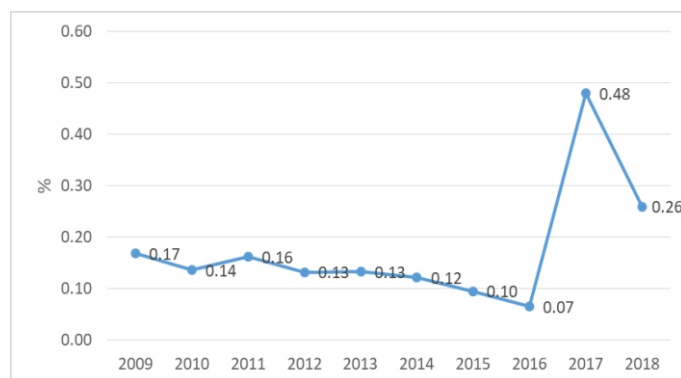


Figure 1: Commercial banks' loans to small-scale enterprises as a percentage of total credit

Source: Central Bank of Nigeria Statistical Bulletin 2018

This sharply contrasted with the fact that, together with micro enterprises, the small-scale enterprises (or MSMEs) contributed about 48.5 per cent of national income and about 7.3 per cent of exports (SMEDAN/NBS, 2013). The realisation of the immense economic importance of these enterprises that are definitely under-funded by the banking system further provided impetus for CBN's interventions in the MSME segment in recent years.

Relatedly, an examination of commercial banks' loans and advances by sector is even more revealing (Table I). The analysis is similarly disaggregated into the two sub-periods as in the preceding discussion, but due to dissimilarity in the sectoral classification scheme over both periods. Ostensibly a carry-over from the era of sectoral credit allocation and preferred sector policy, the classification scheme for the 2009-2013 had production, general commerce, services and others as the broad sectors. In this sub-period, the production sector, comprising agriculture, manufacturing, mining and quarrying, and real estate and construction, attracted 40.9 per cent of loans and its share of credit grew at a compounded growth rate of 9.2 per cent. Services share was 20.9 per cent but with a decline of 1.9 per cent.

Table I: Analysis of Sectoral Distribution of Commercial Banks' Loans and Advances

Period: 2009 – 2013				Period: 2014 - 2018			
Sector	Component sector	Share (per cent)	Growth* (per cent)	Sector	Sub-sector	Share (per cent)	Growth* (per cent)
<b>Production</b>		40.9	9.2	<b>Agriculture</b>		3.4	3.8
	Agriculture, forestry and fishery	2.8	26.2	<b>Industry</b>		36.7	10.9
	Manufacturing	12.6	4.4		Mining and quarrying	0.1	-10.1
	Mining and quarrying	18.0	16.0		Manufacturing	13.6	6.5
	Real estate and construction	7.5	-17.0		Oil and gas	20.4	14.4
<b>General Commerce</b>		10.7	-11.4		Power and energy	2.6	10.9
	Bills Discounted	0	0	<b>Construction</b>		4.1	2.5
	Domestic Trade	0	0	<b>Trade/ General Commerce</b>		6.9	0.4
	Exports	0.5	-45.9	<b>Government</b>		7.9	17.9
	Imports	10.2	-10.7	<b>Services</b>		41.0	-1.6
<b>Services</b>		20.5	-1.9		Real estate	4.8	6.7
	Public utilities	1.0	30.2		Finance, insurance and capital market	6.1	8.0
	Transport and communications	12.4	15.7		Education	0.5	-6.5
	Credit to financial institutions	7.1	-28.4		Oil and gas	8.0	2.0
<b>Others</b>		27.9	3.9		Power and energy	1.7	20.1
	Government	6.1	19.5		Others	19.8	8.6
	Personal and professional	0	0				
	Miscellaneous	21.8	0.6				

\* Compound annual growth rate.

Source: Author's compilation from Central Bank of Nigeria Statistical Bulletin 2018

In the 2014-2018 sub-period, following review of the sectoral classification scheme to emphasize the nature of production, the shares of agriculture, industry, construction and services were 3.4 per cent, 36.7 per cent, 4.1 per cent and 41.0 per cent respectively, while the growth rates of banks' credit to these sectors within the same sub-period were 3.8 per cent, 10.9 per cent, 2.5 per cent and -1.6 per cent, respectively. In summary, agriculture recorded the lowest share of credit while services, although with the highest share, registered the slowest growth, which was negative. It is also noted that the oil and gas sub-sector attracted the highest financing within this time, at 28.4 per cent of all credit, with manufacturing coming a distant second with 13.6 per cent.

In this latter lustrum, these two sectors were driving real economic growth and contributing significantly to national income. Agriculture consistently posted positive growth even during the recession, averaging 3.6 per cent for the review period. Conversely, services consistently captured more than half of gross domestic product, with average growth of 2.56 per cent. Credit to government ranked third overall, setting aside the "others" in services.

Understandably, commercial banks' preferences, guided more by profit than other motive, appeared not quite in sync with national priorities of, for example, food security, job creation and promotion of investments. Their pattern of financing of economic activities, characterised by high interest rates and short-tenored loans, seemed to favour the highly-lucrative but capital-intensive oil and gas sub-sector, thereby tending to promote growth without inclusion. The CBN, obviously aware of the adverse implications of this on macroeconomic policy effectiveness and on other facets of national life such as security of life and property, assumed a proactive role through its development finance interventions to address the observed lop-sidedness.

### 2.3 Overview of CBN's Development Finance Interventions 2009 - 2018

The CBN (2019a) believed the MSME funding gap of about ₦48 trillion or US\$158.13 billion reflected the risk-driven apathy of financial institutions to lend to these enterprises. This gap represented about 47.7 per cent of the MSME financing gap of Sub-Saharan Africa, and specifically compared unfavourably



with US\$30.34 billion for South Africa and US\$46.72 billion for Egypt, both in Africa, and US\$21.45 billion for Malaysia, an emerging market economy (Bruhn et al, 2017). This was despite the Bank's vigorous efforts, especially in the 2014 – 2019 sub-period, to address this challenge using a myriad of intervention policies in form of programmes, schemes and institutions. This paper focuses on the operative programmes and schemes of the Bank from 2009 to 2018.

The Agricultural Credit Guarantee Scheme (ACGS), which commenced operations in 1978, was jointly established by the Federal Government and the Bank to provide guarantees to banks that lend to the agricultural sector. It continued operations in the review period, with overwhelming patronage from microfinance banks, mostly targeting small and medium farmers. On the other hand, immediately following the 2007-08 global financial crisis and the subsequent credit squeeze, the Bank introduced the Commercial Agriculture Credit Scheme (CACs) in 2009 to fast-track development of the agricultural sector through credit for commercial agriculture at single digit interest rate, enhance national food security through increased food supply and engender lower agricultural output prices and low food inflation, among other objectives (CBN, 2017). This was routinely followed in 2010 by the Power and Airline Intervention Fund (PAIF) and the Small and Medium Enterprises Re-financing and Restructuring Facility (SMERRF) which were to serve as credit enhancement instruments to improve the financial position of banks in view of the global financial crisis.

Since then, other intervention policies have been introduced by the CBN either solely or collaboratively with financial institutions, but definitely inspired by it. The interventions and their sectoral focus as espoused by the respective policy guidelines are outlined hereafter.

#### 2.4.1 Agriculture Sector Interventions

These target the entire agricultural value chain and all enterprise segments by size. A few of these target specific commodities or value chain segments, e.g. PAS, which is for rice millers. They include:

- Agricultural Credit Guarantee Scheme (ACGS);
- Commercial Agriculture Credit Scheme (CACs);
- Anchor Borrowers' Programme (ABP);
- Paddy Aggregation Scheme (PAS);
- Accelerated Agricultural Development Scheme (AADS); and
- Interest Drawback Programme (IDP).

#### 2.4.2 Industrial Sector Interventions

These are overwhelmingly targeted at manufacturing. They include:

- Small and Medium Enterprises Re-financing and Restructuring Facility (SMERRF);
- Presidential Fertiliser Initiative (PFI);
- CBN-BOI Industrial Facility (CBIF); and
- Textile Sector Intervention Facility (TSIF).

#### 2.4.3 Services Sector Interventions

These interventions target services sector, especially public utilities. These include:

- Power and Airline Intervention Fund (PAIF);
- Nigerian Bulk Electricity Trading - Payment Assurance Facility (NBET-PAF);
- Shared Agent Network Expansion Facility (SANEF); and
- Nigeria Electricity Market Stabilization Facility (NEMSF).

#### 2.4.4 Multi-Sectoral or Cross-Sectoral Interventions

These interventions target a mix of sectors and sub-sectors, cutting across agriculture, industry (manufacturing), services and trade. These include:

- Real Sector Support Facility (RSSF);
- RSSF using Differentiated Cash Reserve Ratio (RSSF-DCRR or DCRR);
- Micro, Small and Medium Enterprises Development Fund (MSMEDF);
- National Food Security Programme (NFSP);
- Export Development Facility (EDF);
- Non-Oil Export Stimulation Facility (NESF);
- Agri-business/ Small and Medium Enterprises Investment Scheme (AGSMEIS); and
- Youth Empowerment Development Programme (YEDP).

To sustain momentum in the 2019 – 2024 term and magnify previous successes in its development finance policies, the CBN (2019b) reiterated its policy thrust of working with banks to improve access to credit for smallholder farmers, MSMEs, consumption and real estate (mortgage), as well as, supporting efforts at diversifying the economy through its intervention programmes in agriculture and manufacturing.

### 3.0 Methodology

#### 3.1 Data

Data on the cumulative disbursements to MSMEs and large enterprises from the interventions was obtained from the Central Bank of Nigeria Economic Report 2018.



On the other hand, the Kruskal-Wallis H test is the non-parametric alternative to the one-way ANOVA because there are no assumptions about the distribution of the data. It is used when the assumptions of ANOVA are not met. That is, the H test relaxes the assumptions such as normality and homogeneity, among others. Since it uses the ranks of the data values rather than the actual data for the test, it is often called ANOVA on ranks, while the null and the alternative hypotheses are given as:

$$H_0: \text{the group population medians are equal} \dots (4)$$

$$H_A: \text{the group population medians are not equal} \dots (5)$$

The H statistic is given as:

$$H = \left[ \frac{12}{N(N+1)} \sum_{j=1}^k \frac{R_j^2}{n_j} \right] - 3(N+1) \dots (6)$$

Where:

H = Value by which the statistical significance of the median differences was judged.

$n_j$  = Sample size of the jth group or sector.

k = Number of groups, samples or sectors.

$R_j$  = Sum of ranks in/ of the jth group or sector.

N = Total sample size or number of observations in the analysis.

The H statistic is evaluated at  $\alpha = 0.05$ , at  $k-1$  df. If the test statistic is less than the critical value, the null hypothesis of no difference between the population medians is true. Contrarily, if the test statistic is more than the critical chi-square value, the null hypothesis is rejected as the evidence suggests inequality of means (Zaiontz, 2019; Statistics Solution, 2013).

#### 4.0 Results and Discussion

Table II shows data used in the analyses. Panel A shows the sectors included in the sector samples while Panel B shows the corresponding intervention intensities. The intervention intensity is defined as the totality of financing from the CBN, comprising direct funding interventions and induced funding interventions. In the direct funding interventions, the Bank provides PFIs with funds for on-lending at approved lending rate and tenor. The figures refer to the cumulative disbursements in such interventions, e.g. ₦174.48 billion for ABP.

Table II: CBN's intervention intensity by sector

Panel A – the interventions				Panel B – the intervention intensities (₦ bn)			
AGR	IND	SRV	MLT	Agr	Ind	Srv	Mlt
ABP	SMERRF	NEMSF	NESF	174.48	300.0	183.09	25.4
CACS	PFI	PAIF	EDF	603.29	30.0	301.37	10.18
PAS	TSIF	NBET-PAF	MSMEDF	44.4	55.77	534.18	83.36
AADS	CBIF	SANEF	NFSP	0	100.0	5.5	38.96
ACGS			RSSF	85.68			115.51
IDP			DCRR	3.11			6.16
			AGSMEIS				0.42
			SMECGS				3.4

Source: Central Bank of Nigeria Annual Report 2018

In induced funding interventions, financing arises from the direct policy actions of the Bank. These are sub-divided into two types, namely the credit guarantee schemes and the interventions involving mobilisation of banking system resources. For the credit guarantee interventions, that is, ACGS and SMECGS, the guarantee policy instrument covers 75 per cent and 80 per cent of principal and interest, respectively. Hence, these respective proportions of total disbursements were assumed to directly evince the faith of financial institutions in the guarantee and, therefore, applied for purpose of this study, e.g. for ACGS, ₦85.68 billion represents 75 per cent of cumulative financing from inception, and is assumed to reflect the portion of credit granted as a result of the existence of the guarantee.

The second sub-group consists of interventions under which the CBN has no financial burden, namely AGSMEIS and DCRR. However, it played significant roles in mobilising and channelling the resources of the banking system to MSME financing. Accordingly, it used moral suasion and its affiliation, as Head of the Bankers' Committee, in the case of AGSMEIS. It also deployed financial regulation to implement a differentiated dynamic cash reserves requirement, in the case of DCRR (CBN, 2018b).

#### 4.1 Test for normality

As can be seen in Table III, the small values of the Jarque-Bera statistics indicate that the standardised residuals of all samples are normally distributed. This is so because the associated probability values ranged from approximately 0.31 for agriculture to 0.88 for services, which are all higher than  $\alpha = 0.05$ .



Table III: Test for normality

	AGR	IND	SER	MLT
Mean	151.8267	121.4425	256.0350	35.42375
Median	65.04000	77.88500	242.2300	17.79000
Maximum	603.2900	300.0000	534.1800	115.5100
Minimum	0.000000	30.00000	5.500000	0.420000
Std. Dev.	230.3980	122.4978	221.7421	42.37430
Skewness	1.499560	0.970579	0.194096	1.015582
Kurtosis	3.638148	2.181530	1.830545	2.538011
Jarque-Bera	2.350490	0.739664	0.253053	1.446354
Probability	0.308743	0.690850	0.881151	0.485208
Sum	910.9600	485.7700	1024.140	283.3900
Sum Sq. Dev.	265416.2	45017.17	147508.7	12569.07
Observations	6	4	4	8

Source: Author's computation using Eviews 7.0.

Moreover, agriculture had the largest mean of 151.83, while the multi-sector had the least, at 35.42. Services displayed the most symmetry, with 0.19, which indicated that its sample was near normal, since a normal distribution has 0 skewness. Multi-sector and agriculture had kurtoses which were nearest to that of a normal distribution (3), at 2.53 and 3.63, respectively. On the whole, the result of the Jarque-Bera test suggested that all samples are normally distributed, which makes further analysis with ANOVA consistent.

### 4.2 Test for Homogeneity of Variance

The test for homogeneity of variance gave mixed results (Table IV), while the Bartlett Method indicated that the variances were not equal ( $\alpha = 0.0036$  which was less than  $\alpha = 0.05$ ), a violation of the ANOVA assumption of equality of variances. However, both the Levene and the Brown-Forsythe Methods did not reject the null hypothesis, suggesting that the variances were equal.

Table IV: Test for equality of variances of sectors

Method	df	Value	Probability
Bartlett	3	13.53922	0.0036
Levene	(3, 18)	2.459726	0.0959
Brown-Forsythe	(3, 18)	1.337388	0.2935
<b>Category Statistics</b>			
		Mean Abs.	Mean Abs.
<b>Variable</b>	<b>Count</b>	<b>Std. Dev.</b>	<b>Mean Diff. Median Diff.</b>
AGR	6	230.3980	158.0389 135.9900
IND	4	122.4978	89.27875 78.55750
SER	4	221.7421	161.7400 161.7400
MLT	8	42.37430	32.88969 30.38375
All	22	170.1059	100.7012 91.82727
Bartlett weighted standard deviation: 161.6772			

Source: Author's computation using Eviews 7.0.

In the absence of unanimity of outcomes from this test, analysis proceeded with both ANOVA and Kruskal-Wallis Tests. Simultaneously conducting the parametric and non-parametric tests served to capitalise the benefit of doubt afforded by the

divergent outcomes of the homogeneity tests to provide reasonable room for trustworthy inference. Additionally, the outcome of the earlier conducted normality test supported the use of ANOVA. Recall that ANOVA was said to be fairly robust to mild violations of its assumptions, such as that emerging from this test.

### 4.3 Test of ANOVA

ANOVA test results are presented in Table V which showed that there was no difference between the mean intervention intensity of the sectors by the CBN. The probability  $\alpha = 0.19$  was more than the  $\alpha = 0.05$ , with the associated test statistic equal to 1.74, which is quite low.

Table V: ANOVA test for equality of means between sectors

Method	df	Value	Probability
ANOVA F-test	(3, 18)	1.748891	0.1930
Welch F-test*	(3, 6.15214)	1.881916	0.2315
*Test allows for unequal cell variances			
<b>Analysis of Variance</b>			
<b>Source of Variation</b>	<b>df</b>	<b>Sum of Squares</b>	<b>Mean Square</b>
<b>Between</b>	3	137145.5	45715.16
<b>Within</b>	18	470511.1	26139.50
<b>Total</b>	21	607656.5	28936.03

Source: Author's computation using Eviews 7.0.

Note, also, that the Welch Test, a parametric alternative to ANOVA which allows for unequal variances as found in the data used herein, also indicated that the null hypothesis of no difference in the means cannot be rejected. From the foregoing, there was no need for post-hoc test.

### 4.4 Kruskal-Wallis H Test

In Table VI, the Kruskal-Wallis H Test results similarly indicated that the null hypothesis of homogeneity of medians cannot be rejected, given the low test statistic of 4.40 and the 0.22 probability, which is above  $\alpha = 0.05$ .

Table VI: Kruskal-Wallis test for equality of medians between sectors

Method	df	Value	Probability
Med. Chi-square	3	4.000000	0.2615
Adj. Med. Chi-square	3	1.791667	0.6168
Kruskal-Wallis	3	4.409091	0.2205
Kruskal-Wallis (tie-adj.)	3	4.409091	0.2205
van der Waerden	3	4.028200	0.2584
<b>Category Statistics</b>			
		<b>&gt; Overall</b>	
<b>Variable</b>	<b>Count</b>	<b>Median</b>	<b>Mean Rank Mean Score</b>
AGR	6	65.04000	3 11.33333 -0.043712
IND	4	77.88500	3 13.75000 0.277152
SER	4	242.2300	3 16.00000 0.621019
MLT	8	17.79000	2 8.250000 -0.416302
All	22	50.08500	11 11.50000 -2.02E-17

Source: Author's computation using Eviews 7.0.

Other non-parametric tests, including the van der Waerden Method, also suggested that the null hypothesis was true. In view of this, no post-hoc test was conducted.

#### 4.5 Policy Implications

Several implications emanate from these findings. Firstly, the CBN is pursuing a holistic development finance practice. That is, there is no preferential policy towards a single sector or group of sectors as all sectors are viewed as priority for development. This approach of simultaneous and uniform development of all sectors shows that the Bank is neither unmindful of nor unresponsive to current economic realities. For instance, the services sector has since overtaken agriculture as the dominant sector, and it would seem untenable to deny it its fair share of financing. Similarly, agriculture has been driving growth and was partly responsible for recent economic recovery. This justifies the sustained intervention in the sector.

Secondly, there is the confirmation that the promotion of economic diversification is a major policy thrust of the Bank's development finance strategy. Intervening in as many sectors as possible within the broader non-oil sector classification reflects a deliberate and guided approach to growth, which should help quicken the pace of overall economic development.

Thirdly, the Bank pursues a high level of economic inclusiveness/ inclusive growth. By throwing a wide net of interventions to cover many sectors, it engenders wider income distribution through job creation and poverty alleviation. It also has the additional benefit of bringing more economic units under the influence of monetary and interest rate policies, thereby eliciting greater responsiveness to, and effectiveness of, both.

Fourthly, since no sector is preferentially treated, there is no sectoral dominance. This implies that irrespective of the chosen sector of investment or operation by an enterprise, there is statistically an equal opportunity of accessing any of the Bank's interventions which have more favourable terms, compared with own balance sheet lending by banks, including low interest and long tenors, among others. This should encourage investors and entrepreneurs to venture into more diverse and potentially lucrative endeavours since such activities stand an equal chance of attracting intervention finance like the often referenced activities of agriculture and manufacturing.

Fifthly, there is reassurance that the CBN had, definitely, discontinued the preferred sector policy. More pragmatically, it is sustaining a relatively

market-driven intervention policy now, with no directives to banks to maintain credit floors and ceilings or to lend at regulated interest rates. Rather, indirect approaches such as credit guarantees, ex-post interest rebates, low-cost and long-term funding to financial institutions, are being used by the Bank to deepen the financial market and provide diverse investment options for banks. In the same vein, interest saved by MSMEs that have accessed the interventions is an additional source of real and financial investments in the economy.

Since the sectoral intervention intensities are normally distributed, we can reasonably expect that the intensity of each intervention will most likely be close to the mean sectoral intervention intensity. Furthermore, as the interventions are mostly enterprise size-specific (targeting one of micro, small and medium, or large enterprises), it implies that each intervention contributed almost equally to the sectoral intervention intensity. In other words, there is a lower probability of dominance of one intervention within each sectoral basket as well. This is particularly illuminating because of the higher credit risk and higher transaction costs often associated with MSMEs, compared with large corporations, and which would have made the latter to have a highly-skewed chance of being financed. But, CBN's development finance intervention practice appears to have addressed the disparity or discrimination, by providing equal opportunity for enterprises, irrespective of size, to derive benefits from its interventions.

#### 5.0 Conclusion and Recommendations

An evaluation of the development finance strategy of the CBN has shown that there is no dominant or preferred sector of intervention by the Bank, despite agriculture and manufacturing being the most frequently referenced sector and sub-sector with respect to the Bank's interventions. The parametric ANOVA and the non-parametric Kruskal-Wallis Tests did not reject the null hypotheses of equality of means and medians, respectively, between the intervention intensity of the Bank in relevant sectors of the economy. The implications are that development finance strategy is holistic, inclusive and are geared towards economic diversification and uniform development, among others.

It is recommended that the Bank should sustain the implementation of the interventions. Although intervention impacts or policy effectiveness could be the subject of other studies, the intensity of intervention suggests that the interventions are promoting the policy thrusts of economic diversification and inclusiveness. Implementation should also continue to be guided by successful

principles which have eliminated disparity in financing between MSMEs and large enterprises.

Besides, the bank should consider increasing the focus of its interventions on education sector and mining & quarrying sub-sector. From Table I, we noted that both had not only attracted the lowest shares of banks' credit in recent times, at 0.1 per cent and 0.5 per cent, respectively, but also had negative credit growth of -10.1 per cent and -6.5 per cent respectively. Education is crucial for human capital development while mining & quarrying, which used to employ the largest proportion of labour after agriculture, has since paled into insignificance, although with huge potentials to drive growth.

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