

Predictive Power of The Determinants of Interest Rate Spread in Nigeria: (1991-2020)

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Abstract

This study examined the determinants of interest rate spread in Nigeria from 1991 to 2020. The objectives were to determine the impact of monetary policy rate, inflation, exchange rate, oil price and fiscal policy on interest rate spread in Nigeria. Data were collected from CBN statistical bulletin 2021. Analyses were carried out using unit root test, OLS Multiple regression analysis, Johanssen cointegration test and ECM model. Findings show that all the variables are integrated in I(1). Results also showed that inflation rate has significant impact on interest rate spread using OLS regression analysis. From the ECM model, all the variables were found to be significant determinants of interest rate spread in the long run. The study concludes that only inflation is a strong determinant of interest rate spread in Nigeria both at the short run and at the long run among the variables investigated. It therefore recommends that the policy of inflation targeting should be sustained and the Central Bank of Nigeria should review its monetary policy rate to ensure effectiveness in achieving monetary stability.

Keywords: *Inflation, Interest rate spread, Exchange rate, Fiscal policy, Oil price, ECM*

1.1 Introduction

Interest rate spread is defined as the difference between the lending rate and savings rate. Lending which may be on short, medium or long-term basis is one of the services that deposit money banks do render to their customers. In other words, banks do grant loans and advances to individuals, business organizations as well as government in order to enable them embark on investment and development activities as a means of aiding their growth in particular or contributing toward the economic development of a country in general (Felicia, 2011, Owolabi, 2020).

The price which borrowers pay for the use of money they borrow from a lender/financial institution is known as Interest rate. In other words, it is a fee paid on borrowed assets (Crowley, 2007). Interest rate is a macroeconomic variable that banking industry uses for effective resource allocation in an economy. According to Obidike, Ejeh and Ugwuegbe (2015), this however is made possible through the intermediation role played by these financial intermediaries in the economy.

The Central Bank of Nigeria regulates the activities of these intermediaries in Nigeria with a view to achieving sets of monetary policy targets. One of the ways they do this is by setting a Monetary Policy Rate (MPR) which is the minimum rate in which Deposit Money Banks (DMBs) otherwise known as commercial banks lend to their customers. It is also the rate at which DMBs borrow from the Central bank of Nigeria. However, the difference between MPR and the maximum lending rate by the Deposit Money Banks is called Interest Rate Spread (IRS). On the other hand interest rate spread can also be measured as the difference between bank deposit rate and that of

lending rate (Wariboke, 1994; Obidike, Ejeh & Ugwuegbe, 2015; Chandra, Yunika & Fibria, 2020).

Financial institutions such as deposit money banks are the most important savings, mobilization and financial resource allocation institutions. Consequently, these roles make them an important phenomenon in economic growth and development. In performing this role, it must be realized that banks have the potential, scope and prospects for mobilizing financial resources and allocating them to productive investments and in return promote their performance. Therefore, no matter the sources of the generation of income or the economic policies of the country, deposit money banks would be interested in giving out loans and advances to their numerous customers bearing in mind, the three principles guiding their operations which are, profitability, liquidity and solvency (Adolphus, 2011).

Thus, interest rate spread has been identified as an important factor in profitability of banks (Kalsoom & Khurshid, 2016). A competitive banking system foster greater efficiency which is reflected in lower net interest margins (Rudra & Ghost, 2004). High margins create impediments for the deepening of financial intermediation in the country, as lower deposit rates discourage savings, and high loan rates reduce the investment opportunities of banks (Zuzana & Tigran, 2008). Consequently, banks are expected to carry out intermediation function at the lowest cost possible in order to promote overall economic growth.

1.2 Statement of the Problem

The subject of interest rate spread has been receiving great attention worldwide and has been severally described as a key determinant for the struggle for investible funds in the economy. It has been expressed in popular press and by investors as a cause for “capital crisis” and in economics literature as the primary cause of declining labour productivity and of relative decline in the stock market values (Jianzhou, 2007). Several arguments have been advanced for the failure of interest spreads in developing countries to converge towards those observed in developed countries. A number of authors argue that bank behavior changes, poor financial liberalization policies, fiscal policies, monetary policy, oil prices and inflation are some of the factors affecting interest spreads.

Gibson and Tsakalotos (1994) noted that competitive pressures that result from conditions of free entry and competitive pricing will raise the functional efficiency of intermediation by decreasing the spread between deposits and lending rates. Recent studies on bank spreads tend to support the hypothesis that intermediation margins are positively related to market power. This can be seen if the rate of interest paid by banks to depositors is very low or negative; investors will resort to shy away from the banks. This will lead to a decrease in short-term and medium-term capital investment needed in the private sector of the economy. This is the case in Nigeria where, the disparity in the interest rates have affected fund mobilization leading to poor credit delivery and low rate of development and growth of the economy (Ologunde, Elumilade & Asaolu, 2006). These influences constitute the major problem that this study intends to investigate as it looks at factors that determines interest rate spread in Nigeria.

The remaining sections of this study are decomposed as follows; section two takes care of review of related literature; section three addresses the materials and methods of analysis adopted; section four analyses the data, results, and interpretation while section five handles conclusion and recommendations for policy making.

2. Review of Related Literature

2.1 Conceptual Framework

2.1.1 Interest Rate

Interest rates are rental payments for the use of credit by potential borrowers and return for parting with liquidity by lenders. Just like any price, interest rates perform a rationing function by allocating limited supply of credit among any competing demand on it (CBN, 1995). Ibimodo (2005) defined interest rates, as the rental payment for the use of credit by borrowers and return for parting with liquidity by lenders. Like other prices interest rates perform a rationing function by allocating limited supply of credit among the many competing demands (Adofu Abula, & Audu, 2010). Interest rate is the amount of interest paid per unit of time expressed as a percentage of the amount borrowed. The cost of borrowing money, measured in naira, per year per naira, borrowed, is the interest rate. Interest rates differ mainly in term/maturity. When maturity and liquidity together with other factors are considered, many different financial instruments and so many different interest rates will emerge (Anyanwu, 1998). Uchendu (1993) defines interest rate as, “the return of yield on equity or opportunity cost of deferring current consumption into the future”. Couple with these definitions and descriptions, interest rate also has certain roles it performs. The primary role of interest rate is to help in the mobilization of financial resources and to ensure efficient utilization of such resources in the promotion of economic growth and development.

Interest rate also affects the level of consumption and the pattern of investment. Adebisi (2002) defines interest rate as the return or yield on equity or opportunity cost of deferring current consumption into the future. Some examples of interest rate include the saving rate, lending rate, and the discount rate. Professor Lerner, in Jhingan (2003), defines interest as the price which equates the supply of ‘Credit’ or savings plus the net increase in the amount of money in the period, to the demand for credit or investment plus net ‘hoarding’ in the period. This definition implies that an interest rate is the price of credit which like other price is determined by the forces of demand and supply; in this case, the demand and supply of loanable funds. According to Udonsah (2012), the variation of interest rates affects decision about how to save and invest. Investors differ in their willingness to hold risky assets such as bonds and stocks. When the holding stocks and bonds are highly volatile, investors who rely on these assets to provide their consumption faces a relatively large chance of having low consumption at any given time. They are significant in financial intermediation.

Generally, interest rates are useful in gauging financial market conditions, and they are a major monetary policy tool. The general concept of interest rate can therefore be classified into real and nominal interest rates. Interest rates can either be nominal or real. Nominal interest rate can be measured in naira terms, not in terms of goods. The nominal interest rate measures the yield in naira per year, per naira invested while the real interest rate is corrected for inflation and is calculated as the nominal interest rate minus the rate of inflation (Pandey, 1999). Interest rate can also be categorized as lending rate and deposit rates respectively. Like other prices, interest rates perform a rationing function by allocating limited supply of credit among the many competing demands for it. According to Nwankwo (1990), interest rate regulates the flow of business and industrial behaviour in any economy by influencing the supply of and demand for loan able fund. A major strategy of the programme is to deregulate the financial sector.

2.1.2 Interest Rate Spread

Interest rates spread is defined as the difference between average interest rate earned on interest earning assets (loans) and average interest rate paid on deposits (from savers) (Leonard, Chepkulei

& Rop, 2013). Chandra, Yunika and Fibria (2020) defined interest rates spread as the difference (spread) between the interest rate that banks charge on loans and the interest rate they pay on deposits is a key financial bank variable, since it indicates the level of efficiency in financial intermediation.

Leonard, Chepkulei and Rop (2013) in their study they found that interest rates spread affects the banks capability to transact business as high interest rate spread means that borrowers of funds are being charged high interest rates on loans thus decreasing their demand for loanable funds. Also, high spread shows that savers are getting low interest rates on their savings and thus can reduce the supply of loanable funds, as they can channel their funds to other activities; all this affects the banks performance in the economy. According to Rhyne (2002) cited in Obidike, Ejeh and Ugwuegbe (2015, pp.132), the difference between the gross cost of borrowing and the net return on lending defines the intermediation cost (information cost, transaction cost, administration cost, default cost, and operational cost).

However, the rate at which each bank charges for the borrowed assets depends on the level of risk they are ready to shoulder. Meanwhile risk-averse banks operate with small interest spread due to the level of risk they are ready to undertake. This however is due to the fact that risk aversion raises the banks optimal interest rate and reduces the amount of credit supply. Emmanuelle (2003) cited in Obidike, Ejeh and Ugwuegbe (2015, pp.132), assert that actual spread which incorporates the pure spread is in addition influenced by macroeconomic variables including monetary and fiscal policy activities. Another factor that affects banks interest spread is the market structure in which the banks operate. According to Ng'etich and Wanjau (2011) cited in Obidike, Ejeh and Ugwuegbe (2015, pp.132), who noted that depending on the market structure and risk management, the banking industry is assumed to maximize either the expected utility of profit or the expected profit. They also assert that depending on the assumed market structure the interest rate spread component varies.

For instance, assuming a deposit rate and market power in the loan market, the interest rate spread is traced using the variation in loan rate. But with market power in both markets, the interest rate spread is defined as the difference between the lending rate and the deposit rate. The level of interest rates spread (IRS) affect bank's investment portfolio thus directly influencing the allocation of money and real capital to specific industries and firms (Parkin, 1939). His study stipulated that the level of interest rates in the equilibrium determines the supply and demand for loanable funds in the market. He found out that at high interest rates on savings households makes available a large quantity of funds than at low interest rates. The larger the amount of this payments the larger the deferral of household consumption and thus the greater the amount of funds available to borrowers. This will prompt banks to reduce the interest rates charged on borrowers of funds in order to increase their demand thus leading to reduction in the interest rates spread (IRS) (Leonard, Chepkulei & Rop, 2013).

Studies have therefore attempted to find out factors that influence interest rate spread in Nigeria. Different results have shown that some of the determinants are anticipated changes in macro-economic variables, which include inflation, foreign currency exchange rates, taxation, etc, encourage banks to increase their lending interest rates thus widening the spread (Leonard, Chepkulei & Rop, 2013). This is because these elements like inflation rates are not precisely known in advance hence banks, as lenders, will demand a risk premium on their lending interest rates necessitated by the uncertainty of this factor. The impact causes a direct effect by increasing

the interest rates on borrowings than on deposits thus further widening the interest rates spread (Al-Qudah, 2021).

According to Mugume (2005), the inability of banks to diversify risks in a competitive market due to market failures or non-existing markets results in increased lending interest rate beyond the level necessary to cover the creditor's marginal cost of funds plus the intermediation costs. Consistent with this, banks whose loan portfolios are more exposed to risky and volatile sectors such as agriculture have often higher interest rate spreads. The incapability of the lender to perfectly ascertain the creditworthiness of the borrower gives rise to adverse selection and moral hazard effectively adding another risk premium to lending interest rates.

Additionally, credit risks affect the level of a bank's profitability due to un-paid loans. These loans will carry with them the interest income that could have accrued had they been honoured thus reducing the bank's profitability. The higher the level of high-risk loans, the higher the level of unpaid loans due to customer defaults. This can easily lead to a bank failure as a result of poor financial asset quality and low levels of liquidity. The allowance for doubtful debts represents a direct measure of difference in credit quality (Miller & Noulas, 1997).

Macroeconomic factors such as inflation and currency exchange rates contribute to variations in interest margins (Demirguc-Kunt & Huizinga, 1999). Inflation was associated with both higher costs and higher income although their study found clear implications that income increases more than costs hence increasing the banks' profitability. Demirgüç-Kunt and Huizinga (1999) further suggested that the positive relationship between inflation and bank profitability implies that bank income increases more with inflation than bank costs. High inflation rates are also generally associated with high loan interest rates and therefore high spreads leading to high bank incomes. Banks also obtain higher earnings from float or delays in crediting customer accounts in an inflationary environment.

Molyneux and Thornton (1992) in their study found there is a positive relation between inflation and long-term interest rates with bank performance. Gerlach (2003) also found that changes in profitability are directly related to the net interest margin and to the non-performing loan (NPL) ratio which manipulate banks' provisioning decisions. Major component of banking profitability is the interest margin on loans. High loan rates render the cost of funds increasingly excessive to potential users thereby reducing investment activities and also forcing banks to hold huge amounts of cash which could have been lent to earn interest income.

In an environment where the exchange rate is volatile, and the interest rates are sticky downward expectations of exchange rate depreciation would result in higher lending rates (Ndung'u, 2001). Additionally, exchange rate plays an important role in a country's level of trading with other economies around the world. Constant appreciation of the foreign currencies against a given country's currency has direct impact on business performance. An increase in price of goods and services because of unfavourable exchange rate will in turn increase inflation hence affecting interest rates, loan rate and the composition of debt in the financial structure and possibly declining banks profitability (Abiti & Adzraku, 2011).

In Nigeria, studies showed that you cannot discuss interest rate spread without talking of deregulation of interest rate in Nigeria. The Federal Government of Nigeria in 1986, introduced a comprehensive economic restructuring programme (The Structural Adjustment Programme [SAP]) which emphasized the need for increased reliance on market forces. In order to pursue the objectives of introducing the SAP, Financial Sector reforms were initiated by the Federal Government. The reforms, which focused on interest rate administration, structural changes,

reduction of credit control, free entry into the banking sector, liberalization of capital flows, etc encompasses both financial market liberalization and institutional building in the financial sector (Obamuyi & Olorunfemi, 2011).

Rasheed (2010), states that Nigerian economy saw different interest rates for different sectors in 1970s through the mid-1980s (Regulated Regime, 1960-1985). The preferential interest rates assumed that the market rate, if universally applied, would exclude some of the priority sectors. Interest rates were, therefore, adjusted periodically with 'visible hands' to promote increase in the level of investment in the different sectors of the economy. For example, agriculture and manufacturing sectors were accorded priority, and the commercial banks were directed by the Central Bank to charge a preferential interest rates (vary from year to year) on all loans and advances to small-scale industries. Since 1986, the inception of interest rates deregulation, the government of Nigeria has been pursuing a market determined interest rates regime, which does not permit a direct state intervention in the general direct of the economy (Adebiyi & Babatope-Obasa, 2004). Between 1970 – 1986 a period described as the pre-reform period, the monetary policy environment in Nigeria was highly regulated (Ogede, 2013). In fact, it has been argued in the literature that during the pre-reform period, policies of directed credits as well as that of interest rate ceiling and restrictive monetary expansion were the rule rather than the exception (Ojima & Emerenini, 2015). This according to Obamuyi & Olorunfemi (2011) resulted to a situation where interest rates policy instruments became fixed with marginal increases. By August 1987, the Central Bank of Nigeria (CBN) liberalized the interest rate regime and adopted the policy of fixing only its Minimum Rediscount Rate (MRR). This policy as noted by scholars was put in place to achieve efficiency in the financial sector, thus engendering financial deepening.

It is noteworthy however that the Minimum Rediscount Rate (MRR) now Monetary Policy Rate (MPR) according to CBN (2006) is the official interest rate of the CBN, which is the major determinant of prevailing interest rates in the economy. Thus, decisions taken by the CBN on the MRR affects the level of economic activities as well as the prices of goods and services in the country. This policy was however modified in 1989, when according to Onwumere, Okore & Ibe (2012), the CBN issued further directives on the required spreads between deposit and lending rates in the country. In addition to the above development, one should note that by 1991, a maximum margin was prescribed between the average cost of capital of each bank and its maximum lending rates in the country; but by 1992, financial institutions were however required to maintain only a specified spread which was between their average cost of capital and their maximum lending rates (Ogunbiyi & Ihejirika, 2014). With this, partial deregulation was however, restored.

Furthermore, CBN (2006) maintained that by 1993, the maximum lending rate ceiling was removed. This, according to Akingunola, Adekanle, and Ojodu (2012), made interest rates in the country to increase to an unprecedented level, *vis a vis* the trend of inflation rates that was prevailing in the country as at then. Thus, interest rates in 1993 were volatile and rose to unprecedented levels, thereby exerting negative impact on investments in the productive sectors of the economy, while volatile inter-bank rates undermined the efficacy of open market operations and general stability in the financial system.

Based on the foregoing developments, some measures of regulation were introduced in the management of interest rates, resulting to what Udoka and Anyingang (2012) described as policy reversal in 1994. This time, there was the claim that a wide variation and unnecessarily high rate of interest exist under the complete deregulation of interest rate. Thus, deposit rates were set at 12 per cent per annum, while a ceiling of 21 per cent per annum was fixed for lending. This measure

of regulating interest rate was however retained in 1995, though with little modification for flexibility. By October, 1996 total deregulation of interest rates was again adopted due to the fact that the controls introduced in 1994 and 1995 had negative economic effects. As a result of the total deregulation of interest rates in 1996, Udoka and Anyingang (2012) opine that banks were given freedom to determine the structure of interest rates in consultation with their customers. The CBN, however, retained the discretionary power to intervene in the money market to ensure orderly developments in interest rates. The deregulation of interest rates brought in liquidity glut, high interest rates and volatile inter-bank interest rates which became a permanent feature in the Nigerian economy.

However, the deregulation policy on interest rate was retained in 1997 though by October 22, 2002 as noted by Ayodele, Obafemi & Akongwale (2013), the CBN reached a tripartite agreement on interest rate moderation with the banks operating in the country. In that agreement, a decision was reached to lower interest rate to a point where lending rates would not exceed 4% above the MRR. That notwithstanding, we must note however that lending rate between 1997 – 2006 according to Ogede (2013), did not show a significant trend in reduction with an average of 22%, despite the declining deposit rate that was averaging 15%. By December 8, 2006, a policy referred to as the Monetary Policy Rate (MPR) replaced the Minimum Rediscount Rate (MRR) as a cornerstone of monetary policy implementation (Doguwa & Essien, 2013). The MPR was introduced as an instrument targeted at correcting the excessive short-term interest rate volatility; especially with the setting of the Seven (7) to 13 (thirteen) percents corridor. They further pointed that this measure allowed the Central Bank of Nigeria (CBN) to actively intervene in the money market to achieve the interest rate target (CBN, 2013; Obamuyi & Olorunfemi, 2011; Davidson & Gabriel, 2009).

The Nigerian government has since 1987 been pursuing a market –determine interest rate which does not permit a direct state intervention in the general direction of the economy (Nyong, 2007). In Nigeria, financial sector reforms began with the deregulation of interest rates in August 1987 (Chete, 1999). Prior to this period, the financial system operated under financial regulation and interest rates were said to be repressed. During this period, savings rate (deposit rate)-a major determinant of commercial banks deposit fund mobilization-averaged 7.66% in 1980-1985. This low rate resulted to a meager average of 12.77% in rate of deposits in commercial banks during the same period. Further implication of this is the low credit base and thus high interest rate charge on lending to the public; which do not improve economic growth as cost of borrowing is high (Nnanna, 1999). In January, 1994 there was another policy reversal.

This time the government had rightly introduced some measures of regulating interest rate management. It was claimed that there were wide variation and unnecessarily high rate under the complete deregulation of interest rate. Immediately, deposit rates were once again set up at 12 percent per annum while a ceiling of 21 percent per annum was fixed for lending. The gap of interest rates introduced in 1994 was retained in 1995 with little modification for flexibility (Udoka & Anyingang, 2012; Okon, Themeje, Yamta & Keyadi, 2020). According to Udoka and Anyingang (2012), in October, 1996, interest rates were fully deregulated with the banks given freedom to determine the structure of the interest rate in consultation with their customers.

The apex bank (CBN) however, retained the discretionary power to intervene in the money market to ensure orderly development in interest rates. It should be remembered that this policy on interest rates deregulation has been in force in Nigeria since 1997-till date. Depositors were discouraged from investment a situation that almost resulted to bank failure investors were also affected by the

limited funds available for lending coupled with its high interest rate, aimed at reducing the demand for loans (Usman, 1999). Since there exist, a relationship between interest rates and commercial banks creditability to satisfy the needs of the economy, it is therefore imperative for the researcher to examine determinants of interest rates spread in Nigeria.

2.1.3 The Influence of Interest Rate on Financial Intermediation in Nigeria

The concept of loanable funds in economics is central to the theory of interest rate. It explains how the demand for, and supply of credit decides the financial market interest rate. Bamocks *et al.*, (1998) defined loanable funds as money available for lending to individuals, government and institutions in the financial markets. It is comprised of current savings of private individuals and firms, discharging and any increase in money supply made available by the actions of depository institutions, governments and monetary authorities in the financial markets. Thus, loanable funds represent a flow of money into the financial markets for loans of all kinds. According to Pearce (1992), loadable funds or credit is strictly the term used for funds that are available for lending in the money and capital markets and is usually considered within the context of the theory of interest rate. According to Uremadu (2005), loadable funds result out of planned and mobilized savings; accumulated savings when invested, translate into capital formation which is a stock of real productive asset.

Financial institutions are established to provide financial services with a view to make profit. The survival and sustainability of any profit-oriented business depends on the level of profit they make. Banks however, as financial institutions provide financial services to their clients with a view to make profit. Banks lend to their customers as part of the intermediation role they play in an economy and in return, charge an interest rate for the use of money borrowed (Obidike, Ekeh and Ugwuegbe, 2015). Meanwhile, Ngugi (2001) noted that charging of interest on the use of money borrowed is important because the effect of time may erode the value of the amount of money borrowed and so, interest rate which is a price paid for the use of borrowed assets reflects the market information regarding expected change in the purchasing power of money or future inflation. Financial institutions facilitate mobilization of savings, diversification and pooling of risk as well as allocation of resources. Since the receipt for deposit are not always synchronized with that of loan, intermediaries like bank incur certain cost (Ngugi 2001). In view of this, banks charge a fee for the intermediation services offered under uncertainty and set the interest rate level for both deposit and loan (Enyioko, 2012).

For the reform period, deposit and lending rates were allowed to be determined by market forces and the interest rate increased as envisaged. For instance, the nominal deposit and lending rate rose from 9.5% and 10.5% in 1986 to 14% and 17.5% respectively in 1987 as a result of the interest rates reform in Nigeria (Obute, Adyorough & Itodo, 2012). The financial system reforms (1987-1993) led to deregulation of the banking industry that hitherto was dominated by indigenized banks that had over 60 per cent Federal and State governments' stakes, in addition to credit, interest rate and foreign exchange policy reforms.

Though the deregulation reforms in Nigeria started in the fourth quarter of 1986 with the setting up of a foreign exchange market in September 1986, the reforms pertaining to the banking industry proper did not commence until January 1987 (Ikhida & Alawode 2001, Asogwa 2005). The reform took the form of deregulation of the rate of interest both on loans and on deposits. Market

mechanism was left to determine the rate of interest any bank would charge. Government also brought out new rules for setting up banks and issuing licenses that favoured new entrants most. This consequently led to a sudden upsurge in the number of banks which invariably increased from 56 in 1986 to 120 in 1993 (Okpara, 2010a; Brownbridge, 1995; Balogun, 2007; Ebong, 2006; Lemo, 2005; Adeyemi, 2007).

2.1.4 Determinants of Interest Rate Spread

Several factors have been adduced to influence interest rate spread in Nigeria. Factors influencing interest rate spread though not limited to the followings are explained below:

2.1.4.1 Credit Risk

Credit risk is the risk to earnings and capital arising from an obligor's failure to meet the terms of any contract with the bank or if an obligor otherwise fails to perform as agreed (Daniel, Yonas & Milcah, 2012). Literatures have found that banks that make risky loans may be obliged to hold a higher number of provisions. In turn, this may force them to charge higher margins to compensate for the higher risk of default, leading naturally to a positive relationship (Maudos & Fernández de Guevara, 2004). Empirical evidence show that credit risk affects net interest rate margins positively and so the coefficients of credit risk are expected to be positive because a high proportion of bad loans may cause banks to increase their interest margins with risk premium to compensate for possible default risk.

2.1.4.2 Operating Expenses

The variation in operating expense is reflected in variation in bank interest margins, as banks pass on their operating costs to their depositors and lenders. Several studies show that there is a positive relationship between operating expenses and net interest margin of commercial banks (Claessens, Demirgüç-Kunt & Huizinga, 2001, Maria & Agoraki 2010). This is because banks bearing higher average operating expenses may resort to charge higher margins to offset higher operating costs (Maudos & Fernández de Guevara, 2004; Martinez Peria & Mody, 2004). On the other hand, higher operational efficiency may induce banks to pass the lower costs onto their customers in the form of lower loan rates and/or higher deposit rates, thereby lowering interest margin (Claeys & Vander Vennet, 2007). Daniel, Yonas and Milcah (2012) also argued that operating costs and interest margins are positively related since banks that incur high costs during the operations will have to charge higher margins in order to break even.

2.1.4.3 Saving

Just as price of factors of production is determined by forces of demand and supply, savings constitutes the major source of credit while investment represents the main demand for credit. Consequently, the amount of savings by individuals, businesses and government partly determines the level of interest rates. For instance, a fall in savings will lead to rise in interest rates and vice versa.

2.1.4.4 Inflation

According to CBN (1995), inflation reduces the nominal value of money. However, saving in financial institutions is encouraged when nominal interest rate is higher than expected inflation

rate. The changing expectation about rate of inflation affects interest rate movements, even if demand and supply for capital is constant. According to Thomas, Mathias and Christian (2015), a stable macroeconomic environment is conducive for business and can reduce banks risk aversion and the price mark up. Theories have predicted that there exists a relationship between inflation and interest rate spreads. Perry (1992) in his study opined that the effects of inflation on bank interest depend on whether inflation is anticipated or unanticipated. If inflation is anticipated, then the banks adjust interest rate accordingly, thereby increasing the interest rate margins.

On the other hand, if inflation is not anticipated, then banks may be slow in adjusting their interest rates and so may affect the interest margin negatively because of increased costs occasion by inflation. Whichever case, inflation affects net interest margin. Demirgüç-Kunt and Huizinga (1999) also found a positive relationship between inflation and net interest margin in a study of 80 developed and developing countries. These results are consistent with other studies such as Claessens *et al.*, (2001) in a study of 80 countries; and Drakos (2002) in a study of Greek banks. However, Abreu and Mendes (2003) found negative relationship between inflation and interest margins on a cross-country study of Portugal, Spain, France, and Germany. Maria and Agoraki (2010) also found a negative relationship between inflation and net interest margin on South Eastern Europe countries. Martinez and Mody (2004) show that inflation has a negative impact in Latin-American banks' margins. Samy (2003) indicates a negative relation between inflation and interest margin of Tunisia banks.

2.1.4.5 Fiscal Policy

The extent of investment proposed of government and firms will influence the level of interest rate. For instance, if the government and firms has made plans towards many projects to take-up within a period, their pressing need for capital or loanable fund especially where money supply is limited will cause interest rates to rise. Kofi and Kofi (2013) also added that fiscal policy can serve as an interventionist policy that influences interest rates. According to the authors, a rise in fiscal expenditure means that the state must compete with the private sector for borrowed funds from the domestic financial markets which widens the interest rate spread, thus crowding out the private sector. On the other way round, a high tax rate will strain consumer spending and investment capital of the private sector. This will lead to decrease in domestic demand for debt financing. Thus, in order to compensate, credit providers will reduce their lending rate which narrows the spread. In addition, public transfer can also serve as a transmission mechanism between fiscal policy and interest rates.

2.1.4.6 Government Activities

According to Uchendu (1993), some investors invest their funds in certain assets because of government and institutional directive. In such a situation, interest rates on the assets are not influenced by market forces. Government activities influence interest rate on both the demand and supply side of market for credit. It supplies credit by nurturing fiscal surpluses and demand credit to finance fiscal deficits. Thomas, Mathias and Christian (2015) also state that political stability has the ability to influence the whole economic environment, banks' investments, assets and profitability. Hence, it definitely affects banks pricing behavior.

2.1.4.7 Stock Market Activities

Stock markets were expected to significantly boost domestic savings. They allow firms to raise capital at a lower cost, making them less dependent on banks. An efficient stock market provides suppliers of financial resources with a higher real return to their savings, thus increasing this rate. The deposit rate and stock market return are the two main proxies of the return for domestic savings. As such, they are substitutes and consequently, efficient stock markets are expected to narrow the lending–deposit rate margin (Alam & Uddin, 2009). This is achieved in two main ways. Firstly, as firms increasingly use stock markets to raise funds instead of resorting to bank financing, the lending rate should decrease. Secondly, an increase in stock market returns will decrease the attractiveness of bank deposit rates. To attract more deposits, banks will increase the deposit rate. This will narrow the spread (Kofi & Kofi, 2013).

2.1.4.8 Monetary Policy Stances

Monetary policy through expansion and contractions in money stock can influence interest rate movements. For instance, if demand supply increase, portfolio shift from cash to securities will lead to lower interest rate. Likewise, a restrictive monetary policy will lead to a rise in interest rate while an expansion monetary policy will lead to a reduction in interest rates.

2.2 Theoretical Framework

For the purpose of this study, we shall examine three (3) basic theories on interest rate and they are:

2.2.1 Keynesian Liquidity Preference Theory

The liquidity preference theory is a postulate of John Maynard who argued that interest is not only a compensation for savings but also for lending cash. Keynes defined the rate of interest as the reward of not hoarding but the reward of parting with liquidity for a specific period. It is not the price which brings into equilibrium the demand for resources to invest with the readiness to abstain from consumption; rather it is the price which equilibrates the desire to hold wealth in the form of cash. In other words, the rate of interest in the Keynesian sense is determined by the demand for and supply of money (Keynes, 1936; Jhinghan, 2001).

The Post Keynesian theory of the banking firm, originally developed by Oreiro (2004) and Silva and Oreiro (2007), advances in the analysis of the determinants of bank spread and demonstrates that “a permanent reduction of banking spreads can be obtained through a policy of lower interest rates and/or through a change in social conventions regarding the “safe” or “normal” value of the interest rate” (Silva and Oreiro, 2007). Silva et al. (2007) makes the macroeconomic aspects more relevant because they consider the history of macroeconomic instability of economy and high levels of bank spreads in international terms. An extremely used variable to measure the stability of the economy is the interest rate, which is believed to be largely responsible for the high levels of bank spread.

2.2.2 The Classical Theory

According to the classical theory, rate of interest is determined by the supply and demand of capital. The classical economists believe that supply and demand for loanable funds is determinants of interest rates. Hence, interest rate is the intersection of demand for savings and supply of capital is governed by the time preference and the demand for capital by the expected productivity of capital. Both time preference and productivity of capital depend upon waiting or

saving or thrift (Jhinghan, 2001). Advanced classical theory came in the form of the modern neoclassical theory led by Tobin in 1963. From Tobin's (1963) theory of the banking firm came the modern neoclassical theory of the banking firm, whose main representative is the work of Klein (1971). The modern theory of the banking firm seeks to establish the role of market structure and competition within the structural relationships faced by commercial banks, treating them as rational agents in an environment of risk and uncertainty.

His theory of the banking firm studies the process of determining the price charged for the services offered. On the role of structure and competition in the model, it is observed that three types of variables must be considered in the analysis of the fees that the bank offers to deposits. These are: the economic variables, the market structure and the degree of interbank competition. The banking spread reflects the degree of monopoly of the bank, therefore, is an increasing function of the degree of concentration of the banking sector (Silva et al., 2007). The theory of the banking firm evolved further with contributions from Ho and Saunders (1981), who introduced to this theory the role of macroeconomic aspects. In this approach, the bank is seen as a "mediator" – exchange deposits for loans – and this task is surrounded by uncertainty, since deposits tend to arrive at a different time from when the demands for loans are made. Thus, "the bank will demand a positive interest spread or fee as the price of providing immediacy of (depository and/or loan) service in face of the (transactions) uncertainty generated by asynchronous deposit supplies and loan demands" (Ho and Saunders, 1981, p. 583) and also by uncertainty about the rate of return on loans.

The optimal mark-up for deposit and loan depends on four factors, according to Ho and Saunders (1981) : (i) the degree of bank management risk aversion; (ii) the market structure in which the bank operates; (iii) the average size of bank transactions; and (iv) the variance of interest rates. However, for this approach of Ho and Saunders (1981), unlike in Klein (1971), the bank is not risk neutral, but averse to it and seeks to maximize the expected profit utility. Although Ho and Saunders (1981) have introduced in his theory the role of the market structure in which the bank operates, Bresnahan (1982) and Lau (1982) went further, presenting microeconomic factors related to competition in the banking sector as fundamental to understanding the behavior of bank spread.

The theorem developed by Lau (1982) seeks to identify the degree of competitiveness through price and production data for the industry. In this model, the degree of competitiveness of an industry is a constant that ranges from zero (perfect competition) to one (monopoly). Bresnahan (1982) argues that oligopolistic solution can be estimated and identified by traditional econometric methods. All models with which they dealt had the market price and quantity determined by the intersection of the demand function with the supply function. The model developed by Panzar and Rosse (1987) follows the movement of the industrial organization literature, abandoning the traditional approach of Structure–Conduct–Performance and the treatment of market structure as endogenous, affected by the degree of competition among its participants (Martins, 2012) To Bikker and Haff (2000, p.17), "these New Empirical Industrial Organization approaches test competition and the use of market power, and stress the analysis of banks' competitive conduct in the absence of structural measures".

2.2.3 The General Equilibrium Policy

The general equilibrium theory is a compromise between the other two previous theories explained earlier. The proponents postulated that interest rate determination is an equilibrium matter which

depends on monetary and non-monetary forces (Afolabi, 1991). In conclusion of these analyses of interest rate theory, an interest rate theory is that one that considers both demand for and supply of capital for development of an organization. Also, government policy or deregulating interest based on market forces of demand and supply is almost like those already discussed theories.

2.3 Theoretical Framework

When the financial market is free and the nominal rates of interest respond to inflation in such a way that the real rates of interest are positive, savers will be encouraged to save. McKinnon (1973) and Shaw (1973) postulates that financial liberalization in financially repressed developing countries would induce higher savings, especially financial savings, increase credit supply, stimulate investment and hence help to boost economic growth. They both claim that interest rate regulations usually lead to low and sometimes negative real interest rates, which is the cause of unsatisfactory growth performance of developing countries. They claim that financial repression through interest rates ceiling keeps real interest rates low and thus discourages savings and consequently, stifles investment.

Thus, investment is constrained because of low savings resulting from financial repression. The quality of investment will also be low because the projects that would be undertaken under a regime of repression would have a low rate of yield. With interest rate deregulation, real interest rates would rise thereby increasing both savings and investment. The increased investment results in the rationing out of low-yielding projects and subsequent undertaking of high-yielding projects. This would therefore boost economic growth. Both McKinnon and Shaw advocated that interest rates deregulation was needed to remedy the problems caused by financial repressive policy of developing countries.

2.4 Empirical Review

Many studies have investigated these transmission mechanisms, which tallies with interest rate policy regimes articulated in Nigeria prior to and after the 1986 deregulation.

Agu (1988) reviewed the determinants and structure of real interest rates in Nigeria between 1970-1985. He demonstrated the negative effect of low real interest rate on savings and investment using the usual McKinnon financial repression diagram. His main conclusion was that the relationship between real interest rates, savings and investment is inconclusive.

Khat and Bathia (1993) used non-parametric method in their study of the relationship between interest rates and other macro-economic variables, including savings and investment. In their study they grouped (64) Sixty-Four developing countries including Nigeria into three bases on the level of their real interest rate. He then computed economic rate among which were gross savings, income and investment for countries. Applying the Mann-Whitny test, he found that the impact of real interest was not significant for the three groups.

Olubanjo, Atobatele and Akinwumi (2010) in their study assessed the inter-relationships among interest rates, savings and investment in Nigeria between 1993 and 2010, using historical data on Nigeria spanning a period of 18 years (i.e. 1975-1992). Preliminary analysis carried out based on the historical data confirmed that the real interest rates had a negative effect on the investment rate in Nigeria between 1975 and 1992. Also, a positive association was found between the investment rates and the savings rates in Nigeria over the review period. This latter finding, thus suggest that persistent, low or negative real interest rates will discourage or fail to stimulate the savings rates and may stifle qualitative investment in Nigeria. Ex ante forecasts beyond the historical data period

further suggested that a marked decrease in the real lending rate would not result automatically into increased domestic investment. Similarly, a sizeable decline in the real deposit rate will not prevent a marked growth in total savings. Nonetheless, the gross domestic production should posit a 4.2 percent growth rate in real terms between 1993 and 2010.

Olokoyo (2012) analyzed the areas that have been deregulated in the banking sector and how it has affected bank performance. To realize these objectives, the study analyzed secondary data collected from CBN statistical bulletin by employing the Ordinary Least Square (OLS) technique. This study found out that the deregulation of the banking sector has positive and significant effect on bank performance. It recommended that bank management should embark on effective intermediation drive that will bring all the small savers to the purview of the banks, banks should improve their total asset turnover and diversify in such a way that they can generate more income on their assets and adequate efforts should be made by banks to increase their level of investments as that will help in generating reasonable returns on their assets.

Samahiya and Kaakunga (2012) investigated the determinants of commercial banks interest rate spread in Namibia, using a panel data analysis of bank level data. It applied the OLS technique to identify the bank-specific variables that have been influencing interest rate spread in Namibia over the period 2004 – 2011. The results of the study indicate that deposit market share, liquidity levels and operating costs are the main bank-specific determinants of interest rate spread in Namibia. More specifically, it was found that the deposit market share and operating costs reduces net interest margin whilst the liquidity levels of a commercial bank increase its net interest margin. Furthermore, it was revealed that the tax paid by a bank, non-performing loans and the capital ratio are not important determinants of the net interest margin. The foregoing implies that the monetary authority in Namibia should place emphasis on the policies aimed at reducing the liquidity levels in the banking industry, which will reduce the net interest margins. This is especially important for both banks and consumers alike. It is also found that it is imperative to focus on policies that promote a low interest rate environment, as these would reduce the interest margins in the economy.

Uguwanyi (2012) examined the interest rate deregulation and bank lending in Nigeria within the period of 1987 to 2011. The study was carried out to show the relevance of the hinges on the fact that credit and its costs (interest) perform a private role in shaping the economic future of Nigeria. The ordinary least square (OLS) techniques were utilized to estimate the parameters of the modeled independent variables/regressors on our chosen dependent variable. The hypothesis that the interest rate deregulation has a significance impact on bank lending was tested and validated with the result. Our findings gave rise to statistically significant t-statistics, which confirms the effects of the independent variables on the dependent variables. Some of the recommendations to further accelerate growth of the banking sector are more efforts to recommend that government through central bank should implement stringent fiscal and monetary policies aimed at reducing inflation. Others include that banks have been over-reacting to interest measures by increasing the rates to unprofitable levels especially during the period of deregulation.

Leonard, Chepkulei and Rop (2013) attempted to establish the effects of interest rates spread on the performance of banking industry in Kenya. The researcher further sought to determine the influence of credit risk and banking regulations on interest rates spread in the banking industry and their possible effects on bank's performance. The research study utilized descriptive research design and embraced systematic random sampling technique on selecting the fifteen commercial banks in Nairobi city out of the existing forty four in the country. Both primary and secondary data were analyzed and presented in form of tables, means, percentages and frequencies. Findings

showed that Central Bank regulations, credit risk and macro-economic environment played a major role in influencing the extent of interest rates spread and hence contributed to the performance of banking industry. It is evident from the research findings that the spread provided sufficient margins for banks to continue operating in the market. In conclusion, the study found out that interest rates spread to a large extent affect the performance of commercial banks in Kenya. Therefore, the researcher recommended to the banks' management to be both proactive and reactive in harmonizing those elements that have an influence on interest rates spread in order to cushion their institutions from any financial shocks that could be experienced in the banking industry in Kenya.

Obidike, Ekeh and Ugwuegbe (2015) examined the impact of interest rate spread on the performance of Nigerian banking industry for the period of 1986-2012. The study used OLS method of estimation to analyze the data generated from CBN statistical Bulletin and World Bank online data base. Testing for the properties of time-series, ADF test indicates that all the variables are integrated of same order I(1). The Co-integration test reveals that there exists a long-run relationship among the variables under consideration. The result shows that interest rate spread, negatively and significantly impact on bank performance in the long-run. Exchange rate and GDP was found to be positively and significantly affecting bank performance in Nigeria at the long-run. The result of the ECM indicates that 23.37 percent of the disequilibrium in the model will be corrected annually. Moreover, at the short-run interest rate spread also negatively but insignificantly affect bank performance in Nigeria. Government should improve the macroeconomic environment by striving to develop the level of infrastructural facility in the country as well as reducing the level of insecurity in the country by curbing the menace of the Boko-Haram sect and that of Militancy in Nigeria.

Ogbulu, Uruakpa, and Umezina, (2015) investigated the nature of the relationship between deposit rates (disaggregated into various categories of deposit rates charged by DMBs in Nigeria) and deposit mobilization in Nigeria within the period 1981 and 2012 using annual data collected from the Statistical Bulletin published by the CBN. Using the OLS multiple regression, unit root tests, co-integration, error correction mechanism (ECM) and Granger causality tests, the empirical results report no significant relationship between all categories of deposit rates and total deposit liabilities of DMBs in Nigeria. The same results were also obtained with respect to the impact of deposit rates on time, savings and foreign currency deposits. In addition, the paper found no granger causality relationship between deposit rates and deposit liabilities. It is therefore recommended that a policy of interest rate liberalization alone may not be enough to induce higher levels of fund mobilization.

Thomas, Mathias and Christian (2016) examined the determinants of interest rate spread in Rwanda. The study used Arellano-Bond dynamic panel data. Generalized Method of Moments (GMM) estimation was adopted. The study showed that credit risks, operating cost and inflation positively influence interest rate spread in Rwanda, though the effect of the latter is quite small. Panel data fixed effects and random effect estimation also confirmed these results. The findings above imply that banks need to adopt consolidation and cost minimization strategies alongside strengthening of their credit management mechanisms to help reduce credit risk.

Chandra, Yunika and Fibria (2020) examined the determinants of interest rate spreads in conventional banks listed on the Indonesia Stock Exchange. The major objectives were to find out how financial bank, macroeconomics, economic freedom and market structure factors affects interest rate spread of the conventional banks from 2013 to 2017. Data were analyzed using OLS multiple regression model. The results showed that bank financial indices that Liquidity Risk,

Return to Asset Ratio, Capital Adequacy, Cost Efficiency Ratio, and Risk Aversion significantly affect interest rate spreads. It also found of the selected macroeconomic variables studied only Gross Domestic Product and Inflation Rate influenced interest rate spread. It concluded that market structure and economic variables are significant determinant of interest rate spread.

Eke, Adetiloye, Adegbite and Okoye (2020) carried out a study on how interest rate spread relates with and corporate bond market development in 13 African countries which are Botswana, Cameroon, Cote d'Ivoire, Egypt, Ghana, Kenya, Mauritius, Morocco, Namibia, Nigeria, South Africa, Tanzania and Tunisia covering the period 2004 to 2014. The study adopted fully modified ordinary least square and autoregressive distributive lag. The result shows that corporate bond issue is negatively influenced by interest rate spread in the short and long run. The ECM coefficient was in line with a priori expectation which indicates that the short run dynamic relationship, and the long run equilibrium from the annual speed of adjustment was about 100 percent. It concludes that the bond market can malfunction in an atmosphere of high inflation, which can worsen interest rate spread.

Okon, Themeje, Yamta and Keyadi (2020) analyzed the impact of interest rate spread on the efficacy of commercial banks' lending in Nigeria. Data were from Central Bank of Nigeria Statistical bulletin, International Monetary Fund, and International Financial Statistics. The study adopted unit root test and Unit root test and the Autoregressive Distributed Lag for analyses. Findings revealed that the variables were integration of $I(0)$ and $I(1)$. It also found that commercial banks' loans and advances has a positive and significant impact of interest rate spread in Nigeria. It concluded that interest rate spread had a positive impact on loans and advances of commercial banks' and thus recommended that commercial banks should maintain their current interest rate spread strategy as it is yielding profit and helping them realize higher demand for their loans and advances in Nigeria.

Al-Qudah (2021) assessed the determinants of lending interest rates of 13 Jordanian commercial banks listed on the Amman Stock Exchange for the period 2011-2018. The factors include liquidity, profitability (ROA), bank size, operating cost ratio, deposit interest rate and inflation rate. The fixed effects model was performed as suggested by Hausman test. The results of the fixed effects model show that ROA and bank size had negative significant impacts on lending interest rates. Liquidity had a negative insignificant impact. The results also show that deposit interest rate and inflation had a positive significant impact on lending interest rate of Jordanian commercial banks. Operating cost ratio also had a positive insignificant impact. Thus, the results indicate that ROA, bank size, deposit interest rate and inflation were good determinants of the lending interest rates of Jordanian listed commercial banks. The study suggests that banks should use profitability and the size of the bank as tools to reduce the lending interest rate, as it is one of the factors that can cause a further decrease in the lending interest rates.

3. Materials and Method

3.1 Sources of Data

The secondary source was mainly used in this study. Secondary sources refer to those type of data obtained from materials that contain an accounting, an event or phenomenon. It is also information that has been documented or from an already published or unpublished work. Secondary sources used includes previous works such as journals, newspaper, textbooks, CBN statistical bulletin from 1991 to 2020.

3.2 Technique for Data Analysis

To test the level of relationship between the economic events the regression method of analysis was adopted. Regression analysis is a technique used for modeling and analyzing several independent variables and their link with a dependent variable. More specifically regression analysis helps us understand how the typical value of the dependent variable changes when any one of the independent variables is varied, while the other independent variable is held fixed in all cases, the estimation target is a function of the independent variables called the regression function. Regression analysis with not more than one dependent variable and one independent variable is known as simple regression. On the other hand, regression analysis with two or more independent variables or with at least one non-linear prediction is called multiple regression analysis (Lind and Mason, 1996). In this study the multiple regression analysis was adopted.

3.3 Specification of the Model

Regression deals with two or more independent variables given dependent variable. In regression analysis, the dependent variable (y) is sometime referred to as the response variable. The partial regression coefficient of an independent variable represents the increase that will occur in the value of Y from a 1-unit increase in that independent variable, if all other variables are held constant (Lind and Mason, 1996).

In actuality, the regression constant of a multiple regression model are population values and are unknown. These values are estimated by using simple information

$$Y = f(X_1, \dots, X_n)$$

Where Y = dependent variable

X = Independent variable I

X_n = Independent variable N

The model is based on the assumption of a linear relationship form of $Y = b_0 + b_1 X_1 + \dots + b_n X_n + \mu$. The b_0, b_1, b_n in the model represents the parameter, given a sample from the population, we estimate the population parameters and obtain the sample linear regression model as

$$Y = b_0 + b_1 X_1 + \dots + b_n X_n + \mu$$

Where

b_0 = the true intercept b_0 estimated

b_1 = estimated of the true slope b_1

b_n = estimated of the true slope b_n

μ = estimate of the stochastic term which is unexplained variation.

$$Y = f(X)$$

Interest rate spread = F (monetary policy rate, Inflation rate, exchange rate, oil price, fiscal deficit/surplus)

Where Y = interest rate spread (INTSPR)

X₁ = Monetary Policy Rate (MPR), X₂ = Inflation rate (INFR), X₃ = Exchange Rate (FXR), X₄ = Oil Price (Oilprice), X₅ = Fiscal deficit/ surplus (FSD)

The constructed model will be given as

$$\text{INTSPR} = b_0 + b_1 \text{MPR}_t + b_2 \text{INFR}_t + b_3 \text{FXR}_t + b_4 \text{Oilprice}_t + U_{1t} \dots \dots (2)$$

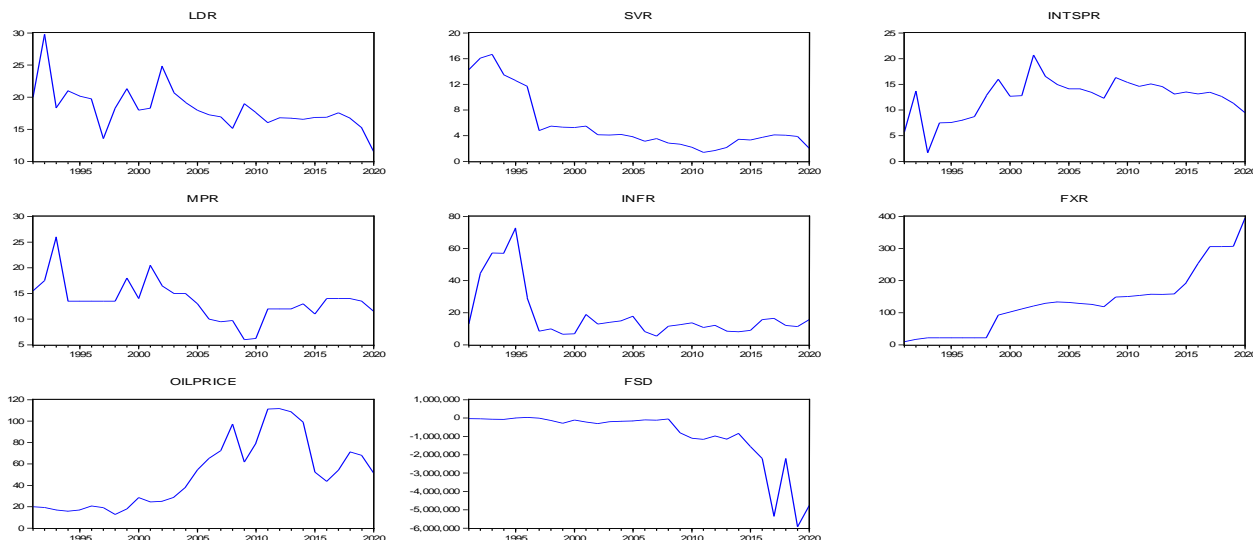
Apriori expectation

F(MPR, INFR, FXR, oil price, FSD) > 1 → positive result

$F(\text{MPR, INFR, FXR, oil price, FSD}) < 1 \rightarrow \text{negative result}$

4. Data Analysis and Interpretation

This covers the data analysis and result presentation. Therefore, the objective of this research work is focused on the predictive power of determinants of interest rate spread in Nigeria using the following variables, interest rate spread, monetary policy rate, Inflation rate, exchange rate, oil price, Fiscal Deficit/ Surplus for periods 1991 to 2020.



The graphical analysis shows that interest rate spread has similar trend with lending rate and savings rate. FXR continues to show an upward trend, oil price has fallen drastically since 2011 while broad money supply shows an upward trend before falling in 2020 which is attributed to the economic lockdown and global pandemic. Monetary policy rate has remained inconsistent while inflation has also followed a pattern of inconsistency while fiscal policy has shown persistent level of negative trend.

Table 4.1: Descriptive statistics

	LDR	SVR	INTSPR	MPR	INFR	FXR	OILPRICE	FSD
Mean	18.26300	5.729917	12.53308	13.56667	18.53833	134.7115	50.21533	-1003175.
Median	17.77000	4.090000	13.25625	13.50000	12.75000	129.0041	47.50000	-211896.0
Maximum	29.80000	16.66000	20.70000	26.00000	72.80000	394.9211	111.6700	32049.48
Minimum	11.50000	1.410000	1.660000	6.000000	5.400000	9.909492	12.72000	-5928982.
Std. Dev.	3.318726	4.480545	3.752524	3.843901	16.77499	99.23821	32.14546	1609693.
Skewness	1.335545	1.412100	-0.820126	0.871455	2.076998	0.803513	0.598258	-2.067656

Kurtosis	6.657721	3.524752	4.200277	5.523019	6.175320	3.237923	2.115826	6.189874
Jarque-Bera	25.64206	10.31434	5.163863	11.754202	34.17292	3.298924	2.766767	34.09513
Probability	0.000003	0.005758	0.075628	0.002803	0.000000	0.192153	0.250729	0.000000
Sum	547.8900	171.8975	375.9925	407.0000	556.1500	4041.344	1506.460	-30095261
Sum Sq. Dev.	319.4042	582.1833	408.3616	428.4917	8160.608	285598.4	29966.59	7.51E+13
Observations	30	30	30	30	30	30	30	30

The descriptive statistics shows INTSPR averaged 12.53% annually with a maximum of 20.7% and minimum of 1.66% over the thirty years period under review. Within the same period, lending rate averaged 18.26% per annum, 29.8% maximum and 11.5% minimum while savings rate had 5.73% per annum, 16.7% maximum and 1.41% minimum. Moreover, monetary policy rate has an average of 13.57% per annum, 26% maximum and minimum of 6%. Inflation rate averages 18.54% per annum with a maximum of 72.8% and minimum of 5.4%, exchange rate value averages 134.71/\$1 with a maximum of 394.92/\$1 and minimum of 9.909/\$1 within the period under review. Oil price averaged 50.2 with a maximum of 111.67/\$1 and minimum of 12.72/\$1. From the foregoing, it can be deduced that the MPR has been on the high side which is usually the benchmark for lending rate while the savings rate has been very small and thus no wonder the interest rate spread is large averaging 13.56% per annum which suggests that banks are making huge profits from such spread.

The Jarque-Bera shows probability for INTSPR, FXR and OILPRICE are extremely high and is above 0.05% which implies that the variables are not significant and therefore normally distributed. MPR, INFR, FSD variables are less than 0.05% level of significance and not normally distributed.

Table 4.2: Correlation matrix

	LDR	SVR	INTSPR	MPR	INFR	FXR	OILPRICE	FSD
LDR	1.000000	0.571894	0.201552	0.359662	0.408130	-0.519729	-0.479813	0.428571
SVR	0.571894	1.000000	-0.688226	0.580169	0.789456	-0.633880	-0.652190	0.337795
INTSPR	0.201552	-0.688226	1.000000	-0.374642	-0.581668	0.297211	0.354375	-0.024302
MPR	0.359662	0.580169	-0.374642	1.000000	0.401211	-0.288276	-0.550689	0.143064
INFR	0.408130	0.789456	-0.581668	0.401211	1.000000	-0.419723	-0.450201	0.196407
FXR	-	-0.633880	0.297211	-0.288276	-0.419723	1.000000	0.481637	-0.855623
OILPRICE	-	-0.652190	0.354375	-0.550689	-0.450201	0.481637	1.000000	-0.274690
FSD	0.428571	0.337795	-0.024302	0.143064	0.196407	-0.855623	-0.274690	1.000000

The result of correlation matrix which shows the collinearity between the independent variables shows that the highest correlation is between MPR and INFR (0.401211) while the lowest

correlation is between FSD and FXR (-0.855623). This implies that there is low correlation between the independent variables. Having determined the correlation between the independent variables, it becomes imperative to find out the short-term relationship between the independent variables and dependent variable.

Table 4.4: ADF Results

Variables	Max. lag	ADF Test statistics value	Order of integration
D(INTSPR)	7	-5.894709	1(1)
D(FSD)	7	-4.216358	1 (1)
D(FXR)	7	-3.326396	1(1)
D(INFR)	7	-4.247487	1(1)
D(MPR)	7	-7.625993	1(1)
D(OILPRICE)	7	-4.558262	1(1)
	1% level	-3.689194	
	5% level	-2.971853	
	10% level	-2.625121	

Source: Authors' computation

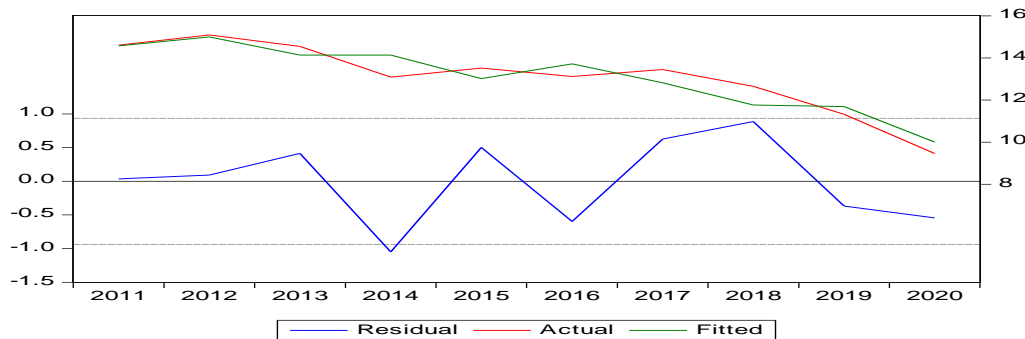
The result above shows that the variables are stationary at first difference i.e. 1(1) meaning they were integrated of order one.

Table 4.5: OLS Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	14.59972	3.426800	4.260453	0.0003
MPR	-0.139093	0.182821	-0.760815	0.4542
INFR	-0.090084	0.042081	-2.140702	0.0427
FXR	0.022578	0.013814	1.634436	0.1152
OILPRICE	-0.004038	0.024241	-0.166573	0.8691
FSD	1.34E-06	7.52E-07	1.786222	0.0867
R-squared	0.438811	Mean dependent var		12.53308
Adjusted R-squared	0.321897	S.D. dependent var		3.752524
F-statistic	3.753270	Durbin-Watson stat		2.029078
Prob(F-statistic)	0.011870			

The model estimate is given as $INTSPR = 14.5997215179 - 0.139092925302*MPR - 0.0900839141416*INFR + 0.0225778730248*FXR - 0.00403787705761*OILPRICE + 1.34407195916e-06*FSD$.

The coefficient of determination (R^2) is 43.88% which shows that the model was poorly fitted. This also shows that the adjusted coefficient of determination (R^2) found to be 32.19% change in Interest rate spread was explained by the explanatory variables (monetary policy rate, Inflation rate, exchange rate, oil price and fiscal deficit/surplus). Durbin-Watson= 2.029078 shows that there is no presence of auto correlation (not spurious). Prob(F-statistic) = 0.011870 shows that the overall model was statistically significant at 5% level of significance which implies that the variables jointly impacted on decision of interest rate spread.



The model shows that monetary policy rate has negative (-0.139093) but insignificant (prob value=0.4542) relationship with interest rate spread. Inflation rate has a negative (-0.090084) and significant relationship (prob value=0.0427) relationship with interest rate spread. Foreign exchange rate has positive (0.0222578) but insignificant relationship (prob value=0.1152) with interest rate spread. The result further shows that oil price has negative (-0.004038) but insignificant (prob value=0.8691) relationship with interest rate spread while fiscal deficit/surplus has positive (1.34E-06) but insignificant relationship with interest rate spread. From all indication, only inflation has a strong predictive power on interest rate spread in the short run for the period under review. Hence the model follows the integrating process as we proceed to test the long run relationship between the variables. The result of the cointegration result is presented in table 4.6 below.

Table 4.6: Johansen Cointegrated Test Result

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.796687	109.9660	95.75366	0.0037
At most 1	0.635402	65.36180	69.81889	0.1077
At most 2	0.547871	37.11093	47.85613	0.3423
At most 3	0.238652	14.88489	29.79707	0.7875
At most 4	0.194646	7.250282	15.49471	0.5487
At most 5	0.041576	1.189029	3.841466	0.2755
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.796687	44.60421	40.07757	0.0144
At most 1	0.635402	28.25087	33.87687	0.2022
At most 2	0.547871	22.22603	27.58434	0.2090
At most 3	0.238652	7.634613	21.13162	0.9247
At most 4	0.194646	6.061253	14.26460	0.6054
At most 5	0.041576	1.189029	3.841466	0.2755

The result of the above test indicates the presence of one co-integrating equation at 5 percent level of significance thereby confirming the existence of long run relationship among variables. We proceed to test for the parsimonious error correction model. The result is presented in table 4.7 below.

Table 4.7 Parsimonious Error Correction Mode

Dependent Variable: D(INTSPR)				
Included observations: 29 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1751.657	318.5147	5.499456	0.0001
D(INTSPR (-1))	1.064953	0.334046	-3.188040	0.0061
D(INTSPR (-6))	0.865712	0.212676	4.070572	0.0010
D(MPR (-1))	-2.501381	0.391009	-6.397245	0.0000
D(INFR (-1))	-1.800672	0.647481	-2.781044	0.0140
D(INFR (-2))	-1.016185	0.571639	-1.777671	0.0157
D(FXR (-1))	1.660155	0.497717	3.335541	0.0045
D(OILPRICE (-1))	-38.14395	8.069802	4.726752	0.0003
D(OILPRICE (-2))	-27.17897	6.961587	3.904135	0.0014
D(OILPRICE (-3))	-10.41319	4.386907	2.373697	0.0314
D(OILPRICE (-4))	-4.718403	3.497783	-1.348970	0.0474
D(FSD (-2))	62.78558	53.13992	1.181514	0.0158
D(FSD (-5))	34.85067	46.33974	0.752069	0.0036
ECT(-1)	-0.474124	0.073467	6.453524	0.0000
R-squared	0.956842	Mean dependent var	3491.019	
Adjusted R-squared	0.919439	S.D. dependent var	3359.083	
F-statistic	25.58183	Durbin-Watson stat	2.301978	
Prob(F-statistic)	0.000000			

From the result above, monetary policy rate at lags 1 is negative and significant function of interest rate spread. It is not surprising since monetary policy rate is a major determinant of banks' lending rate and/or cost of obtaining credit. Oil price is a negative and significant function of interest rate spread at lags 1-4. This implies that oil price has significant impact on interest rate spread and therefore a significant determinant of interest rate spread at the long run. In addition, inflation has negative and significant influence on interest rate spread, in other words, inflation at the long run can impact on interest rate spread positively. Fiscal deficit is a positive and significant function of interest rate spread at lags 2 and 5. The ECM was rightly signed and significant at 5% level of significance with a speed of adjustment of -0.474124 and probability of 0.0000. The coefficient of determination (R^2) is 95.6% which shows that the model was highly fitted. This also shows that 95.6% change in interest rate spread was explained by the explanatory variables (monetary policy rate, inflation rate, oil price, fiscal deficit/surplus). Durbin-Watson= 2.2301978 shows that there is no presence of auto correlation (not spurious). Prob(F-statistic) = 0.000000 shows that the overall model was statistically significant at 5% level of significance.

Having determined the short and long run relationship between the variables, we proceed to find out the direction of causality relationship between the variables in order to conclude if the independent variable and dependent variable influence each other.

Table 4.8: Granger causality test

Null Hypothesis:	Obs	F-Statistic	Prob.
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MPR does not Granger Cause INTSPR	28	0.20092	0.8194
INTSPR does not Granger Cause MPR		2.62104	0.0943
INFR does not Granger Cause INTSPR	28	1.81966	0.1847
INTSPR does not Granger Cause INFR		1.44362	0.2567
FXR does not Granger Cause INTSPR	28	0.10973	0.8965
INTSPR does not Granger Cause FXR		0.65887	0.5269
OILPRICE does not Granger Cause INTSPR	28	0.05071	0.9507
INTSPR does not Granger Cause OILPRICE		1.99123	0.1594
FSD does not Granger Cause INTSPR	28	0.45448	0.6404
INTSPR does not Granger Cause FSD		0.02891	0.9715

From the granger causality test result, it was found that no granger causality relationship exists between the independent variables (inflation, exchange rate, monetary policy rate, fiscal deficit/surplus) with Interest rate spread. It was also found that oil price, money supply and inflation do not have granger causality relationship with interest rate spread. Therefore, there is no evidence that interest rate spread can influence the direction of inflation, exchange rate, monetary policy rate and fiscal deficit/surplus.

4.3 Discussion of Findings

Findings in this study have shown that none of the variables except inflation can be considered a predictive power on interest rate spread for the period under review at the short run. However, at the long run, inflation, oil price, exchange rate, fiscal policy proxies and monetary policy rate seem to exert significant impact on interest rate spread. The significant relationship found between inflation and interest rate spread implies that if inflation is anticipated by banks, then the banks adjust interest rate accordingly, thereby increasing the interest rate margins. In other words, the higher the inflation the lower the interest rate spread. This finding is in line with the outcome of past studies such as Claessens *et al.*, (2001), Drakos (2002), Abreu and Mendes (2003) and Maria and Agoraki (2010) who all found negative relationship between inflation and interest margins.

On the long run relationship found between interest rate spread and monetary policy, this is consistent with the findings of Samahiya and Kaakunga (2012) that the liquidity levels of a commercial bank increase its net interest margin that is, the higher the policy rate, the higher the interest rate spread. The long run significant relationship result found between interest rate and fiscal policy also conforms to the findings of Thomas, Mathias and Christian (2015) that fiscal policy and political stability has the ability to influence banks' behaviour towards interest rate determination and pricing behavior. Our findings further support the claim by Kofi and Kofi (2013) that fiscal policy can serve as an interventionist policy that influences interest rates. The implication of the result is that to understand the predictive power of the variables, it takes longer time for inflation, oil price, exchange rate, fiscal policy proxies and monetary policy rate to influence interest rate spread in the banking sector.

5. Conclusion and Recommendations

5.1 Conclusion

Interest rate spread is the sum difference of deposit money banks' lending rate and savings rate. It is usually considered as the profit made by the banks on cost of obtaining savings from customers and cost charged on borrowers of the same customer deposit. Several empirical studies have

therefore been carried out to determine factors that influence interest rate spread in Nigeria. Using a time frame of 30 years, findings in this study has shown that inflation, oil price, exchange rate, and monetary policy rate have long run impact on interest rate spread, however, at the short run, only inflation is a significant determinant of interest rate spread in the banking sector given a period of thirty years. The study concludes that only inflation is a strong determinant of interest rate spread in Nigeria both at the short run and at the long run among the variables investigated.

5.2 Recommendations

Based on the findings in this study, the following recommendations are made:

- i. It is imperative that the CBN review its monetary policy rate which is definitely too high as it has also been found not to be a factor influencing cost of credit charged by deposit money banks.
- ii. Furthermore, the policy of inflation targeting should be sustained as the present state of inflation does not influence interest rate spread in the banking sector.
- iii. There is need to ensure stability in exchange rate as a stable exchange rate will ensure banks are not exposed to exchange rate risk.
- iv. Government fiscal policy should also take cognizance of its effect on banks interest rate spread.
- v. Finally, efforts should be made by bank management at ensuring they don't engage in unnecessary risky investment especially in the oil sector as fluctuations in oil price has no predictive power on the interest rate spread at the short run.

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