A CAUSALITY LINK BETWEEN INFLATION RATE AND DEPOSIT MONEY BANK TOTAL SECTORAL CREDIT ALLOCATION IN THE PRESENCE OF STRUCTURAL BREAKS IN NIGERIA

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Abstract
This paper examined inflation rate and Deposit money banks total sectoral credit allocation in Nigeria from 1981 to 2020. It has been observed that in spite of fluctuations in inflation rate, the total amount of total sectoral credit allocation by deposit money banks have not been appropriate with sectoral needs. The study aimed at identifying a causality link between inflation rate and deposit money bank total sectoral credit allocation in the presence of structural breaks in Nigeria. The study utilized Nigeria annual time series data sourced from the Central Bank of Nigeria statistical Bulletin and Word Development Indicator from 1981-2020. The e-views statistical technique involving Augmented Dickey Fuller Unit Root conventional and structural break tests, ARDL, granger causality test, Bai-Perron's multiple structural break procedure were employed. The finds revealed the existence of short-run relationship between inflation rate and deposit money banks sectoral credit while in the long run inflation rate has negative but non-significant impact on deposit money banks total sectoral credit allocation in Nigeria. Also Bai-Perron's test found strong evidence of five structural breaks in the variable, with identifiable finance and economic shock in the country during the sample period. The study therefore, recommended, that monetary policy regulator should continue focusing on keeping low inflation because it would expand the volume of deposit money banks total sectoral credit but when it is high and uncertain, it erodes all economic activities and financial institution in particularly in Nigeria.

Key words: Inflation rate, banks total sectoral credit, ARDL Bound Test, Bai-Perron structural breaks, Granger causality

1.0 Introduction

Inflation rate and deposit money bank substantiate to be re-examined since inflation is a constant disease in many branch of the globe. Inflation is a financial progression that has been stirring globally and it is practical to integrate inflation into financial planning for any organization. Profitability of a company is loud when the cost of depreciation and stocks consumed during the year are based on their original cost and not the replacement cost without consider inflation (Slawson, 2015). The performance of deposit money bank can be assess in the area of loans and advances through the monetary policy tools, which can be generally classified into market intervention portfolio and control approach (Jegede, 2014). The main objectives of economic policy are to control inflation, maintain a good

physical shape balance of payment position, to safeguard the external value of national currency and promote adequate and sustainable level of economic growth and development.

Inflation as an indicator of price stability affects the solvency of loan for long periods of high inflation. The real value of the payments of borrowers begins to decrease, which helps them to pay duties. The study of Derbali (2011) reports a positive association between inflation and loans portfolio quality. The author further stated that high inflation rates are generally associated with high loan interest rates and high incomes, if inflation is not anticipated and banks are sluggish in adjusting their interest rates, there is a possibility that bank costs may increase faster than bank revenues and hence adversely affect loans portfolio quality. A number of experts consider inflation to be a complicated multisided process, which depends not only on economical but also on social and political reasons. Theory of inflation considers unanimity of three components thereof: excessiveness of currency circulation; depreciation of money; redistribution of income, property and downfall of net remuneration (Kochetkov, 2012). Inflation is one of the most recurrently used terms in economic debates, yet the concept is variously misinterpreted. There are various schools of thought on inflation, but there is a consensus among economists that inflation is a continuous rise in the prices. It could be as a continuing rise in prices as measured by an index such as the consumer price index (CPI) or by the implicit price deflator for Gross National Product.

However, the most difficult facing almost all nations are high rate of inflation because it worsens the effectiveness of financial sector through financial market frictions and slow down the financial performance. High rate of inflation has become not only a concern in the industrial and evolving market economies but to the general economy of nations, hence price of all goods and services may not rise simultaneously or by the same proportion and conditions of inflation imply the general price level keeps increasing over time. Therefore Low-slung and stable inflation rates allow the sectors to plan ahead, which lead to price regulations, prevent tax bias and thus make a steady commercial location (Bencivenga and Smith, 1993). In this context, past studies in the area of inflation rate effect on deposit money banks (like Miguel, Francisco&Víctor, 2018; Akaninyene, Innocent &Aniekpeno, 2018; Adesina, Nwidobie&Amadi, 2018; Afolabi, Adeyemi, Salawudeen&Fagbemi, 2018; Haroon, 2015; Alimi, 2014; Waseem, Maria, Rafia,Waqasia, Nimra&Samnia, 2014)

Considering the difference in findings of the past studies, this research main to ascertain a causality link between inflation rate and deposit money bank total sectoral credit allocation in the presence of structural breaks in Nigeria from 1981 – 2020, a stimulus for this study as are nonexistent, a gap that the current study has bridged. The study intends to answer the research question; what is the effect of inflation rate on deposit money bank total sectoral credit allocation in Nigeria. The objective of this study was to examine the effect of inflation rate on deposit money bank total sectoral credit allocation in Nigeria while hypothesis of the study is that, inflation rate has no significant effect on deposit money bank total sectoral credit allocation in Nigeria. The outline of this paper are introduction (in section one), literature review (in section two), methodology (in section three), results

and discussion (in section four), and finally, conclusion and recommendations (in section five).

2.0 Literature Review
2.1.1Concept of Inflation rate
Inflationary rate in Nigeria has been on the increase leading to major economic distortions since the late 1970s. Inflation has been widely described as an economic situation where increase in money supply is faster than the new goods and services in the same economy (Hamilton, 2001). Inflation emerges in the economy on account of the increase in the money income of certain sectors of the economy without any corresponding increase in their productivity, giving rise to an increase in the aggregate demand for goods and services which cannot be met at the current prices by the total available supply of goods and services in the economy. Inflation is an increase in the general level of prices, or, alternatively, it is a decrease in the value of money. Inflation is one of the economic variables that shake every Nigerian resident, regardless of an investor, borrower or lender, almost every day. Inflation is seen as negative news by the stock markets, because it tends to control consumer spending and therefore corporate profits. It also affects the value of the domestic currency adversely in the foreign exchange markets. The two frequently used measures of inflation in Nigeria are based on average inflation rate and Consumer Price Index (CPI).

Inflation is considered to be due to an increase in the money supply. On the other, the fiscal explanation views inflation as rising from budget deficits which are considered fundamental causes of inflation. In the balance of payments aspect, emphasis is place on the exchange rate. Essien and Uche (2012) noted and distinguish two features of inflation which are worth noting. First, inflation is generally associated with an increase in an individual good and service. Secondly, a once and for all increase in the price level does not necessarily add impetus to the underlying inflation. On the other hand, a onetime increase in the price of certain goods may trigger a chain of price increases which can lead to a sustained increase in inflation. Many economists have analyzed the relationship among these variables over the years. From the opinion of economist that concluded that there is a causal relationship between "monetary inflation" (the supply of money) and "price inflation" (increases in the price of goods and services measured in monetary terms). But there is neither a common view about the theoretical exact mechanism and relationship, nor about how to measure it exactly in reality.

2.1.2 Concept of Bank Lending
An evolving theoretical literature tries to explain the link between inflation rate and bank credit allocation. Credits refers to aggregate of all loans, advances, overdrafts, commercial papers, bankers acceptances, bills discounted etc and other loss contingencies connected with a bank's credit risks. Osada and Saito (2010) define the credit advance or accessibility of credit can substitute financial development by rising savings, improving efficiency of loanable funds and promoting capital accumulation. Availability of credit allows nation to growth like farms to increase production, output and efficiency, which in turn increases the profitability of banks through interest established (Agada, 2010).

2.1.3 Policy Communication and Bank Lending Network

Keynes (1930) stated that inflation occurs from a rise in the value of aggregate demanded for goods and service beyond aggregate supply at full employment level. Friseh (1990) argued that inflation is an upsurge of influenced average price level as opposed to an upsurge in the price of individual products. Hagger (1997) argued that there is in single definition for inflation, however, the most considerable definition was that inflation is the surplus demand for commodities on the market as a whole. This indicated that the level of expenditure being engaged on home produced commodities surpasses the maximum field of the home produced commodities that one achievable in the long run, based on the available resource (Skene, 1992).

Inflation increases production when the economy is functioning of capacity since there is additional spending and ultimately raising the demand for product and services. The interest expense on making capital is considerably increased and this encourages borrowing and lending in the economy (Goldschmidt, Shashua, & Human, 1986). Measurements of inflation can be affected by variations in the value of the commodities provided in the CPI. The utilization of goods and services in a population is dependent on the specific country since the index is based on a variety in the population is dependent on the specific country since the index and this is weighted based on the content of the consumers overall spending. Special offers that increase the shopping habits of consumers can also affect the CPI services there is a resultant change in the expenditure patterns of the consumers which influence the weighting of the index (Comely, 2015). Thus, it is on works that credits are obtained by frequent economic agents to enable them meet operating expenses. Credit is the extension of money from the lender to the borrower (Ebi& Emmanuel, 2014)**.** Ajayi and Atanda (2012) also noted that credit implies an arrangement by the debtor to pay the creditor for money lent or goods and services obtained on credit. Credit is a core business of financial institutions or banks because banks mobilized deposits from the surplus units of the economy and channeled it to the deficit units who need funds for productive uses. Therefore, the relationship between Banks and customers is that of borrowers and creditors

2.2 Empirical Review
Inflation Rate and Performance of Deposit Money Bank

Miguel, FranciscoandVíctor(2018) explored the influence of inflation on the conditional distribution of financial development, with data from 84 countries covering the 1980-2010 periods. Panel techniques method employed. The study revealed that a consistently negative and nonlinear effect of price increases on financial variables statistically influence the full sample of countries, significant in developing countries, and insignificant in developed countries.

Akaninyene, Innocent and Aniekpeno (2018) examined the inflation rate in Nigeria with the view of ascertaining its effect on the deposit mobilization in Banks. The study employed secondary data which were collected through the Central Bank of Nigeria (CBN) statistical bulletin, The population for this study included selected numbers deposit money bank in Nigeria from 1994 – 2014. Multiple regression Ordinary Least Square (OLS) statistical tool was applied to establish the like fit to the observed data and the degree of relationship that exist between variables. Findings reveals among others that significant

and negative relationship exist between demand, savings and time deposit with inflation in Nigeria, and that interest rate impacted significantly and positively on saving and time deposit.

In a study carried out by Adesina, Nwidobie and Amadi (2018) investigated monetary policy instruments of the Central Bank of Nigeria (CBN) during and after the bank consolidation exercise (2000 – 2016) and determine the effects of these policies on the financial performance of deposit money banks (DMBs) in Nigeria. An Autoregressive Lag Model (ADL) analysis of secondary data obtained from the CBN Statistical Bulletin, 2016. The result shows that monetary policies of the CBN had a significant effect on the performance of DMBs in the short-run but an insignificant effect in the long-run.

In the analysis of the direction of causality between Inflationary trends that have great influence on the performance of the large banking segment of Pakistan and return on assets (ROA), return on equity (ROE) and net interest margin as key performance indicators of banking sectors are selected as variable, Waseem, Maria, Rafia, Waqasia, Nimra and Samnia (2014) Researchers found that, the research sample consists of large banks in Bahawalpur district and the results shows that a strong positive relation has found among the variables.

Alimi (2014) examined the long run and short run relationships between inflation and the financial sector development in Nigeria over the period between 1970 and 2012. Three variables, namely; broad definition of money as ratio of GDP, quasi money as share of GDP and credit to private sector as share of GDP, were used to proxy financial sector development. Employed   ordinary least square (OLS) estimation technique for the case where there is evidence of long run relationship among our variables of interest. The study findings suggest that inflation presented deleterious effects on financial development over the study period. Moreover, the study also observed a negative effect of the measures of financial development on growth, suggesting that impact of inflation on the economic growth passes through financial sector.

Haroon (2015) scrutinised the impact of inflation on financial development in the case of Pakistan for the period of 1991-2011. Regression and Correlation methods applied. Experimental findings expose that high trends of inflation delay the performance of financial markets. GDP per capita promotes the development of financial sector through its causing channels. Three indicators namely money supply, total level of deposits, BCPS (bank credit to private sector) represent the financial development in Pakistan. There is a negative relationship between inflation and financial development.

In a study carried out by Afolabi, Adeyemi, Salawudeen and Fagbemi (2018) investigated the relationship that exists between monetary policy instruments and Deposit Money Banks Loans and Advances in Nigeria. An annual time series data covering a period of 36years from 1981-2016 were sourced from Central Bank of Nigeria and used for the study. The study employed Toda and Yamamoto granger non-causality model to examine the relationship existing between Deposit Money Banks loan and advances and monetary policy variables in Nigeria. The findings revealed that structural changes in monetary policy system exerted positive significant impact on loan and advances of Deposit Money

Banks in Nigeria. However, bidirectional relationship exist between MPR and loan and advances of Deposit Money Banks in Nigeria. Precisely, MPR proved to be a significant variable which causes Deposit Money Bank loans and advances in Nigeria. The other explanatory variables; broad money supply (LM2), liquidity ratio (LR), inflation rate (IFR) and cash reserve ratio (CRR) does not granger cause loan and advances of Deposit Money Banks in Nigeria within the study period.

2.3 Theoretical Framework
This study employed Deflation theory which is relevant to the effect of inflation rate on the deposit money bank total sectoral credit allocation in the presence of structural breaks in Nigeria.

Deflation theory was propounded by Fisher (1933). The theory asserts that a decrease in inflation rates bring about a decline in the general price level, which subsequently brings down the business net worth, reduced profitability and thus, precipitating bankruptcies in institutions. The cycles cause complicated disturbances in interest rates and a decline in the value of money. These complicated disturbances are described as both macro and micro forces (external and internal factors) impacting on the level of over indebtedness which exists among debtors and/or creditors which can result in loan default (Nzuve, 2016).

The theory is relevant to this study as it asserts that high rates of inflation will bring about high commercial banks' revenues, high profitability and thus, better financial performance of banks.
Conversely, decrease in rates of inflation, decreases revenues, profitability and thus poor financial performance of banks which can ultimately leads to bankruptcy of commercial banks (Nzuve, 2016). The anticipation of inflation rate determines its effect on the banks' profitability.
It is positive when it well anticipated, as management of banks will quickly adjust interest rates to cater for such changes and vice versa. Opposed to this theory is Paul and Conroy (1998) who assert that high inflation brings about devaluation of currency, thus fall in purchasing power of money and erosion of value. In addition, it brings about fall in real sales, high costs of operation and interest rates in the economy.

3.0 Methodology
This study adopted the ex-post facto research design. Secondary data were used from 1981to 2020. The time series data of deposit money bank total sectoral credit allocation extracted from CBN statistical bulletin used while inflation rate was captured from word development indicator.
The study accounted for five steps in other to avoid the spurious regression problem; the order of integration of the variables (without breaks) was investigated using the Augmented Dickey-Fuller (ADF). Unit root test with structural break was also carried out using the ADF test. Thereafter, a test for co-integration with structural breaks amongst the variables was conducted based on Bai and Perron (1998, 2001) procedure. Since the estimated parameters in the specified model were average values for the entire sample period (1981-2020), there is the possibility that the parameters could change over time if a structural

break occurred. Therefore, the study also explored the possibility of multiple structural changes in the parameter relating to variable inflation rate and return on asset of DMBs in Nigeria by using the Bai and Perron (1998) test.

According to (Chaudhuri& Wu, 2003), considered that failure to account for structural breaks may not only lead to the erroneous conclusion but would indices are characterized by a random walk. In addition, the unit root test results may equally be biased towards flawed non-rejection of the non-stationarity hypothesis (Perron, 1989; 1997). Bai and Perron (1998, 2001) proposed some tests for structural changes and a selection procedure based on a sequence of tests to estimate consistently both the number of breaks and the induced structural regimes in a linear model specified as:
$$yt = xt\beta + zt\delta j + ut$$

Where yt is the observed dependent variable at time t, j = 1, …, m +1, where m is the number of breaks in m + 1 regime; xt and zt are "vectors of covariates"; β and δj are the corresponding vectors of coefficients, and ut is the error term. The objective is to estimate the unknown regression coefficients and the breakpoints when a number of observations on yt, xt and zt are available.

That is ECMs used to directly estimate the rapidity at which a dependent variable returns to equilibrium after a change in other variable using the model: The Ordinary Least Square regression model is stated as:
$$BTSC_t = \beta_0 + \beta_1 INFR_t + \mu_t \text{---1}$$
Where;
BTSC = Deposit Money Bank Total Sectoral Credit Allocation and INFR = Inflation Rate
ARDL bound test was also captured to show the existence of a long-run and short-run relationship between the variables of consideration was assessed using the model. Furthermore, post-diagnostic tests were carried out, including the Breusch-Godfrey Serial Correlation LM test, and Breusch Pagan-Godfrey heteroskedasticity test, the CUSUM tests. Finally, the Granger Causality test was employed to test which of the variables Granger cause one another. The E-Views statistical package was used in carrying out all the analysis in this study.

Model Specification
To capture the relationship between the effects of inflation rate on the deposit money bank total sectoral credit allocation in Nigeria, the empirical model that accommodates the relationship is drawn from reviewed literatures and theories. The model of the study will be adopted from Duruechi(2018) study and modified to suit our objectives. The econometric expression below that was earlier stated will be vital for the study.

$$\Delta BTSC_t = \sigma + \sum_{i=1}^{k-1} \gamma_i \Delta BTSC_{t-i} + \sum_{k=1}^{k-1} \eta_k \Delta INFR_{t-k} + \lambda ECT_{t-1} + \mu_t \text{--2}$$
Where:
BTSC = Deposit Money Bank Total Sectoral Credit Allocation

INFR = Inflation Rate and εt = Error term at time t.
Theoretically, the coefficient of the independent variable is expected to be negative, that is, impacting the dependent variable negatively: $\alpha 1 > 0$.

4.0 Empirical Results

4.1 Descriptive Statistics

Table 4.1 below shows the descriptive statistics, the behaviour of the data provides information about sample statistics such as mean, median, maximum value and minimum value and the distribution of the sample measured by the skewness, kurtosis and the Jarque-Bera statistics.

The table shows the average value of Deposit Money Banks Total Sectoral Credit Allocation (BTSC) and Inflation rate (INFR) to be 4410.042 and 18.99905 respectively. The minimum value of BTSC is 8.582900 with maximum value 20373.49 and INFR is 5.388008 with maximum value of 72.83550 was also noted. The standard deviation value of BTSC 6130.211 is greater than the mean value of 4410.042, it means that the data are widely dispersed from the mean value, in addition the standard deviation value of INFR 16.86844 is less than the mean value of 18.99905, it means that the data are not widely dispersed from the mean value as the mean value of the variable is greater than the standard deviation value. The skewness value of BTSC is 1.168384 and INFR 1.823484 which are above zero and is considered to be non-symmetric. Similarly, the kurtosis value of BTCS is 2.984277 which is below 3, it shows that the variable is normally distributed in nature and which indicated the extent of flatness (platy-kurtic) of the distribution of the data series relative to normal. Likewise, the kurtosis value of INFR is 5.159020 which is above 3, it shows that the variable shape is leptokurtic in nature. This study uses the Jarque-Bera test for normality, the results of the test indicate that are the data are not normally distributed because their P-value is less than 0.05.

In an aspect report of correlation coefficient, 0.298860 indicates a positive strong correlational relationship between Deposit Money Banks Total Sectoral Credit Allocation (BTSC) and Inflation rate (INFR) over the 40 years.

Table 1: Descriptive Statistics

	Mean	Min.	Max.	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Prob.	Obv
BTSC	4410.042	8.582900	20373.49	6130.211	1.168384	2.984277	9.101215	0.010561	40
INFR	18.99905	5.388008	72.8355	16.86844	1.823484	5.159020	29.93625	0.00000	40
Corr.	**BTSC**	**INFR**							

BTSC	1.0000								

INFR	-0.29886	1.0000							
	0.0610	-----							

Source: *Authors' computation using E-Views 10*(2021)

4.2 Unit Root Tests without Structural Break

The notion of stationarity of financial time series data is tested via the Augmented Dickey-Fuller (ADF –BP) Unit Root Tests conventionally and results are as presented in Tables 2. According to the ADF test, the variable Banks Total Sectoral Credit (BTSC) to have unit root (non-stationary) in the level but induced- stationary in fist difference. However, the other variable inflation rate (INFR) attain stationarity at level, thus making variables integrated in different forms (that is, I(0) I(I) series) respectively.

Table 2: Augmented Dickey-Fuller(ADF) Unit Root Test

Variables	ADF at Level		Remarks	I(d)	ADF at First Diff.		Remarks	I(d)
BTSC	2.899837 (-2.938987)	1.0000	Not Stationary	I(0)	-3.612755 (-2.941145)	0.0101 ***	Stationary	I(1)
INFR	-2.958757 (-2.938987)	0.0479**	Stationary	I(0)				

Source: Authors' computation using Eviews 10, (2021).
*Note: *** and ** represent rejection of null hypothesisof presence of unit root at 1% and 5% respectively.*

4.3 Unit Root Tests with Structural Breaks

The table below tested the stationarity of the time series data at level of significance. The essence is to determine the consistency of the said data overtime and be cautious of spurious regression problem.Perron (1989) demonstrated that the ADF test could lead to misleading inferences if potential structural breaks are ignored. He noted that if there is a structural break, the power to reject a unit root decreases when the stationary break alternative is true. Hence, the unit root test with break was carried out using the ADF test. ADF test confirmed that, the variable Banks Total Sectoral Credit (BTSC) unit root non-stationary at the level but made its stationary in fist difference. However, the other variable inflation rate (INFR) achieves stationarity at level, with the break dates at 1995 and 2005 for BTSC and INTR respectively. This implies that variables integrated in combination forms (that is, I(0) I(I) series) all These findings are consistent with the results provided by the conventional ADF.

Table 3: Augmented Dickey-Fuller Break Point (ADF –BP) Unit Root Tests

Variables	ADF –BP at Level					ADF –BP at First Diff.				
	t-stat	p-value	Break Date	Remarks	I(d)	t-stat	p-value	Break Date	Remarks	I(d)
BTSC	-1.125238 (-4.443649)	> 0.99	2015	Not Stationary	I(0)	-5.515608 (-4.949133)	< 0.01***	2005	Stationary	I(1)
INFR	-6.432615	< 0.01***	1995	Stationary	I(0)					

(-4.949133)									

Source: Authors' computation using Eviews 10, (2021).
Note: *** and ** represent rejection of null hypothesisof presence of unit root at 1% and 5% respectively.

4.4 Bai-Perron's Breakpoint Test

By employed the Bai-Perron's (1998, 2001) tests and their commendation, the study used a trimming region of 15% and allowed the system to search for a maximum of five breaks, which is the largest permissible number according to the Bai and Perron procedure. The results seemed to suggest strongly that there are five structural breaks in each of the estimated models. The identified breakpoints were assessed based on Scaled F-statistic, Weighted F-statistic, UDMax and WDMax statistics at 0.05 significance level, and the four statistical tests gave credence to the presence of five (5) breakpoints in the variable. The detected break dates and the associated levels of the interest rate are shortened in Table 4. The breakpoints were identified to be 1989, 1995, 2001, 2008, and 2014. All the identified breakpoint periods were of significant events in Nigeria and some of the periods had significant events attached to them at the level in worldwide. In 1989, this rapid expansion is likely to give way to more moderate increases in world output and trade. The measures taken to contain inflationary pressures in the industrialized countries in late 1988 and early 1989, and more cautious attitudes on the part of investors and consumers in the big industrial countries are slowing the growth of aggregate demand. Growth in the world economy is thus expected to slacken from more than 4 to 3.5 per cent in 1989 and to stay at about that level in 1990. The most probable short-term scenario for 1989 and 1990 is one of a modest slow-down in output and a gradual deceleration of inflation in major industrial countries beginning in 1990. It should be noted that the 2008 break date in Nigeria is financial crises hit the country, the average annual inflation rate was nearly double the fed's target at 3.5percent. In fact some month in 2008 had annual inflation rates as high as 5.6 and 5.4 percent, which were the highest rates in 17 years. After the stock market crashed and the country entered the great recession. It is also a period deflation throughout 2009. Some inflation rates were as low as -2.1 percent and annual inflation rate for the year was -0.4percent on average. Between 2010 and 2017, the country had been struggledto recover from the financial crises and the annual inflation rate between 2014-2015 is 0.1 percent.

Table 4: Bai-Perron's Breakpoints

Variable	Scaled F-statistic	critical value	WDMax Statistic	WDMax critical value	Breakpoints	Years

INFR	428.7417	11.70	525.6067	12.81	5	1989,1995, 2001, 2008, 2014

Source: Authors' computation using Eviews 10, (2021).

4.5 Test of Multicollinearity

A test of multicollinearity among the explanatory variable was also carried out using Variance Inflation Factors (VIF) test and its result presented in Table 5. As general rule (rule of thumb) says that the higher the VIF the more troublesome or the more likely there is multicollinearity. On the other hand if VIF exceeds 5, it warrants further investigation. If VIF exceeds 10, it suggests serious multicollinearity requiring correlation. Since the VIF (Centred VIF) for any variable does not exceed the threshold of 10 (Gujarati & Porter, 2009), we can safely assert there is no problem of multicollinearity among the explanatory variables.

Table 5: Variance Inflation Factors

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
BTSC(-1)	0.000884	1.652312	1.088222
INF	95.92188	2.462374	1.088222
C	86243.50	3.439605	NA

Source: Authors' computation using Eviews 10, (2021).

4.6 ARDL Bound test

In this study, co-integration carried out to show the long and short run relationship between the variables. Exclusively, non-stationary variables could become stationary when combined linearly via cointegration (Gujarati & Porter, 2009). Therefore, since all the variables are not stationary (in level), there is the need for cointegration test and so far the variables are of mixed order of integration, the Bounds Test for cointegration becomes applicable. The results of the ARDL bounds test shown in table 5 indicates that the F-statistic with a coefficient of 6.558765 is greater than the lower bound value of 3.62 and upper bound value of 4.16 at 5% level of confidence show long run relationship in the study. Thus, a long run position is established between Deposit Money Banks Total Sectoral Credit Allocation (BTSC) and Inflation rate (INFR) in Nigeria.

Table 6: ARDL Bound test

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	6.558765*	10%	3.02	3.51
K	1	5%	3.62	4.16
		2.5%	4.18	4.79
		1%	4.94	5.58

Source: Authors' computation using Eviews 10, (2021).
*Note: * reject the Null Hypothesis: No levels relationship at 10%, 5% and 1% since the F-stat>I(1) value at the respective levels of significance.*

4.7 Model Estimation

To examine the effect of inflation rate on deposit money banks total sectoral credit allocation in Nigeria. This study applies the autoregressive distributed lag (ARDL) technique after ascertaining that the variables are integrated of a mixed order one and zero [I(1),and I(0)]. Both long-run and short-run cum error correction models are estimated and the results of the ARDL Long-Run model as presented in Table 7 reveal that in the long-run, inflation rate (-6.960082) has negative and insignificant impact on deposit money banks total sectoral credit allocation in Nigeria. Thisimplies that, an increase in inflation rate by 1% will lead to decrease in credit allocation by STSC by 69.6%. However, going by the BTSC at lag -1(1.076065), has positive and significant impact, mean a percentage change in BTSC will lead to increase by 1.7% on credit distribution.

The coefficient of determination of the long-run model R-squared and Adjusted R-squared of 0.975650 and 0.974297 further prove that variation in the deposit money banks total sectoral credit allocation in Nigeria are mostly captured in the changes in the components of INFR the tune of 97%. This implies that variation in the components of the variable combined by 1 will prove changes to the tune of 97% in BTSC. The 1.59 (less than 2) as revealed by Durbin Watson statistics showed that there is absence of autocorrelation in the study and the findings of our study is fit and accepted for policy implementation.

Table 7: ARDL Long-Run Estimates

Dependent Variable: BTSC				
Method: ARDL				
Selected Model: ARDL(1, 0)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
BTSC(-1)	1.076065	0.029727	36.19877	0.0000
INFR	-6.960082	9.793972	-0.710650	0.4819
C	349.7750	293.6724	1.191038	0.2414
R-squared	0.975650	Mean dependent var		4522.900
Adjusted R-squared	0.974297	S.D. dependent var		6168.107
S.E. of regression	988.8746	Akaike info criterion		16.70482
Sum squared resid	35203425	Schwarz criterion		16.83278
Log likelihood	-322.7439	Hannan-Quinn criter.		16.75073
F-statistic	721.2220	Durbin-Watson stat		1.593215
Prob(F-statistic)	0.000000			

Source: Authors' computation using Eviews 10, (2021).
*Note: ***, **, and * represent significant at 10%, 5% and 1% respectively.*

4.8 ARDL Error Correction Regression Estimates
ARDL Error Correction Regression Estimates as presented in Table 8 shows the speed of adjustment towards the equilibrium after the initial deviations are corrected. Precisely, the impact of variable is represented in the short-run model. As expected, the error correction term for the models is ECM (-1) the coefficient is 0.076065 that is less than one with a positive sign and statistically significant at one percent. This means that the conditions for

error correction mechanism are met and the speed of adjustment for correction disequilibrium from the preceding year to current year is 8 % respectively.

The predictive power of the short-run and ECM as indicated by the coefficient of determination (R2) of 0.196457 suggests that, in the short-run, about 20% of the changes in the explained variables are determined by the joint changes in the explanatory variable.

Table 8: ARDL Error Correction Regression Estimates

ARDL Error Correction Regression				
Dependent Variable: D(BTSC)				
Selected Model: ARDL(1, 0)				
ECM Regression				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
CointEq(-1)*	0.076065	0.016691	4.557348	0.0001*
R-squared	0.196457	Mean dependent var		522.1771
Adjusted R-squared	0.196457	S.D. dependent var		1073.732
S.E. of regression	962.4998	Akaike info criterion		16.60225
Sum squared resid	35203425	Schwarz criterion		16.64491
Log likelihood	-322.7439	Hannan-Quinn criter.		16.61756
Durbin-Watson stat	1.593215			

Source: Authors' computation using Eviews 10, (2021).
Note: ***, ** and * significant at 10%, 5% and 1% respectively.

4.9 Post-Estimation Diagnostic Tests

Post estimate diagnostic test was carried out to ascertain the degree of confidence that could be employed upon the estimates of the ARDL models after establishing a long and short term correlation. Some Post-Estimation Diagnostic Tests were conducted include, Breusch-Godfrey Serial Correlation LM, Heteroskedasticity Test: Breusch-Pagan-Godfrey and Ramsey RESET Test and the results of the tests are summarized in Table 9 as well as model stability test showed in Fig.1.

In the Breusch-Godfrey Serial Correlation LM Test, the hypothesis of no serial correction could still be rejected at five percent level of significant as indicates that P-values of 0.3095 is not significant at 5% level. This implies that there is no evidence of autocorrelation problem and the model is free from auto correlation. The Heteroskedasticity Test: Breusch-Pagan-Godfrey test also indicates that the model is herteroscedsatic in nature since meaning that there is present of hetroscedasticity problem as P-value significant at 5% level of significance. In the Ramsey RESET Test, the hypothesis of no misspecification error is rejected; hence the model is indicated to the correct functional form in specification as well significant at 5% level of significance.

Table 9: Post-Estimation Diagnostic Tests

|	F-statistics	p-value
Breusch-Godfrey Serial Correlation LM Test	1.063519	0.3095

| Heteroskedasticity Test: Breusch-Pagan-Godfrey | 5.866021 | 0.0206 |
| Ramsey RESET Test | 1.291533 | 0.2635 |

Source: Authors' computation using Eviews 10, (2021).

4.10 Normality test

Normality test was also conducted to find out the variable are normally distributed. The conditions of normality are all met because the skewness is less than one, kurtosis is 3 and jarque-bera probability is not significant. Therefore, the dtata is normally distributed

Table 10: Result of Normality Test
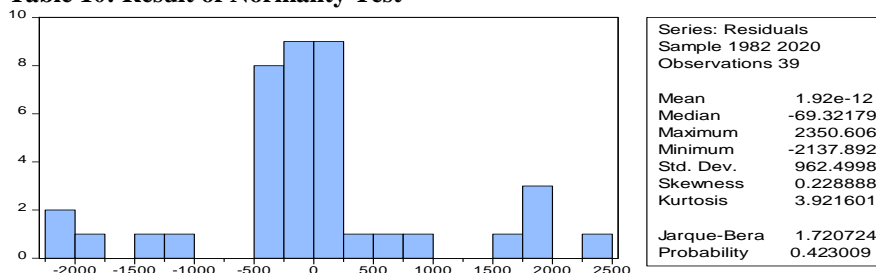
Source: Authors' computation using Eviews 10, (2021).

4.11 Granger Causality Test

The analysis of Granger causality test became probable after asserting the stationarity of the variable of concern. The F-statistic test in the granger causality test secures the reject of the null hypothesis in the two tests. Therefore, asserted that there was causal relationship between the inflation rate and deposit money banks total sectoral credit allocation because the probability value is significant at 5% level of significance in Nigeria during the study period

Table 11: Result of Pairwise Granger Causality Test Lag1

Null Hypothesis:	Obs	F-Statistic	Prob.
INF does not Granger Cause DMBS_TSCA	39	0.96696	0.3320
DMBS_TSCA does not Granger Cause INF		0.61685	0.4374

Source: Authors' computation using Eviews 10, (2021).

4.12 Toda-Yamoto Causality Analysis

Going by Granger (1969) indicated that the unbiased for estimation results to undertake the causality technique was not to find the relationship between the variables but to test the causality between them. This strengthens the results of the estimation because it verifies the causation effect among the variables. However, the result of Toda-Yamamoto Granger

Causality confirmed of both variables are not significant then there was no causal relationship between them.

**Table 12: Results of Toda-Yamoto Causality Analysis**

Hypothesis	Chi-sq	df	Prob.	Decision	Remark
INFR does not granger-cause BTSC	0.693362	1	0.4050	**Accept**	**No causality**
BTSC does not granger-cause INFR	0.177830	1	0.6732	**Accept**	**No causality**

Source: Authors' computation using Eviews 10, (2021).

4.13 Cusum Plot for Stability
In the same vein, the CUSUM test of the model stability in Fig.1 shows the model to lie within the critical boundaries and this reveals that there are no chance of having spurious as the blue line is in between the two red line.

Figure 1: Cusum Plot for Stability
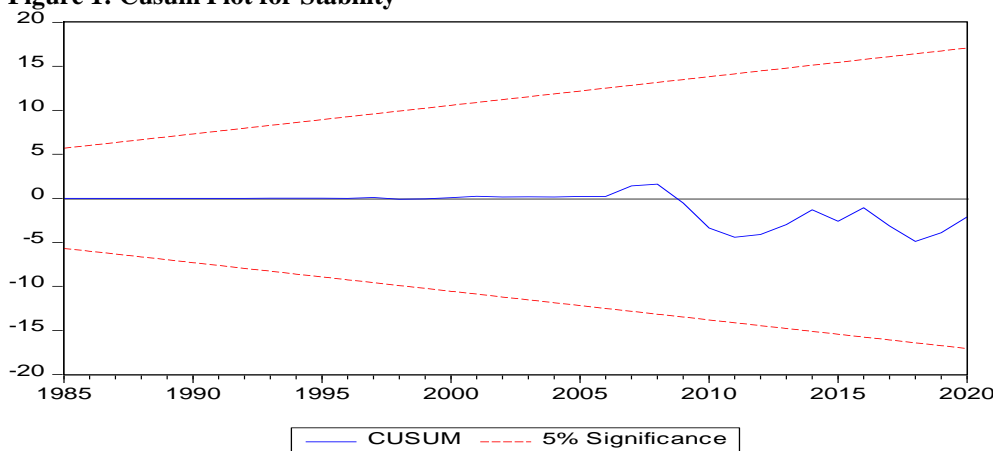
5.0 Discussion of Findings
The descriptive statistics result in table 1 shows the average value of Deposit Money Banks Total Sectoral Credit Allocation (BTSC) and Inflation rate (INFR) to be   4410.042 and 18.9% respectively. BTSC data are widely dispersed from the mean value while INFR the data are not widely dispersed from the mean value as the variable is greater than the standard deviation value.
The unit root with and without structural break with uses of ADF test confirmed that, the variable Banks Total Sectoral Credit (BTSC) unit root non-stationary at the level but made its stationary in fist difference. However, the other variable inflation rate (INFR) achieves stationarity at level, with the break dates at 1995 and 2005 for BTSC and INTR respectively. This implies that variables integrated in combination forms (that is, I(0) I(I) series). The findings are consistent with the results provided by the conventional ADF. In

line with the Bai-Perron procedure, the identified break dates in INFR are 1989, 1995, 2001, 2008, and 2014. These dates are connected with certain economic/financial, political events in Nigeria and at the global scene that could possibly stimulus the variables of the study and thus, the model of the relationship between them.

The study also confirmed after mixture of unit root text order of intergration 1(0) and 1(1), cointergration carried out to show the long and short run relationship between the variables. Therefore, since all the variables are not stationary (in level), the results of the ARDL bounds test shown in table 7 and 8 indicates that the F-statistic with a coefficient of 6.558765 is greater than the lower bound value of 3.62 and upper bound value of 4.16 at 5% level of confidence show long run relationship in the study. Thus, a long run position is established between Deposit Money Banks Total Sectoral Credit Allocation (BTSC) and Inflation rate (INFR) in Nigeria. However, Both long-run and short-run cum error correction models are estimated and the results of the ARDL Long-Run model as presented in Table 7 reveal that in the long-run, inflation rate has negative but non-significant impact on deposit money banks total sectoral credit allocation in Nigeria. Moreover, the error correction term for the models is ECM (-1) the coefficient is that is less than one with a positive sign and statistically significant at one percent which means that the conditions for error correction mechanism are met and the speed of adjustment for correction disequilibrium from the preceding year to current year is 8 % respectively.

Post estimate diagnostic test was carried out to ascertain the degree of confidence that could be employed upon the estimates of the ARDL models after establishing a long and short term correlation. In the Breusch-Godfrey Serial Correlation LM Test, the hypothesis of no serial correction could still be rejected at five percent level of significant as indicates that P-values of 0.3095 is not significant at 5% level. The Heteroskedasticity Test: Breusch-Pagan-Godfrey test also indicates that the model is herteroscedsatic in nature since meaning that there is present of hetroscedasticity problem as P-value significant at 5% level of significance. In the Ramsey RESET Test, the hypothesis of no misspecification error is rejected; hence the model is indicated to the correct functional form in specification as well significant at 5% level of significance. Normality test was also conducted to find out the variable are normally distributed. The conditions of normality are all met because the skewness is less than one, kurtosis is 3 and jarque-bera probability is not significant. Therefore, the dtata is normally distributed. The F-statistic test in the granger causality test secures the reject of the null hypothesis in the two tests. Therefore, asserted that there was causal relationship between the inflation rate and deposit money banks total sectoral credit allocation because the probability value is significant at 5% level of significance in Nigeria during the study period. The plot of CUSUM shows the model to lie within the critical boundaries and this reveals that there are no chance of having spurious as the blue line is in between the two red line.

The result gotten from this research is in line with the studies carried out by OnohAdesina, Nwidobie and Amadi (2018) and Waseem, Maria, Rafia, Waqasia, Nimra and Samnia (2014)who discovered that inflation rate have positive impact on deposit money banks performance. Moreover, findings from this study did not agree with the study of Miguel, FranciscoandVíctor(2018), Akaninyene, Innocent and Aniekpeno (2018), Alimi (2014), Haroon (2015) and Afolabi, Adeyemi, Salawudeen and Fagbemi (2018) who found an

indirect relationship between inflation rate and deposit money banks performance. Similarly, the results reported is in line with the *a pripori*expectation of the study which states that inflation rate have negative impact on deposit money banks performance in term of loan and advance

6.0 Conclusion and Recommendations

Based on these findings, the study concluded that inflation rate has influenced the level of deposit money banks total sectoral credit allocation and also established unilateral relationship between Inflation rate and Deposit Money Banks Total Sectoral Credit Allocation (BTSC) (INFR) in Nigeria during the sampled period. The identified structural breaks coincided with identifiable finance and economic shocks in the country. The study, therefore, recommended that in the long run, inflation rate has negative but non-significant impact on deposit money banks total sectoral credit allocation in Nigeria. However, inflation rate is shown to have positve short run and significant impact on Deposit Money Banks Total Sectoral Credit Allocation (BTSC) (INFR) in Nigeria. In this case, the authorities should continue focusing on keeping low inflation because it would expand the volume of deposit money banks total sectoral credit but when it is high and uncertain, it erodes all economic activities and financial institution in particularly in Nigeria.

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