DILEMMA BETWEEN DEPOSIT AND LENDING RATE: SAVINGS-INVESTMENT PERSPECTIVE

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Abstract

The dilemma between deposit and lending rate has created challenges for financial institutions in the course of intermediation. This dilemma also made it difficult for investors to make accurate decisions which has created a lacuna in the financial system. The objective of this study is to investigate the source of the dilemma between deposit and lending rate. The study also examined the impact of deposit and lending rate on saving and investment respectively in Nigeria using the Auto-Regressive Distributed Lag (ARDL) approach.

The empirical result revealed the main cause of the dilemma to be the fluctuation in the deposit and lending rate. The ARDL result shows that the deposit rate has a positive impact on savings while the lending rate has a negative impact on investment in Nigeria. The monetary authority should endeavor to maintain stability of the interest rate due to the significant impact of these rates on saving, investment and economic growth at large.

Key words:

Deposit Rate, Lending Rate, Savings, Investment.

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1. Introduction

The goal of every nation is to achieve an inclusive economy which caters for both advantaged and disadvantaged groups in the economy via the provision of employment and eradication of poverty. Among the primary goals of the Sustainable Development Goals (SDGs) is eradication of poverty (United Nation, 2017) which is achievable through improving access and making basic financial services available to all citizens in a nation. Accessing basic financial services has been a challenging issue facing the poor in the economy whose income contributes largely to the Gross Domestic Product (GDP) and forms a large proportion of the Small and Medium Enterprises (SMEs) in Nigeria. Accessibility to basic financial services i.e. investible funds contributes largely to the productivity of SMEs and assists in the eradication of poverty in the economy (Soyemi, Olowofela and Yunusa, 2020), helps in the procurement of modernized technical equipment and human capital acquisition (Brune, Giné, Goldberg and Yang, 2015), increases the level of savings in an economy (Karlán and Yin, 2010), among many others.

Mobilization and disbursement of financial resources by the financial intermediaries is highly dependent on the rate of interest dictated by the monetary authority in the country which could be used as a contractionary or expansionary tool in the economy. Variation in the interest rate induces all the macroeconomic indicators making the interest rate a significant phenomenon in determining the output and survival in any economy (Wuan and Adnan, 2015). Saving has been established by theory to equate investment in an economy. Savings-investment are dependent on the level of growth in an economy and on other factors such as success of doing business, level of infrastructural development, expectations (Bano, 2018) love for cash and distress viewed in the banking institution (Acha, 2011) income inequality and the problematic nature of the financial market (Ostry and Reinhart, 1995). Saving-investment is also not independent of the level of interest rate dictated by the monetary authority in the economy. The interest rate could be viewed from two angles, the deposit rate and the lending rate. These rates determine the cost of borrowing, credit availability, level of savings-investment and economic growth in a nation (Ojima and Emerenin, 2015).

The Central Bank of Nigeria (CBN) also uses the interest rate as a significant tool for stabilizing the economy which could either be used to tighten or expand the economy depending on the situation in the latter. In a period of depression, the interest rate is decreased in order to make borrowing less expensive and may be increased during the boom period in order to control for inflation which makes the

economy contrast and borrowing becomes expensive. The interest rate is also crucial to determining the deposit and lending rate used by commercial banks in the course of intermediation. To foster savings, a higher deposit rate must be given to the depositors and to foster investment, a lower lending rate is expected in order to encourage the SMEs and make borrowing less expensive to the investors. It is, however, imperative to note that the depositors' return and the banks' margin are sourced from the interest income which comes from loans and advances given to the investors. This simply means that retaining the depositors and borrowers requires a higher deposit rate and a lower lending rate respectively. This conflict has created the dilemma between the deposit rate and the lending rate for the bank and made intermediation challenging to the banks in the financial system. Prior studies done in Nigeria have not paid attention to the dilemma between the deposit and the lending rate. This overlooked dilemma between deposit and lending rate alongside their respective impact on saving-investment is what this study intends to proffer a definite solution to.

The depositor's savings is highly determined by the deposit rate which is the compensation given to the depositor for the usage of his money. Increase in the deposit rate encourages more savings which will be transformed into investment. Contrarily, reduction in the deposit rate discourages the depositor from saving which reduces the savings and investment. The disparity between the deposit and lending rate obtainable in Nigeria is, however, worrisome to the stakeholders in the economy. An average bank interest rate on demand deposit in Nigeria is 4.2% while the prime and maximum lending rate on general commerce is 15% and 30% respectively (CBN, 2017) which could be responsible for the low level of growth rate in the economy. The borrower is interested in the cost of capital accumulation (lending rate) which determines the borrowers projection of the Internal Rate of Return (IRR). A higher lending rate requires the investors to project an IRR higher than the lending rate in order to maximize profit. A lower lending rate increases the borrower's profitability and encourages borrowing. The Marginal Efficiency of Capital (MEC) as explained by (Keynes, 1936; Brainard and Tobin, 1968; Tobin, 1969) (which is the additional income generated by the additional capital introduced into a project) opine that borrowers are encouraged to borrow if the MEC is higher than the lending rate which makes borrowing less expensive and project more profitable ($MEC > \text{lending rate}$). The inability to obtain a reasonable rate of interest by both borrower and lender and the difficulty encountered in forecasting the interest rate has created a lacuna in making investment decisions which has posed challenges on the financial intermediaries and policy makers which also informed the enquiry in this line of thought.

Growth sustainability in an economy is highly dependent on numerous factors among which is investment (Harrod, 1939; Domar, 1946; Solow, 1956; Romer, 1986). Many other scholars also followed this line of thought in their work that investment is very crucial to the survival and growth in an economy (Wuan and Adnan, 2015). More so, the McKinnon-Shaw theory (1973) asserted that a higher deposit rate induces savings, which is supported by other theories (Corsepius and Fisher, 1986; Fry, 1980). Contrarily, some scholars asserted that a higher interest rate decreases savings (Siaw and Lawer, 2015; Sukmana and Kassim, 2010; Haron and Azmi, 2006). However, in a practical banking scenario, these assertions look ambiguous and need to be re-examined because of what is obtainable in reality looking at the peculiarity of Nigerian economy, the heterogeneous nature of the Nigerian banking industry and the rational behaviour of depositors in the Nigerian financial system which is bank based in nature.

Evidence from the literature reviewed showed that numerous studies have been conducted on the interest rate, savings-investment nexus both locally and internationally by looking at the impact of interest rate on savings-investment. This study however contributes to knowledge by investigating the cause of the dilemma between the deposit and lending rate and the resultant effect of the interest rate on saving-investment in Nigeria. This will be done by carrying out a situational analysis test using the deposit rate, lending rate, saving and investment. The resultant effect of the increase/decrease in the rates was investigated against the level of saving and investment in Nigeria using the Auto-Regressive Distributed Lag (ARDL) approach.

2. Literature Review

The interest rate was first used as an instrument of monetary policy in Nigeria in 1962 following the introduction of money market instruments. The significance of the interest rate in an economy appeared to be inseparable from the monetary authority been an indispensable tool used for controlling daily activities and bridging the gap between the rich and the poor in the economy. Scholars arrived at varying conclusions about the magnitude and direction of the interest rate on saving-investment. Ogbulu, Uruakpa & Umezina (2015) investigated the relationship between deposit rate and mobilisation of deposit in Nigeria. The empirical findings revealed no existence of any relationship between the deposit rate and deposit mobilization in Nigeria. Similarly, Onwumere, Okore and Imo (2012) found no significant relationship between the interest rate and savings in Nigeria. Contrarily, (Ojima and Emerenin, 2015) investigated the effect of interest rate on investment in Nigeria and found that the interest rate inversely affects investment in Nigeria.

However, (Udude, 2015) examined the relationship between interest rates and saving in Nigeria and found a positive relationship between the interest rate on deposits and savings. He also discovered that income will boost the level of savings only if income as a percentage of GDP is on the increase as well. Hitlar (2015) examined the differential impact of interest rate liberalisation on investment in Nigeria during the pre- and post-liberalisation regimes. The study revealed that the interest rate has a significant impact on investment in Nigeria. In the same vein, Davis and Emerenini (2015) investigated the causal relationship between interest rate and investment in Nigeria and discovered an inverse relationship between the interest rate and investment in Nigeria. George-Anokwuru (2017) analysed the nexus between interest rates and Private Domestic Investment in Nigeria. The empirical finding showed that the interest rate inversely affects domestic investment. Additionally, (Adofu and Alhassan, 2018) examined the effect of interest rate deregulation on gross domestic investment in Nigeria using the cointegration approach. The empirical results indicate that the gross domestic investment is impacted negatively by the interest rate, other explanatory variables, namely deregulation, savings and exchange rate all induce investment positively. The empirical result obtained from the study of (Okumoko, Akarara and Eluan, 2018) is at variance with previous literature. They examined the effect of liberalization of interest rate on investment in Nigeria and found that interest rate liberalisation positively affects investment, while inflation and market capitalization negatively affect investment in Nigeria.

Evidence from other African countries was also considered in the course of this study. Matsheka (1998) analysed the effects of interest rates on savings in Botswana. The empirical result showed that the interest rate positively impacts savings which leads to an increase in economic growth. More so, the study of (Mashamba, Magweva and Gumbo, 2014) examined the role of deposit rates and deposit mobilization in Zimbabwe. The empirical findings revealed that an increase in the deposit rate leads to higher bank deposit. Mwega and Ngola (1991) investigated the relationships between interest rates and financial and non-financial saving in Kenya. The empirical findings revealed the deposit rate induces savings but a higher deposit rate reduces the demand for loan and advances.

Evidences from outside African climes were also reviewed in order to have a robust opinion about the subject matter. Mushtaq and Siddiqui (2017) investigated the role of interest rate on savings from Islamic and Non-Islamic countries. The empirical result revealed that the interest rate impacts savings positively in both economies. Similarly, Athukorala (1998) investigated the relationship between interest rate and savings-investment in India. The outcome revealed that there is a

positive relationship between the interest rate and savings which translates into an increase in investment. Bano (2018) examined the relationship between interest rate and investment in some selected countries on the Pacific Islands. The empirical result showed that the interest rate inversely affects investment in the short-run but positively affects investment in the long-run. More so, (Hammad, Khan and Abdullah, 2010) examined the determinants of saving in Malaysia and found one of the determinants of savings to be the return earned by the depositor of funds.

Meanwhile, Obansa et al. (2013) examined the existing relationship between exchange rate, interest rate and economic growth in Nigeria. They concluded that the exchange rate impacts economic growth more than the interest rate. However, the interest rate had a positive impact on economic growth at the early stage, but declined as the time horizon increased. Similarly, (Gylych, Fadimatu and Abdurahman, 2016) investigated the relationship between the rate of interest and economic growth in Nigeria. They found the interest rate to induce economic growth in Nigeria. Bruce, Ananth & Hansen (2013) investigated the relationship between real interest rates and economic growth. The empirical findings revealed a negative relationship between the interest rate and economic growth. Mushtaq and Siddiqui (2016) analysed the influence of the religious standard on the financial decisions of people in a Muslim economy, saving and investment. The empirical finding revealed that savings in non-Islamic countries are induced by interest rate but not induced by interest in Islamic countries.

3. Methodology

This study adopts *ex post facto* research and employed situational analysis to analyse the dilemma between the rates. Inferential statistics was used in estimating the relationship between deposit rate, lending rate, savings and investment in Nigeria in order to establish the causal relationship between the variables.

The annual time series data for the study were obtained from the CBN statistical bulletin, National Bureau of Statistics and Index Mundi covering the period from 1981 to 2018.

The model for the objective was adopted from the work of Adofu and Alhassan (2018) which will be modified in order to suit the objective of this research. It is expressed as follows:

$$LNTSDt = \beta_0 + \beta_1 DERT + \beta_2 EXCt + \beta_3 MOST + \beta_4 EXDt + \beta_5 LIQt + \mu t$$

equation (1)

$$LNGCF_t = \beta_0 + \beta_1 LER_t + \beta_2 EXC_t + \beta_3 MOS_t + \beta_4 EXD_t + \beta_5 LIQ_t + \mu_t$$

equation (2)

Where:

GCF = Gross Fixed Capital Formation

EXC = Exchange rate

EXD = External Debt

TSD = Total Savings Deposit

LER = Lending Rate

DER = Deposit Rate

LIQ = Liquidity Ratio

MOS= Money Supply

Description of Variables

	Variables	Description	Measurement/Justification
Dependent	TSD	Total Savings Deposit	This is the total money kept in the bank by the customers which is measured in the local currency unit
	GCF	Gross Fixed Capital Formation	This is the outlay on addition to the fixed assets of the economy plus net changes in the level of inventories which is measured in the local currency unit
Independent	EXC	Exchange rate	This is the rate at which a currency will be exchanged for another which is measured using the dollar to naira rate
	LIQ	Liquidity Ratio	This is the ratio used in measuring an institution's ability to meet up with its obligation
	LER	Lending Rate	This is the annual interest charged by banks on the money lent to their customers
	DER	Deposit Rate	This is the money paid out in interest by banks on depositor's fund annually which is measured as a percentage of a customer's deposit with a bank.
	EXD	External Debt	External debt is debt owed to nonresidents repayable in currency, goods, or services.
	MOS	Money Supply	This is the total amount of money in circulation in a particular year

Source: Authors' Compilation, 2020.

The data collected will be subjected to the Autoregressive Distributed Lag (ARDL) estimation technique in order to test for short and long-run relationship between variables in the model.

The *a priori expectation* shows the expected signs and significance of the values of the coefficient of the parameter under review on the part of the empirical evidence and theoretical assertion.

Table 1

A priori expectation

Variable	Symbol	Expected sign
Exchange Rate	EXC	(-)
Lending rate	LER	(-)
Deposit rate	DER	(+)
Liquidity Ratio	LIQ	(-/+)
Money Supply	MOS	(+)
External Debt	EXD	(-)

4. Results and Discussion

This section consists of the situational analysis results, the unit root test and the ARDL result. The situational analysis result is presented in Table 2. Table 2 presents lending rate, deposit rate, savings, investment and the GDP in order to ascertain the cause of the dilemma between deposit-lending rate and savings-investment in Nigeria.

Table 2

The Situation of Rates, Saving-Investment in Nigeria

YEAR	DER (%)	SAVINGS (Trillion Naira)	SAVINGS (% OF GDP)	LER (%)	INVESTMENT (Trillion Naira)	INVESTMENT (% OF GDP)	GDP (Trillion Naira)
1999	12.81	2,552	46.55	21.32	2,099	38.28	5,482
2000	11.69	4,037	57.16	21.27	2,405	34.05	7,063
2001	15.26	3,108	37.75	23.44	2,473	30.04	8,234
2002	16.67	3,914	34.03	24.77	3,079	26.77	11,502
2003	14.22	4,549	33.55	20.71	3,846	28.37	13,557
2004	13.70	6,476	35.73	19.18	4,724	26.06	18,124

2005	10.53	8,138	35.2	17.95	5,773	24.97	23,122
2006	9.75	13,466	44.33	16.89	7,948	26.17	30,375
2007	10.29	8,454	24.38	16.94	6,998	20.18	34,676
2008	11.87	12,162	30.44	15.14	7,535	18.86	39,954
2009	12.96	10,105	23.25	18.99	9,177	21.12	43,462
2010	6.52	13,103	23.99	17.59	9,183	16.82	54,612
2011	5.69	15,303	24.24	16.02	9,897	15.68	63,135
2012	8.41	23,118	31.95	16.79	10,282	14.21	72,352
2013	7.95	15,248	18.82	16.72	11,478	14.17	81,010
2014	9.34	18,546	20.57	16.55	13,596	15.08	90,137
2015	9.15	13,583	14.27	16.85	14,112	14.83	95,178
2016	7.50	13,417	13.08	16.87	15,104	14.72	102,575
2017	9.55	17,775	15.47	17.55	16,908	14.72	114,899
2018	9.70	23,003	17.82	16.90	24,550	19.01	129,113

Source: CBN Bulletin, National Bureau of Statistics and Index Mundi.

From Table 2, the deposit rate attains its highest value in 2002 (16.67) and the lowest value in 2011 (5.67). The lending rate reaches its highest value in 2002 (24.77) and the lowest value in 2008 (15.14). Practically, to encourage savings, the deposit rate needs to be increased while the lending rate should be decreased in order to increase the level of investment. Empirically, the historical data shows that both deposit and lending rate have been fluctuating which makes it difficult to attribute a particular direction to the deposit and lending rate. This would however make it difficult for the surplus and the deficit unit to make decisions.

More so, a positive relationship was observed between the saving-investment and GDP in Nigeria. This is an indication that the increasing level of saving-investment has contributed to the growth of Nigerian economy. However, it is to be noted that savings and investment in Nigeria have been increasing regardless of the fluctuating rates obtainable and dictated by the financial institutions. The continuous fluctuation in these rates may give rise to instability in the economy which could jeopardize the efforts of the monetary authorities in the economy. This could be supported by the empirical result of decreasing saving-investment as percentage of GDP in Nigeria. Savings as a percentage of GDP reached its highest value in the year 2000 which is 57.16% and kept falling to 13.08% in 2016 and increased to 16.90% in 2018. Similarly, investment as a percentage of GDP reached its highest value in the year 1999 which is 32.28% and kept falling to 14.17% in 2013 and increased to 19.01% in 2018. This shows that the

monetary authority needs to restore the economy back to the former situation by ensuring an increasing growth rate in saving-investment percentage of GDP.

Table 3

Unit Root Test Result

Variables	Level T-Stat	Critical Value @ 5%	First Difference T-Stat	Critical Value @ 5%	Order of Integration
<i>DER</i>	-2.848561	-2.94	-7.695999	-2.94	I(1)
<i>INF</i>	-2.756391	-2.94	-9.447935	-2.94	I(1)
<i>LIQ</i>	-3.223066	-2.94	-9.466231	-2.94	I(0)
<i>lnEXD</i>	-1.940284	-2.94	-4.669738	-2.94	I(1)
<i>lnMOS</i>	-2.212247	-2.94	-5.839320	-2.94	I(1)
<i>lnTSD</i>	-0.467326	-2.94	-4.706641	-2.94	I(1)
<i>lnEXC</i>	-2.007403	-2.94	-5.185391	-2.94	I(1)
<i>LER</i>	-3.483797	-2.94	-9.657455	-2.94	I(0)
<i>lnGCF</i>	-0.167619	-2.94	-3.691714	-2.94	I(1)

Source: Authors' computation (Stata), 2020.

The study used Phillips-Perron to ascertain the order of integration of the variables. It is observed that all the variables are stationary at first difference I(1) except for liquidity ratio and lending rate which are stationary at level I(0) using 5% significance level. The appropriate modulus operandi of analysis that captures the combination of I(1) and I(0) stationary variables is the Auto-Regressive Distributed Lag (ARDL) model (Pesaran & Shin, 2012; Pesaran, Shin, & Smith, 2001). The functional relationship of the savings and investment mode is given as:

Savings Model

$$\Delta TSD_t = \alpha_0 + \sum_{i=1}^n \alpha_{1i} \Delta TSD_{t-1} + \sum_{i=1}^n \alpha_{2i} \Delta DER_{t-1} + \sum_{i=1}^n \alpha_{3i} \Delta LIQ + \sum_{i=1}^n \alpha_{4i} \Delta EXD_{t-1} + \sum_{i=1}^n \alpha_{5i} \Delta MOS_{t-1} + \sum_{i=1}^n \alpha_{6i} \Delta EXC_{t-1} + \beta_1 TSD_{t-1} + \beta_2 DER_{t-1} + \beta_3 LIQ_{t-1} + \beta_4 EXD_{t-1} + \beta_5 MOS_{t-1} + \beta_6 EXC_{t-1} + \mu_t$$

equation (1)

Equation 2 below shows the short-term relationship in the savings model

$$\Delta TSD_t = \alpha_0 + \sum_{i=1}^n \alpha_{1i} \Delta TSD_{t-1} + \sum_{i=1}^n \alpha_{2i} \Delta DER_{t-1} + \sum_{i=1}^n \alpha_{3i} \Delta LIQ + \sum_{i=1}^n \alpha_{4i} \Delta EXD_{t-1} + \sum_{i=1}^n \alpha_{5i} \Delta MOS_{t-1} + \sum_{i=1}^n \alpha_{6i} \Delta EXC_{t-1} + \delta ECT_{t-1} + \varepsilon_t$$

equation (2)

Investment Model

$$\Delta GCF_t = \alpha_0 + \sum_{i=1}^n \alpha_{1i} \Delta GCF_{t-1} + \sum_{i=1}^n \alpha_{2i} \Delta LER_{t-1} + \sum_{i=1}^n \alpha_{3i} \Delta LIQ + \sum_{i=1}^n \alpha_{4i} \Delta EXD_{t-1} + \sum_{i=1}^n \alpha_{5i} \Delta MOS_{t-1} + \sum_{i=1}^n \alpha_{6i} \Delta EXC_{t-1} + \beta_1 GCF_{t-1} + \beta_2 LER_{t-1} + \beta_3 LIQ_{t-1} + \beta_4 EXD_{t-1} + \beta_5 MOS_{t-1} + \beta_6 EXC_{t-1} + \mu_t$$

equation (3)

Equation 2 below shows the short-term relationship

$$\Delta GCF_t = \alpha_0 + \sum_{i=1}^n \alpha_{1i} \Delta GCF_{t-1} + \sum_{i=1}^n \alpha_{2i} \Delta LER_{t-1} + \sum_{i=1}^n \alpha_{3i} \Delta LIQ + \sum_{i=1}^n \alpha_{4i} \Delta EXD_{t-1} + \sum_{i=1}^n \alpha_{5i} \Delta MOS_{t-1} + \sum_{i=1}^n \alpha_{6i} \Delta EXC_{t-1} + \delta ECT_{t-1} + \varepsilon_t$$

equation (3)

Where

Δ is the first difference operator

α_0 is the drift component, μ_t is the white noise term

$\alpha_1 - \alpha_6$ represent the error correction dynamic

$\beta_1 - \beta_6$ represents the long-run relationship

ECT is the error correction term

Optimal Lag Length Selection

The implication of the lag length selected explains the effect of the outcome of the previous year on the current year. The selection of an optimal lag length was very essential before carrying out the ARDL, the result of which is presented in Table 4.

Table 4

Optimal Lag Length Selection Criteria

	Saving Model	Investment Model
Lag	AIC	AIC
0	23.7112	22.1022
1	17.491	15.2415
2	17.3356	15.7299
3	17.694	14.9945
4	14.4676*	10.5511*

Source: Author computation (Stata), 2020.

The result in Table 4 portrays a different lag length criterion (LL, LR, FPE, AIC, HQIC and SBIC). The Akaike Information Criterion depicting lag order length of

four (4) for the model is selected. After establishing the lag order length, the ARDL short and long-run results were estimated and explained in the next section.

The ARDL Bound Test

To investigate the presence of long-run relationships among the variables, the bound testing under Pesaran *et al.* (2001) procedure is used. The bound testing procedure is based on the F-test. The F-test is a test of the assumption of no cointegration among the variables against the premise of its existence, denoted as:

$H_0: \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = 0$, i.e., there is no cointegration among the variables.

$H_1: \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq \beta_6 \neq 0$, i.e., there is cointegration among the variables.

Table 5

Bound Test Result

	Saving Model			Investment Model	
F-Statistics	5%		F-Statistics	5%	
4.221	Lower bound	Upper bound	5.005	Lower bound	Upper bound
	2.62	3.79		2.62	3.79

Source: Authors' computation (Stata), 2020.

Given the result of the Bound test, the F-statistic value should be compared with the Pesaran critical value at traditional levels of significance. Since the F-statistic of the savings model 4.221 is higher than the upper bound critical value, we thus reject the null hypothesis and conclude that deposit rate, exchange rate, external debt, money supply and liquidity ratio have co-movements in the long-run in Nigeria. The F-statistic of the investment model is 5.005 which is greater than the upper bound test result, we thus reject the null hypothesis and conclude that lending rate, exchange rate, external debt, money supply and liquidity ratio have co-movements in the long-run in Nigeria. From the results, we can hence estimate the long-run relationship between the dependent variables and the explanatory variables.

Table 6

ARDL Long-Run Result

<i>Variable</i>	<i>Savings Model Coefficient</i>	<i>Investment Model Coefficient</i>
DER	0.2881125*** (0.2188866)	
LER		-0.2490148 (0.2006608)
lnEXC	4.866054** (0.6297911)	2.210919* (0.3195835)
lnEXD	-7.787282*** (3.19778)	7.776841 (10.03927)
lnMOS	-0.3066908** (0.1162146)	0.00891 (0.1188816)
LIQ	0.0117109 (0.0516288)	-0.2767614 (0.3034079)

Source: Authors' computation (Stata), 2020.

NB: The dependent variables are *lnTSD* and *lnGCF*, Standard errors are in parentheses. *, **and *** significant at 1%, 5% and 10% respectively

The results in Table 6 indicate that in the long-run, the deposit rate has a positive significant impact on total customers savings deposit which implies that an increase in the deposit rate leads to 0.2881125 increase in total customers' savings deposit. The exchange rate has a positive significant impact on customers savings deposit which implies that an increase in the exchange rate leads to 4.866054 increase in total customers' savings deposit. The external debt has a negative significant impact on total customers savings deposit which means an increase in the external debt leads to 7.787282 decrease in total customers' savings deposit. The money supply has a negative significant impact on total customers savings deposit which means that an increase in the money supply will lead to 0.3066908 decrease in total customers' savings deposit. Liquidity has a positive insignificant impact on total customers savings deposit which implies that an increase in the liquidity ratio will lead to 0.0117109 increase in total customers' savings deposit.

More so, the lending rate has a negative insignificant impact on gross fixed capital formation which means an increase in the lending rate leads to 0.2490148 decrease in gross capital formation. The exchange rate has a positive significant impact on gross fixed capital formation which means an increase in the exchange rate leads to 2.210919 increase in gross capital formation. The external debt has a positive insignificant impact on gross fixed capital formation which implies that an increase in the external debt will also lead to 7.776841 increase in gross capital formation. The money supply has a positive insignificant impact on gross fixed capital formation which means an increase in the money supply will lead to 0.00891 increase in gross fixed capital formation. The liquidity ratio has a negative insignificant impact on

gross fixed capital formation which implies that an increase in the liquidity ratio will lead to 0.2767614 decrease in gross fixed capital formation.

Table 7

ARDL Short-Run Relationship

CointEq(-1)	-0.54073** (0.2288023)	-0.2289952** (0.2234007)
D(lnTSD(-1))	0.2148467 (0.2483789)	
D(lnTSD(-2))	0.2184773 (0.3243438)	
D(lnGCF(-1))		-1.167755*** (0.5675721)
D(lnGCF(-2))		-1.735381** (0.4571886)
D(lnGCF(-3))		-1.47962** (0.4476414)
D(DER)	-0.232011* (0.0885133)	
D(DER(-1))	-0.1864302*** (0.0767649)	
D(DER(-2))	0.0058138 (0.0557926)	
D(DER(-3))	0.0664536 (0.0481106)	
D(LER(-1))		0.0691474** (0.021865)
D(LER(-2))		0.0631415** (0.0207044)
D(LER(-3))		0.0373432** (0.0110723)
D(lnEXC)	0.5014545 (1.001386)	-1.270733** (0.4201808)
D(lnEXC(-1))	0.6770793 (1.061225)	-1.007486** (0.3538744)
D(lnEXC(-2))	-0.1697169 (0.8864392)	-0.4119593 (0.308911)
D(lnEXC(-3))	-0.7058251 (0.932319)	-0.2491295 (0.3446333)
D(lnEXD)	3.631424*** (0.1500245)	-2.045187** (0.6975416)
D(lnEXD(-1))	3.187269** (1.220654)	-1.626914*** (0.69593)
D(lnEXD(-2))	1.918119*** (0.9223551)	-1.303254** (0.4730418)
D(lnEXD(-3))	1.414285*** (0.6760326)	-1.27622** (0.384931)
D(lnMOS)	0.1982651** (0.0731126)	
D(lnMOS(-1))	0.0609491 (0.049398)	-0.0286917 (0.0261262)
D(lnMOS(-2))	-0.0203901 (0.0343994)	-0.0180543 (0.0140917)
D(lnMOS(-3))	-0.0479276*** (0.0230466)	-0.0109325 (0.0123645)
D(LIQ).	-0.0077301 (0.0270468)	0.0409872** (0.0119526)
D(LIQ(-1))	-0.0121219 (0.018883)	0.0353831** (0.0095383)
D(LIQ(-2))	-0.0007334 (0.0134155)	0.0231744** (0.0071249)
D(LIQ(-3))	0.0142392 (0.0109205)	0.0100418 (0.0056825)

R-squared	0.9326	0.9399
Adj R-squared	0.5549	0.6696
Durbin Watson Stat	2.684336	2.397007
ARCH LM Test	0.2025	0.5699
Breusch-Godfrey LM test for autocorrelation	0.1086	0.2360
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	0.0548	0.2762
Ramsey RESET test	0.8924	0.2133

Source: Authors' computation (Stata), 2020.

NB: The dependent variables are *lnTSD* and *lnGCF*, Standard errors are in parentheses. *, **and *** significant at 1%, 5% and 10% respectively

The short-run result shows that the error correction term (ECT) is -0.54073 and -0.2289952 for the savings and investment model respectively which are negative and significant at 5% level and in line with the *a priori expectation*. The estimate of the ECT implies that the speed of adjustment towards long-run equilibrium are 54% and 23% for savings and investment model respectively implying that long-run equilibrium can be attained by the system at a speed of 54% and 23% for savings and investment model respectively.

The short-run result for the savings model shows that first and second period lag of total customers savings deposit are positively related to total customers' savings deposit. The deposit rate and one period lag of deposit rate are inversely related to total customers' savings deposit and are significant while the second and third period lag of deposit rate are positively related to total customers' savings deposit. The exchange rate and one period lag of exchange rate are positively related to total customers' savings deposit while the second and third period lag of the exchange rate are inversely related to total customers' savings deposit. The external debt, first, second and third period lag of external debt are positive significantly related to total customers' savings deposit. The money supply and one period lag of money supply are positively related to total customers' savings deposit while the second and third period lag of money supply are inversely related to total customers' savings deposit. The liquidity, first and second period lag of liquidity are inversely related to total customers' savings deposit while the third period lag of liquidity is directly related to total customers' savings deposit.

The short-run result for the savings model shows that first, second and third period lag of gross capital formation are inversely related to gross capital formation.

First, second and third period lag of the lending rate are positively related to gross capital formation and are significant. The exchange rate and one, second and third period lag of the exchange rate are negatively related to gross capital formation. The external debt, first, second and third period lag of external debt are negative significantly related to gross capital formation. First, second and third period lag of money supply are negatively related to gross capital formation. The liquidity, first, second and third period lag of liquidity are positively related to gross capital formation.

The ARCH LM test and the Breusch-Pagan/Cook-Weisberg test for heteroskedasticity show that the variance is homogeneous, i.e. the variance is constant. The Breusch-Godfrey LM test result which is insignificant simply means that there is no serial correlation problem among the variables which is also confirmed by the Durbin-Watson values. More so, the absence of specification error was confirmed by the Ramsey RESET test which shows that there are no misspecification errors among the models.

The Adjusted R-Square shows that the explanatory variables of the savings and investment model explain 55.49% and 66.60% variations respectively in the dependent variable in the short-run.

Discussion of Findings

The study investigated the impact of interest rate on savings and investment in Nigeria using annual data from 1981 to 2018. The situational analysis result was used to observe the dilemma between deposit-lending rate and savings-investment in Nigeria. The Autoregressive Distributed Lag (ARDL) estimation technique was used to establish the short run and long-run dynamics of the model. The ARDL cointegration result were discovered to be negative and statistically significant which shows the existence of cointegration among the variables in the models and also in line with the *a priori* expectation of the models.

The long-run result revealed that the deposit rate has a positive significant impact on total customer saving deposit in the economy which means an increase in the deposit rate leads to increase in total savings deposit. This suggests that bank customers would be encouraged to save more of their disposable income if the deposit rate is increased which yield the customer a higher return for saving their excesses. This result is in line with the *a priori* expectation and the work of (Udede, 2015) but contrary to the work of (Onwumere, Okore and Imo, 2015).

The result also revealed that lending rate has a negative but insignificant impact on gross capital formation which means an increase in the lending rate leads to a

decrease in investment and a decrease in lending rate will make the investment to keep increasing. This implies that an increase in the lending rate would reduce the amount of funds available for the procurement of additional assets in the economy, while a decrease in the lending rate would increase the amount of funds available in the economy. It therefore simply means that an increase in lending rate will discourage people from requesting credit which could worsen the economic activities while the decrease will promote and encourage people to obtain more credit from the banks. This result is in line with the *a priori* expectation and work of (Onwumere, Okore and Imo, 2015; Hitlar, 2015; Davis & Emerenini, 2015). This result further noted that the liquidity ratio has a negative impact on investment which is in line with the *a priori* expectation, but a positive impact on savings. This implies that higher liquidity helps to meet up with the customers requirement but reduces the amount of investible funds. More so, the exchange rate has a positive impact on both savings and investment. The external debt is negatively related to savings but positively related to investment which implies that an influx of external finance discourages savings but increases the level of investible funds which would stimulate economic activities.

Hence, the null hypothesis which states that the deposit rate has no significant impact on savings in Nigeria should be discarded while the null hypothesis which states that the lending rate has no significant impact on investment in Nigeria should be accepted. Therefore, the deposit rate has a significant impact on savings in Nigeria. The diagnostic test results show that the variance is homogeneous there is no serial correlation problem among the variables. The Ramsey RESET test also shows the absence of misspecification errors among the models.

5. Summary and Conclusion

This study examined the effect of the interest rate on saving and investment in Nigeria using annual data series from 1981 to 2018. This study narrowed down the interest rate to interest on savings and investment which are regarded as deposit rate and lending rate respectively. The dilemma between the deposit-lending rate and saving-investment was analysed using the situational analysis approach. The historical data revealed that the dilemma between the deposit and lending rate was due to the fluctuation in the deposit and lending rate. More so, the saving-investment as a percentage of GDP revealed an unimpressive situation due to the persistent decrease in the percentage of savings-investment to GDP in Nigeria.

This study furthermore examined the impact of the deposit rate on savings and the impact of the lending rate on investment in Nigeria. The data was estimated

through the ARDL estimation technique based on the stationarity level of the data. The empirical findings revealed that the deposit rate is positively related to savings, while the lending rate is inversely related to investment in Nigeria. The evidence from this result shows that an increased deposit rate encourages the bank customer to save more, while a lower lending rate encourages investors to obtain credit for investment which increases the output in the economy as well as the bank interest income. The exchange rate is positively related to savings and investment which suggests that regardless of the exchange rate, the bank customers will deposit more and the investors would obtain higher credit for investment.

External debt and money supply are inversely related to savings but directly related to investment, suggesting that external debt and money supply discourage savings but promote investment in the country. Liquidity is positively related to savings but negatively related to investment suggesting that the ability of the [] to meet up with customers' requirements encourages customers to save more but would adversely affect the amount of funds available for investment. However, based on the objectives of this study, it is concluded that the deposit rate has a positive significant impact on savings while the lending rate has a negative impact on investment in Nigeria

The study recommends that the monetary authority should create policies to prevent the fluctuating deposit and lending rate due to the significant impact these rates have on the saving, investment and growth of the economy at large. Efforts should also be made in order to achieve a sustainable interest rate as this will help to increase the economic activities in the country via savings mobilization for investment in Nigeria. The monetary authority should also ensure a stable rate in order to assist depositors and investors in making accurate and informed decisions in line with the changes in rates.

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