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Determinants of Deposit Money Banks' Lending Behaviour to Private Sector of the Economy in Nigeria (1986-2017)

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Abstract:

The study examined those factors that determine the deposit money bank's lending behaviour to the private sector of the economy in Nigeria using annual time series data spanning from 1986 to 2017. Secondary data were sourced majorly from CBN Statistical Bulletin (2017). In measuring the variables, determinants of deposit money banks' lending behaviour to the private sector were subjected to bank-specific factors, regulation factors, financial deepening, and macroeconomic factors. The bank-specific factors were proxied by volume of deposit (VD) and lending rate (LDR), and the regulation factor was proxied by reserve requirement (RSR). Financial deepening was proxied by the ratio of the money supply to GDP (M2G). In contrast, macroeconomic variables were proxied by inflation (INF). The estimation techniques used for the study were the Augmented Dickey-Fuller

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test, pairwise Granger causality test, and autoregressive distributed lag (ARDL). It was found that the variables in the series were integrated of difference order $I(0)$ and $I(1)$, and there was a significant relationship between bank lending behaviours and the identified determinants. In addition, it was revealed that the variables move in the long run. However, among the variables of interest, the volume of deposits and M2G determines bank lending behaviour in the short and long run. At the same time, RSR, INF, and LDR retard lending to the private sector. The study also found that causality runs from the volume of deposits to private sector credit. Hence, the study concluded that there is a significant relationship between bank lending behaviour private sector and its determinants. It was recommended that bank lending rate be brought down or flexible to meet up the categories of borrowers since there is common knowledge that high-interest rate discourages borrowers and influence banks from selecting bad loan offer, which may affect the bank returns in the long run. Secondly, the reserve requirement dictated by CBN on deposit money banks should be reduced to enable banks to be more liquid for the private sector to access funds for their productive purposes. Inflation should be made below two digits, as inflation above a digit may be unfriendly to economic activities, affecting the private-sector output, which is pertinent to economic growth.

Keywords: Private Sector, Bank Lending, Macroeconomic Factor, ARDL.

JEL Codes: G21, E21, E24, C25.

1. Introduction

The economy's private sector comprises economic sectors such as manufacturing, agriculture, service, construction and trade (Ayodeji & Ajala, 2018). These sectors are so important in their contributions to economic growth since economic growth is the add-up of all the outputs produced by these sectors. As a result, the federal government, in her wisdom, has categorized them based on their importance, which is the preferred and less preferred sector. The reason for this lies in motivating banks to extend credit to the preferred sector because they are a catalyst to rapid economic development in an economy, as evidenced in many advanced countries such as the United States of America, Japan, Germany, the United Kingdom etc. More importantly, the continuous growth of these sectors automatically helps improve other small industries. At the same time, it employs the labour force and earns foreign exchange earnings for the government through exporting its produce.

The above is supported by many empirical studies in developed and developing economies emphasizing the importance of the private sector in

inducing economic growth (Ajibola, 2015; Ganiyu, Eboreime, Adam & Belonwu, 2017). Hence, there is a need for finance for the private sector to continue to spur economic growth (King & Levine, 1993). These can be sourced through the banking sector, especially money deposit banks, in the form of credit, either in short-term, medium-term or long-term forms. However, while short-term credit can be used in financing working capital, medium- and long-term credit can majorly be used in financing long-term investments for productive purposes.

However, looking at the trend of deposit money banks' credit to the private sector in the last 32 years, it was discovered that credit to the economy's private sector has been fluctuating. Analytically, in 1986, % the growth rate of deposit money banks' credit to the private sector was 52.47%, but there was a drastic decline from 1987 to 1990 from 38% to 10.34%. From 1991 to 1993, there was an increase in credit to the private sector from 23.26% to 118.70%. However, there was a decline in 1994 to 12%, but from 1997 to 1999, there was an upward trend in the private sector credit from 25.51% to 32.53%. Again in 1998, there was also a decline to 11.31%; however, from 1991 to 2001, private credit increased by 22.51% to 44.23%. Unfortunately, between 2002 and 2003, there was a decline from 21.64% to 17.84%. In 2004 and 2005, there was also an increase recorded which stood at 29% for the two years. There was a decline in 2006, but in 2007 and 2008, there was an increase in the credit channelled to the private sector. In 2009, there was a decrease to 47.22%, which continued until it entered into a negative decrease in 2010 by -3.81. In 2011, the banks bounced back from global financial crises and recorded a 44.28% increase in the private sector; however, since 2012 till date, the credit to the private sector has been on the decrease in which as of 2017, it was 1.40% (CBN, 2017).

Figure 1. The percentage growth rate of banks' credit to the private sector in Nigeria (1986-2017)

Source: CBN statistical bulletin of various editions

From the above analytical stance of deposit money banks' credit to the private sector, there is a need to ask what factors are responsible for the decline and increase in credit growth to the economy's private sector. There have been many studies on the effect of private-sector credit on economic growth (Malaki, 2014; Mamman & Hashim, 2014; Ajibola, 2015; Ganiyu et al., 2017). However, there is limited study on the determinants or factors responsible for banks' lending behaviour to the private sector. While some studies supported bank size as the determinant of bank lending behaviour, others supported that it is deposit volume, interest rate and economic growth. Unfortunately, few studies have incorporated financial deepening and regulation factors as determinants to see how they have influenced bank lending to the private sector in Nigeria. Hence, due to few studies in this area, this study is imitated to fill the gap.

2. Literature review

Banks and their lending constitute important and active inducers of a country's economic growth and development (Ajibola, 2015; Alkhazaleh, 2017). It has been acknowledged that if a country's banking system is effective, efficient, disciplined and sound, it brings about the rapid growth in the various sectors of the economy (Melanie, 2014). A well-monitored and regulated bank is an inducer of economic growth through lending to individuals and other sectors of the economy. CBN has categorized these sectors based on their importance: agriculture, industry, service, trade and construction. Their joint outputs contributed to the aggregate economy, which means that an increase in the outputs of these sectors would lead to an increase in the economic output and vice versa (Ayodeji & Ajala, 2018).

Bank lending is always explained under financial intermediation theory which explains the function of banks as an intermediary between the surplus sector and deficit sector of the economy, providing liquidity insurance, reducing transaction costs, transforming the deposit to bank assets in the form of loans and advances etc. Although, the intermediation role is performed by financial institutions such as the banking sector and capital market, where medium to long-term funds are raised (Ayodeji & Ajala, 2018). However, deposit money bank is very important as they hold the major money supply of the economy and transform short-term deposit into long-term investment; this is made possible by their special nature.

Most of the time, banks lend funds to a different sector of the economy for productive purposes. At the same time, their lending behaviour to these sectors is determined by several factors, which may be bank-specific and macroeconomic-specific (Alkhazaleh, 2017). However, there

have been serious empirical studies on the subject matter, with different views on what determines bank lending behaviour. Some found that the volume of deposits determines bank lending (Olokoyo, 2011), while some said it is lending rate Gambacorta and Iannati (2005); Sacedoti (2005) and Okunneye and Ogunmuyiwa (2016); some said it is bank size, some other said it was growth (Gambacorta and Mistull (2003), Robert, et al. (2004), Obamuyi (2007) and Obasan and Arikewuyo (2012). However, limited studies consider regulation and financial deepening factors determining bank lending behaviour. Although, only some studies on these two variables were from other developing countries (Imran & Nishat, 2012; Million, 2014).

2.1. Theoretical framework

Financial intermediation is the process of mobilizing savings from the surplus units and channelling them to deficit units of the economy for productive investment. It is the art of channelling funds from savers to investors by mobilizing funds and ensuring the efficient transformation of funds into productive activities that can enhance economic growth.

It can also be described as the transformation of mobilized deposits liabilities by financial intermediaries such as banks into bank assets or credits such as loans and overdrafts. Hence, the theory built on the notion that intermediaries serve to reduce transaction costs (Benston & Smith, 1976), Liquidity insurance (Diamond & Dybvig, 1983), informational asymmetries (Leland & Pyle, 1977) and delegated monitoring (Diamond, 1984, 1996). In addition, the approach of financial intermediaries is based on the regulation of monetary creation, a process of monetary creation, saving and financing of the economy—the method of regulation influences the liquidity and solvability of intermediaries (Gurley & Shaw, 1960). Diamond and Rajan (2002) show that regulations regarding the capital of intermediaries influence their health, the ability for refinancing and the method for recovering debts. Furthermore, because financial institutions can break down assets into small units, they can reduce transaction costs and employ diversification to benefit their customers and equity holders.

2.2. Empirical review

Olokoyo (2011) investigated the determinants of commercial banking lending behaviour in Nigeria from 1980 to 2005 using regression analysis. The study employed secondary sources of data employed from the CBN Statistical Bulletin. The dependent variable was proxied using the loan

and commercial bank loan and advances to the private sector. In contrast, the independent variable was proxied by the volume of deposits, investment portfolio interest rate, cash reserve requirement and liquidity ratio. The study revealed that bank deposit, among all variables, has a more significant impact on the lending behaviour of money deposit banks in Nigeria. Further results show that every 1% increase in cash reserve requirement for commercial banks caused the loans and advances to change by 0.12%. Commercial banks' stipulated cash reserve requirement ratio may not necessarily translate into poor lending performance or a lower proportion of the funds available for lending, respectively.

Olusanya, Oyebo and Obadere (2012) accessed those factors that determined the lending behaviour of commercial banks in Nigeria using co-integration techniques from 1975-2010—using secondary data and variables such as commercial bank loans and advances (LOA) and another volume of deposits (Vd), the annual average exchange rate of the naira to the dollar (Fx), Investment Portfolio (Ip), Interest rate (lending rate) (Ir), Gross domestic product at current market price (Gdp) and Cash reserve requirement ratio (CRR). It was found that there is a positive relationship between loans and advances and volume of deposits, the annual average exchange rate of the naira to dollar, gross domestic product at current market price and cash reserve requirement ratio except for investment portfolio and interest rate (lending rate) that have a negative relationship. The result also revealed a long-run relationship between loans and advances and all the explanatory variables in the model.

Imran and Nishat (2012) evaluated the determinants of bank credit in Pakistan, a supply-side Approach covering the period between 1971 and 2010 using the autoregressive distributed lag model. Findings revealed that foreign liabilities, domestic deposits, economic growth, exchange rate, and the monetary conditions proxy by the ratio of M2/GDP have a significant and positive association with private credit in the long run. In contrast, inflation and money market rate do not affect private credit. However, in the short run, all the variables are significant and positively associated with private credit except domestic deposit and inflation, which do not influence private credit in Pakistan.

Makali (2014) accessed the effect of commercial bank loans on economic growth in Kenya from 2008 to 2012. Pool data were sourced from 43 commercial banks on variables such as rate of change on loans and growth rate, and panel regression was used as the estimation technique. It was found that changes in lending do not drive economic growth in Kenya; this indicates that Kenya's economic growth is not firmly determined by the

loans issued by banks to private borrowers.

Mamman and Hashim (2014) investigated the impact of bank lending on economic growth in Nigeria, spanning from 1987 to 2012. Annual time series data were sourced from the CBN statistical Bulletin of various editions. It covers real gross domestic product, bank lending, and total bank assets. At the same time, multiple regression was used as the estimation technique. Findings revealed a relationship between bank lending and economic growth. However, this relationship is insignificant and negative, but bank assets have a significant positive effect on economic growth in Nigeria.

Million (2014) researched the determinants of growth in bank credit to the private sector in Ethiopia from 1978 to 2011. Annual time series data were sourced on variables such as bank credit to the private sector, commercial bank credit, commercial bank foreign liability, lending rate, reserve requirement broad money, consumer price index and GDP. The study employed autoregressive distributed lag as the estimation technique. It was found that domestic deposits, foreign liabilities, real lending interest rate, M2 as a percentage of GDP, GDP and inflation significantly impact banks' credit to the private sector in the long run. In contrast, reserve requirement does not affect commercial banks' credit to the private sector in the long and short run. Moreover, domestic deposits and economic growth do not influence commercial banks' credit to the private sector in the short run. It further revealed that the long and short-run results do not provide strong support for the influence of banking sector reform on the growth of bank credit to the private sector, as shown by the coefficient for the dummy variables in Ethiopia.

Ajibola (2015) examined commercial bank loans, inflation, exchange rate, and political instability as key determinants of economic growth in Nigeria from 1970 to 2013. Secondary data were sourced on variables such as gross domestic product, exchange rate, inflation, commercial bank loans and political instability (i.e., coup and trade dispute) and regression analysis as an estimation technique. It was found that the previous and current year's loans and advances positively impacted Nigeria's economic growth. Likewise, the equation shows that the foreign exchange rate and inflation rate positively affected Nigeria's output growth. In contrast, political instability had a negative effect during the study period.

Enisan and Oluwafemi (2015) examined the determinants of bank credit to the private sector in Nigeria using time series data covering a period from 1980 to 2010. Credit to the private sector was used as the dependent variable. In contrast, the explanatory variables were broad money

supply, liquidity ratio, total bank asset, inflation rate, reserve ratio, cyclical risk premium, prime lending rate, exchange rate, minimum rediscount ratio and real gross domestic product. The estimation technique used was the error correction mechanism. It was revealed that broad money, cyclical risk premium and liquidity ratio tend to increase credit to the private sector. However, the prime lending rate and reserve ratio reduce credit to the private sector. Private credit increases with inflation.

Ayieyo (2016) examined determinants of lending behaviour in selected commercial banks in Kenya from 2002 to 2011. Secondary data were sourced on variables such as loans and advances to the private sector, the volume of deposits, and average and interest rates. At the same time, an ordinary least square was used as the estimation technique. It was found that lending interest rates are negatively related and significantly affected the total loans advanced. Further, the volume of deposits in commercial banks has a significant and positive effect on the total loan advanced to the private sector in Kenya.

Okunleye and Ogunmuyiwa (2016) examined the determinants of the development of small and medium-scale enterprises in Nigeria from 1980 to 2013 using the ordinary least square method. Secondary data sources were sourced from various editions' CBN statistical Bulletin. Variables such as small and medium-scale enterprises' gross domestic products, commercial bank loans to SMEs, interest rate, inflation rate and exchange rate were employed. Results revealed that credit facilities, interest rates, and inflation rates are key determinants of the growth and survival of SMEs in Nigeria.

Timsina (2017) also accessed Nepal's bank lending determinants between 1975 and 2014. Private sector credit (dependent variable) was examined using annual time series data, with deposit volume, gross domestic product, interest rate, cash reserve ratio, liquidity ratio, inflation, and exchange rate as independent variables. The co-integration test, pairwise Granger causality test, and ordinary least squares were the estimation methods used.

Findings show that banks' Gross Domestic Product and liquidity ratio have the greatest impact on their lending behaviour. The Granger Causality Test shows evidence of a unidirectional causal relationship between GDP and private sector credit. The study implies that GDP is the barometer of the economy, and commercial banks should pay attention to the overall macroeconomic situation of the country, factors affecting the GDP in general and their liquidity ratio in particular while making lending decisions.

Ganiyu et al. (2017) investigated the impact of private-sector credit on economic growth in Nigeria, covering a temporal period from 1993 to 2013. It employed variables such as real gross domestic product as the dependent variable while trade openness monetary policy, fiscal policy, Budget Surplus/Deficit to GDP, domestic investment, infrastructure [Electricity Power Consumption per Capita (EP)] and domestic credit to the private sector, local conditions index and policy index as independent variables sourced from Central Bank of Nigeria Statistical Bulletin 2013; the National Bureau of Statistics; World Bank; and The Economist Intelligence Unit. Ordinary least square was used as the estimation technique. It was found that credit is growth-enhancing, even when trade openness, monetary policy, investment climate and infrastructure are low. Also, the composite local condition index analysis revealed that private sector credit increased economic growth when domestic or local conditions were favourable.

Adzis, Sheng and Abu-Bakar (2018) accessed macroeconomic and bank-specific determinants of commercial banks' lending in Malaysia covering a period from 2005 to 2014. The study used a pool of data sourced from financial statements of 27 banks on total loans, which is the dependent variable and total assets, non-performing loans, liquid assets, bank deposits, the annual growth rate of GDP, lending rate, reserve requirement and the dummy for macroprudential policy. In contrast, panel regression was used as the estimation technique. It was found that bank size and volume of deposits positively influence commercial bank lending, while liquidity negatively influences lending activities in Malaysia. However, the study found no conclusive evidence; on the other hand, no conclusive evidence supports the influence of gross domestic product (GDP), lending rate and cash reserve requirement on commercial bank lending activities in Malaysia. Moreover, the findings of this study also reveal that the macroprudential policy measure, implemented in 2010 to curb the high level of household indebtedness, does not significantly impact lending activities in Malaysia during the study period.

3. Methodology

The study employed annual time series data covering a time scope from 1986 to 2017; secondary data were sourced from CBN Statistical Bulletins of various editions. This study focuses on bank-specific, regulatory-specific, financial deepening factors and macroeconomic-specific determinants of bank lending behaviour. The deposit money bank's volume of deposits and the bank lending rate were used for bank-specific

calculations. The study used the reserve requirement as a proxy for regulatory specifics.

The financial deepening was also used as one of the variables in determining bank lending, and this is proxied by M2/GDP, while the macroeconomic variable was proxied by inflation. However, the study used Augmented Dickey-Fuller to test the stationarity of the variables, followed by the Breusch-Godfrey test for serial autocorrelation. The primary estimation technique, therefore, was autoregressive distributed lag.

The study adopted a model from the empirical work of Imran and Nishat (2012). The model stated that:

$$PCT = \beta_0 + \beta_1 FL_t + \beta_2 DD_t + \beta_3 CPI_t + \beta_4 GDP_t + \beta_5 ER_t + \beta_6 MMR_t + \beta_7 M2_t + U_t$$

Where PC is Private Credit, FL is Foreign Liabilities, DD is Domestic Deposit, CPI is Consumer Price Index, GDP is Real Gross Domestic Product, ER is Exchange Rate, MMR is Money Market Rate, M2 is M2 as a percentage of GDP, and μ_t is the error term. However, this model was adopted and adapted by incorporating regulation intervention, that is, reserve requirement and by removing foreign liabilities and money market rates. The adapted model is stated thus in a functional form:

$$PSC = f(VD, LDR, RSR, M2G, INF) \quad (1)$$

In an explicit form, the model is stated as:

$$PSC_t = \beta_0 + \beta_1 VD_t + \beta_2 LDR_t + \beta_3 RSR_t + \beta_4 M2G_t + \beta_5 INF_t + U_t \quad (2)$$

Estimating the model using Autoregressive Distributed lag, the model is stated as follows:

$$\begin{aligned} \Delta \ln PSC_t = & \beta_0 + \sum_{i=1}^n \beta_{1i} \Delta \ln PSC_{t-i} + \sum_{i=0}^n \beta_{2i} \Delta \ln VD_{t-i} + \sum_{i=0}^n \beta_{3i} \Delta \ln LDR_{t-i} + \sum_{i=0}^n \beta_{4i} \Delta \ln RSR_{t-i} \\ & + \sum_{i=0}^n \beta_{5i} \Delta \ln M2G_{t-i} + \sum_{i=0}^n \beta_{6i} \Delta \ln INF_{t-i} + \beta_7 \ln PSC_{t-1} + \beta_8 \ln VD_{t-1} + \beta_9 \ln LDR_{t-1} \\ & + \beta_{11} \ln M2G_{t-1} + \beta_{12} \ln INF_{t-1} + U_t \end{aligned} \quad (3)$$

Where:

n = optimal lag length.

Δ = first difference of the concerned variables.

PSC = Private sector Credit.

VD = Volume of Deposit.

LDR = Lending rate.

RSR = Reserve requirement.

M2G = Ratio of the money supply to GDP.

INF = Inflation.

β_0 = Constant Term.

β_1 - β_5 = parameter to be estimated.

U_t = Error term.

4. Analysis and interpretations

The test of unit root using augmented dickey fuller is presented in Table 1 below. The outputs at levels and first differences were presented. It was revealed that, except for the bank lending rate that was integrated at level $I(0)$, other variables were integrated at the first difference (1). Therefore, the null hypothesis of the presence of the unit root is rejected, while the alternate is accepted, that the variables are free from the unit root. Hence, the variables are said to be integrated at different levels, that is, at $I(0)$ and $I(1)$.

Table 1. Summary of augmented Dickey-Fuller test

Variables	Critical Value/P-value	At Level	at first diff.
PSC	T-Test	-1.4168	-4.2531
	Prob	0.5613	0.0023
VD	T-test	-1.1728	-4.2352
	Prob	0.6733	0.0024
LDR	T-test	-4.5874	-5.5916
	Prob	0.0009	0.0001
M2G	T-test	-0.8666	-5.1957
	Prob	0.7853	0.0002
RSR	T-test	-1.5834	-3.4484
	Prob	0.9990	0.0191
INF	T-Test	-2.6877	-6.7234
	Prob	0.0875	0.0000

Source: Author's computation using Eviews 9

The residual of the series was diagnosed using Breusch pagan and Godfrey serial correlation tests. The results revealed that the series was free from serial correlation and heteroskedasticity problems which may affect the estimation output. The probabilities of the two tests were 0.7237 and 0.8059, which are greater than a 5% significance level.

Table 2. Summary of diagnostic test

Diagnostic	F-stat	Prob.	Obs-R2	Prob.
BPG	0.5239	0.8038	4.4754	0.7237
BGSC	0.1281	0.8807	0.4315	0.8059

Source: Author's computation using Eviews 9

Before the model estimation, lag selection criteria were done using VAR selection criteria, and it was found that lag 1 was suitable based on the AIC. Hence, the result of the bound test is presented in Table 3 below. It was revealed that the F-statistics of 5.14 was greater than the lower bound of 2.62 and upper bound of 3.79 at a 5% significance level, indicating a long-run relationship between private sector credit and other explanatory variables in the model. As a result, the null hypothesis of no long-run relationship was rejected. The alternate accepted that the series has a long relationship and moved together in the long run.

Table 3. Summary of ARDL bound test

Null Hypothesis: No long-run relationships exist		
Test statistic	Value	k
F-statistic	5.14	5
Critical value bounds		
Significance	I0 Bound	I1 Bound
10%	2.26	3.35
5%	2.62	3.79
2.50%	2.96	4.18
1%	3.41	4.68

Source: Author's computation using Eviews 9

The model is estimated using Autoregressive Distributed Lag at lag 1. Hence, the result is presented in Table 4 below. It was found that private sector credit at lag1 significantly negatively affects its innovation. Likewise, VD was found to have an insignificant positive effect of 0.1980 on private-sector credit. In contrast, other variables in the model, that is, LDR of -0.0171, M2G of -0.0233, RSR of -0.0003 and INF of -0.0001, were found to have a negative effect on private sector credit. However, while all other variables were found to be insignificant, RSR was found to have a significant effect on private-sector credit. The coefficient of determination was found to be 0.6756, which indicates that about 67.56% of the variation in PSC was caused by the variables such as LVD, M2G, INF, RSR, and

LDR.

In comparison, 32.44% was caused by variables not captured in the model. The adjusted R² was also found to be 53.37% based on the number of variables included in the model. An F-stat. of 4.76 and p-value of 0.0046 indicated that the model is significant and has a good fit. In addition, the Durbin Watson of 1.75 is close to 2, which indicates that the series was free from serial autocorrelation. The study concluded that bank-specific regulation intervention, financial deepening and macroeconomic variables significantly affect the deposit money banks' credit to the private sector in Nigeria.

Table 4. Summary of parameterized ARDL estimate

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(DRSR)	-0.0001	0.0001	-1.2686	0.2227
C	0.5658	0.3312	1.7082	0.1069
DLVD(-1)	0.1980	0.1324	1.4963	0.1540
LDR(-1)	-0.0171	0.0168	-1.0197	0.3231
DM2G(-1)	-0.0233	0.0236	-0.9885	0.3376
DRSR(-1)	-0.0004	0.0002	-2.4017	0.0288
DINF(-1)	-0.0002	0.0031	-0.0476	0.9626
DLPSC(-1)	-1.0445	0.2175	-4.8027	0.0002
R-Squared = 0.6756	Adj-R ² = 0.5337	F-Stat = 4.7611	Prob = 0.0046	D.W = 1.75

Source: Author's computation using Eviews 9

The results of the short- and long-run dynamics of the determinants of deposit money bank behaviour to the economy's private sector are presented in Table 5 below. It revealed that coin Eq(-1), denoted as the speed of adjustment, was rightly signed by -0.9528. It is highly significant at a 5% level of significance. This implies that the short-run inconsistencies or discrepancies are adjusted and incorporated into the long run. It also indicates that the speed of adjustment is about 95% annually. In addition, it was also revealed that a 1% increase in LDR, RSR and INF will reduce the banking lending behaviours in lending to the private sector of the economy.

In comparison, a 1% increase in VD and M2G will bring about an increase or improvement in the banking lending behaviours to the private sector. Interestingly, M2G and INF were highly significant in the short run. However, M2G and RSR were found to be significant in the long run.

Table 5. Summary of cointegrating/long and short form

Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(DLVD)	0.0862	0.0887	0.9720	0.3455
D(LDR)	-0.0076	0.0116	-0.6530	0.5230
D(DM2G)	0.0473	0.0138	3.4309	0.0034
D(DRSR)	-0.0000	0.0001	-0.9109	0.3759
D(DINF)	-0.0051	0.0023	-2.1865	0.0440
CointEq(-1)	-0.9528	0.1475	-6.4614	0.0000
Cointeq = DLPSC -(0.0905*DLVD -0.0080*LDR + 0.0496*DM2G -0.0002*DRSR -0.0053*DINF + 0.3448)				
Long run coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLVD	0.0905	0.0966	0.9362	0.3631
LDR	-0.0080	0.0126	-0.6345	0.5347
DM2G	0.0496	0.0150	3.2949	0.0046
DRSR	-0.0002	0.0000	-2.1880	0.0439
DINF	-0.0053	0.0028	-1.9198	0.0729
C	0.3448	0.2319	1.4870	0.1565

Source: Author's computation using Eviews 9

Similarly, the causal relationship among the variables was also tested using the pairwise Granger causality test. The results are presented in Table 6 below. It was found that, while other independent variables were not Granger causing the dependent variables, that is there is no causal relationship between the independent variables (Lending rate, Reserve requirement, Money supply as a percentage of GDP and inflation rate) and the dependent variables namely; private sector credit, evidence of unidirectional causality existed between the volume of deposit to private sector credit. This indicates that causality runs from the volume of deposits to private sector credit without corresponding causality from private sector credit to deposit volume.

Table 6. Summary of pairwise Granger causality test

Null Hypothesis:	Obs	F-Statistic	Prob.	Decision	Causality
DLVD does not Granger cause DLPSC	29	4.7677	0.0181	Reject Ho	Uni-causality
DLPSC does not Granger cause DLVD		0.8352	0.4458	Accept Ho	Independent
DLDR does not Granger cause DLPSC	29	0.7936	0.4637	Accept Ho	Independent
DLPSC does not Granger cause DLDR		0.0611	0.9409	Accept Ho	Independent
DRSR does not Granger cause DLPSC	23	1.7388	0.2040	Accept Ho	Independent
DLPSC does not Granger cause DRSR		1.3566	0.2826	Accept Ho	Independent
DLM2G does not Granger cause DLPSC	29	0.8140	0.4550	Accept Ho	Independent
DLPSC does not Granger cause DLM2G		2.3786	0.1142	Accept Ho	Independent
DINF does not Granger cause DLPSC	29	0.1146	0.8923	Accept Ho	Independent

Source: Author's computation using Eviews 9

5. Discussion of findings

Having examined the determinants of deposit money lending behaviour to the private sector of the economy using annual time series data running from 1986 to 2017 and estimating the model using Autoregressive Distributed Lag, it was found that there is a significant relationship of the identified determinants on the banking lending behaviours to the private sector. It was further revealed that a long-run relationship and causality runs from the volume of deposits to private sector credit. However, in the short and long run, the volume of deposit and financial deepening variable, M_2G , was found to have a positive effect. While M_2G was found to be significant both in the short and long-run form, the deposit volume was insignificant. Furthermore, the error correction mechanism revealed that about 95% of discrepancies in the short run are adjusted annually, which is significant.

From the theoretical expectation, the volume of deposits and financial deepening support the a priori expectation. It confirms that the volume of deposit money banks determines the lending behaviour of banks together with financial deepening, which explains that the financial development or liquidity of the economy is important for the growth of other economic sectors as they would have access to funds for their business operations. On the other hand, reserve requirement, lending rate and inflation supported the a priori expectation, as an increase in reserve requirement would affect the liquidity position of banks and, consequently,

their lending behaviour. As a result, an increase in lending rates would follow, further discouraging borrowers. Although the increase in lending rates may favour banks in the short run, in the long run, information asymmetry may set in, putting banks in a very tight corner. In addition, an increase in inflation would automatically affect borrowers from repaying their loans as expected and, at the same time, affect the inputs and outputs of the private sector; this may affect the profit of these sectors and their loan repayment to banks.

However, the findings of this study revealed that, in the long run, the volume of deposits and ratios of the money supply to GDP determine deposit money banks' lending behaviour to the private sector. This submission was in line with the theoretical framework of this study which was on financial intermediation, that is, the intermediation function of banks, which is centred on sourcing funds from the surplus sector to the deficit sector of the economy to which the private sector belongs. The submission of this study was in line with other existing studies like Olokoyo (2011), Imran and Nishat (2012), Olusanya (2012), Million (2014), and Ayieyo (2016) as they all found a positive effect of volume of deposit on the private sector growth, indicating that volume of the deposit is a determinant of bank lending behaviour. It was also supported by Imran and Nishat (2012) and Million (2014) as they used financial deepening variables. It was revealed that the ratio of the money supply to GDP is also a good determinant of bank lending behaviour. Furthermore, it supported the findings of Million (2014), Enisan and Oluwafemi (2015) and Ayieyo (2016) as they found that the lending rate reduces the amount of credit to the private sector of the economy. On the long-run relationship, the findings of this study supported Olusanya (2012) as the study found a significant long-run relationship among the variables of interest.

6. Conclusion

The study concluded that there is a significant relationship between bank lending behaviour and private-sector credit. However, the volume of deposits and the ratio of the money supply to GDP were the two determinants that influenced the lending behaviour of deposit money banks to the private sector. The study, therefore, recommended that, first, the bank lending rate should be brought down or flexible to meet up the categories of borrowers since there is common knowledge that high-interest rate discourages borrowers and influences banks from selecting bad loan offer, which may affect bank returns in the long run. Secondly, the reserve requirement dictated by CBN on deposit money banks should be reduced to

enable banks to be more liquid for the private sector to access funds for their productive purpose. Lastly, inflation should be made below two digits, as inflation above a digit may be unfriendly to economic activities, affecting the private sector output germane to economic growth.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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