Macroeconomic Variables and Nonperforming Loans of Quoted Commercial Banks in Nigeria

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Abstract

This study examined the effect of macroeconomic variables on nonperforming loans of quoted commercial banks in Nigeria. Cross sectional data were sourced from financial statement of the quoted commercial banks while time series data were sourced from Central Bank of Nigeria Statistical Bulletin. Nonperforming loans was modeled as the function of real interest rate, exchange rate, broad money supply, real gross domestic product and inflation rate. Panel data Ordinary Least Square, fixed effect model was used after Hausman test. R-square, adjusted R-square, T-statistics, p-value, Durbin Watson and regression coefficient were used to examine the dynamic effect of macroeconomic variables on nonperforming loans. The study found that 85.8 percent of the variations in the nonperforming loans of the commercial banks were explained by variation in Nigeria macroeconomic variables as modeled in the regression. Exchange rate have negative and no significant effect, interest rate positive and significant effect, inflation rate have positive and no significant effect, real gross domestic product have negative and no significant effect while broad money supply have negative and no significant effect on nonperforming loans of the quoted commercial banks. From the findings, the study concludes that macroeconomic variables have strongly effect on nonperforming loans of the quoted commercial banks. The study recommends that government should direct their monetary and fiscal policies towards curbing the exchange rate by creating an enabling environment for credits expansion. To minimize the incidence of nonperforming loans, the authorities should create encouraging environment to further improve on the nation's exchange rate. Sound credit management will achieve banking growth in Nigeria by Central Bank of Nigeria frequently assessing the lending habit of deposit money banks in Nigeria. This suggests that the supervisory authorities should ensure that the lending rate of interest charged on loans by commercial banks is realistic to enable borrowers conveniently repay the borrowed funds and government should control inflation rate which will improve on national price stability, controllable inflation accelerates employment increase, and aggregate output and income increase which will unexpectedly result to low rate of loan defaulters.

Keywords: Macroeconomic Variables, Nonperforming Loans, Commercial Banks, Nigeria

INTRODUCTION

Traditionally, the role of banks in any economy consists of financial intermediation, provision of an efficient payment system and serving as a conduct for the implementation of monetary policies (Somoye, 2008). Banking is the most regulated business organization in Nigeria (Woldie, 2003). This is because of the direct effect of the banking business on the economy, as a medium for the transmission of government monetary policy and efficient means of implementing electronic payment system (Omossor, 2012). Bank regulation and policies came through ordinance, decree, parliamentary legislation, administrative and professional process such as Bank and Other Institution Financial Act (BOFIA), Central Bank of Nigerian Act (CBN) and Chartered Institute of Bankers of Nigeria (CIBN) Osiegu (2005). The objectives of bank regulation are prudential to reduce the level of risk bank creditors are exposed to, systemic risk reduction, to reduce the risk of disruption resulting from adverse trading conditions for banks causing multiple or major bank failures, avoid misuse of banks to reduce the risk of banks being used for criminal purposes, to protect banking confidentiality, credit allocation to direct credit to favored sectors, monetary and financial stability and protection of depositors and the economy from the vagaries of the financial system, and protection of banks' customers from the monopolistic/oligopolistic tendencies (Scott, 2010; Lucky, 2018). The issues of non-performing loans (NPLs) in the Nigerian banking system is alarming and is gaining increasing global attention in the last two decades, both at the local and the international levels, thus necessitated the various recent actions taken by the Central Bank of Nigeria, (CBN). Inspire of the 1952 Banking Ordinance, the Nigerian banking sector has experienced a number of bank failures; with Non-performing loans, generally, becoming the precursor to these. Non-performing loans are those loan facilities which borrowers often have difficulties in repaying (Onwuamaeze, 2010). They constitute bad debts. The health of a bank is not reflected by the size of its balance sheet but by the return of its assets.

Macroeconomics variables affect the entire economy as a whole such as total output, income, employment levels etc. These macroeconomic variables include economic growth captured by gross domestic product (GDP), interest rates, exchange rates inflation rates, broad money supply, unemployment rates among others (Oyinaka, 2019). Changes in these macroeconomic variables can cause failure in financial institutions, especially banks. The volume of credit extended by a bank is a function of its size, deposit base, liquidity, credit policy and other internal factors (Whyte, 2010). These factors mostly fall within the control of the banks but they are to a large extent influenced by the general environmental factors such as the macroeconomic variables and banks regulatory factors. A bank credits behavior is influenced by macroeconomic factors prevalent in the economy (Churchill, 2014). This uncertain nature of these factors and the general performance of the economy showed by macroeconomic aggregates such as inflation, money supply, industrial capacity utilization, employment level, exchange rate, interest rate and real GDP among others are determinant of the general credits behavior of a bank. Typically, once a bank perceives the macro environment to be stable and they form expectations that borrowers will be better able to repay loans because of their improved ability to accurately predict income stream over the life span of the credits banks adjust their lending behavior in response to the signals from these

macroeconomic factors such that positive signals make banks lend more and vice versa (Oyinaka, 2019).

Economic theory tells us that commercial banks play the role of lending. Joseph et al (2018) support the argument by categorically stating that the traditional role of commercial banks is lending credit or loans. In this regard, loans make up the bulk of their assets on which interest is generated, which contributes largely to the income of commercial banks. The nature of the business of lending is risky as commercial banks exposes themselves to the risk of default by the borrowers. This is generally known as the credit risk as it is expressed as the ratio of non-performing loans to total gross loan. Non-Performing Loans are loans which do not provide incomes anymore and full payment of the principal and interest is not provided (Shingjergji, 2013). NPL could also be seen as loans whose maturity date has passed and the payment has not been concluded. A loan is considered non-performing when the person or entity that has obtained it becomes a problem for its payment (Obamuyi et al 2012). Banks make out more credits or loans during periods of boom and reduced level of macroeconomic uncertainty and curtail lending when the economy is in recession (Talavera, 2006). However, in spite of the ongoing economic recovery, the macro environment in Nigeria remains in a period of significant uncertainty as the country continue to experience series of instability and volatility in macroeconomic factors (Oyinaka, 2019).

One of the current problems that banks face is the growth of non-performing loans (NPLs). The causes of this malfunction can be related to the systematic and nonsystematic factors, such as macro imbalances and other negative externalities, correlated loss exposures, asset bubbles, risk management quality (Bassey et al 2014). NPLs have been increasing in the recent past in Nigeria, the increasing level of NPL in the Nigerian Banking system remains a major problem for the economy as well as the main threat to the survival of the banking sector. Though banks have been trying to curb the rising volume of NPL, by increasing interest rates on the loans and other means, the trend keep increasing. Many studies have looked at the determinants of bank credits worldwide using GDP, interest rate, inflation rate, unemployment rate, exchange rate, degree of openness, government policy, credit growth and remittances have been identified as macroeconomic variables that have strong relationships with bank credits (Ekanayake & Azeez, 2015; Makri, Tsagkanos, & Bellas, 2014). Studies undertaken in Nigeria included lending interest rates, inflation, government expenditure, export and imports, exchange rate as the macroeconomic determinants of NPLs in banks (Warue, 2013; Ombaba, 2013). From the above, this study examined the effect of macroeconomic variables on nonperforming loans of quoted commercial banks in Nigeria.

LITERATURE REVIEW
Macroeconomics variables
Macroeconomics variables are derived from economics activities which are the study of the behavior of the economy as a whole such as total output, income, employment levels and the interrelationship among diverse economic sectors (Karl, 2009). These macroeconomic variables include money supply, interest rates, exchange rates, inflation rates among others. Chen, Roll and

Ross (2004) maintains that these macroeconomic factors are significant in explaining firm performance (profitability) and subsequent returns to investors.

Exchange Rate

Exchange rate is viewed as the level at which a currency will be exchanged for another. It is also viewed as the value of one country's exchange in relation to another. Exchange rate shows a nation's effectiveness in global markets. Foreign exchange rate among different currencies explains how important one currency worth is in relation of the other, that is, the value of a foreign nation's currency in relation to the home nation's currency. An Exchange rate means price, exactly the same as any other price which is the amount you give up to acquire something else. In this case you give up an amount of Naira to acquire another currency, say US Dollar or Japanese Yen.

Afolabi (1998) said that exchange rate is the rate at which one currency will exchange for another. He added that in independent economies such as Nigeria, the exchange rate will be the important price in that it determines virtually all other prices. It is argued that exchange rate has a 8 greater influence on economy through its effect on the value of domestic currency, domestic inflation, the external sector, macroeconomic credibility, capital flows and financial stability. Increased in exchange rate directly affects the price of imported commodities and an increase in price of imported goods and services contributes directly to increase in inflation (CBN, 2016). Nzotta (2004) added that foreign exchange rate is maintained by arbitrage. Arbitrage is a mechanism whereby speculators buy in one market where the rate is low and sell in another where the price is high. The difference constitutes arbitrage income. Exchange rates may be fixed by government by fiat as was the case in Nigeria before the introduction of SAP in 1986.

According to Benita and Lauterbach (2004) explained that exchange rate regimes differ primarily by the noisiness of naira exchange rate, and not by observable macroeconomic essentials. Fixed exchange rates are typically stable and floating exchange rates are volatile, but macro phenomena are regime-independent. In making his celebrated case for flexible exchange rates, Friedman (1953) argued that instability of exchange rates is a symptom of variability in the underlying economic structure; a flexible exchange rate need not be an unstable exchange rate. If it is, it is primarily because there is underlying instability in the economic conditions. Friedman's argument is that exchange rate instability is a display of economic volatility. Exchange rate regimes differ in the mechanisms through which this underlying instability is channeled. For instance, "money supply" or "liquidity" shocks affect the nominal exchange rate when rates float, but the money supply if rates are fixed. Underlying systemic volatility cannot be reduced by the regime, only channeled to one locus or another. The economy can be thought of as a balloon; squeezing volatility out of one part merely transfers the volatility elsewhere.

Interest Rate

According to Keynes, the interest rate is the reward for not hoarding, but for parting with liquidity for a specific period of time. Keynes definition of interest rate focuses more on the lending rate.

Adebiyi, (2002) will define interest rate as the return or yield on equity or the opportunity cost of deferring current consumption in the future. Lerner, in Jhingan, (2004), 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 (Yakubu & Maimuna, 2015).

Interest rates play a crucial role in the efficient allocation of resources aimed at facilitating the growth and development of an economy and as a demand management technique for achieving both internal and external balance with specific attention for deposit mobilization and credit creation for enhanced economic development (Opanga, 2013). Even though many expansionary monetary policies have been implemented, the inflationary pressure increased and forced the CBN to raise interest rate (CBN, 2017). The interest rate policy in Nigeria for example, has changed within the time frame of regulated and deregulated regimes. However, the impacts of this variable in the economic growth of Nigeria have remained controversial (Acha, 2011). In 1993, a new framework focused on the deregulation of interest rate; interest rate was very high and volatile. In 1994, due to the high volatility of interest rates, government decided to fix the MPR at 13.5% (CBN, 1994). Nigerians still remain expectant for brighter days ahead that improvements in the exchange rate and interest rate management could make a difference to the economic growth efforts (Jelilov & Wazkiri, 2016). An increase in the money supply brings about a fall in interest rate as there is more money available, the price of money will be cheaper. But some theory such as liquidity effect posits that increase in money supply will increase in interest rate.

The Central Bank affects the level of interest rates by controlling the amount of money in the vaults of commercial banks. If the central bank wants to influence interest rates upwards, it absorbs money from the banking system. On the other hand, if money is released into the banking system, interest rates will be lowered, reducing the cost of money and making more funds available for lending. The central bank withdraws money from the system by selling securities and injects money into the economy by buying back those securities. Changes in deposit and lending rates will influence the savings and spending behaviour of households and business firms which will ultimately affect the level of economic activity in the economy. When the central bank sells the securities, it soaks up liquidity, and when it buys them, it injects liquidity in the local economy. This transmission often takes some time to manifest. Interest rate is regarded as Bank rate or Monetary Policy Rate (MPR) and it is one of the intermediate monetary policy instruments at the control of central bank to control money supply and thus inflation rate, (Anyaele, 2003). If the apex bank feels to curtail money supply by reducing the power of participants (commercial banks), it will increase interest rates, while in case of an expansionary monetary policy; the reverse will be the case.

Inflation Rate
Inflation is one of the most frequently used terms in economic discussions, yet the concept is variously misconstrued. There are various schools of thought on inflation, but there is a consensus

among economists that inflation is a continuous rise in the prices. It could be defined as a continuing rise in prices as measured by an index such as the consumer price index (CPI) or by the implicit price deflator for Gross National Product (GNP). The term inflation is generally used to describe a situation of rapid, persisted and high rises in the general price level in an economy, resulting to general loss of purchasing power of the currency. Inflation causes serious discomfort for consumers, investors, producers and the government (Asogu, 1990).

Jhingan, (2006) is a persistent and appreciable rise in the general level of prices. According to Agenor and McDermort (2000) one of the most difficult problems facing almost all countries of the world, a problem which appears to be defined as a high and persistent rise in the price level is inflation. This implies that not every price increase is termed inflation; a once for all rise in the price level may not be termed an inflationary phenomenon. Again, price of all goods and services may not rise simultaneously or by the same proportion. This definition of inflation has some limitation because inflationary pressures are not always manifested in rising prices. In some cases, the level of price is prevented from rising because of the imposition of very strict price control a situation usually refers to as suppressed or represented inflation. In such circumstances inflationary pressure are manifested in long queues of customers at shop anxiously waiting to receive their allocation of the very limited supplies. In other circumstances, inflationary pressure is reflected in an excessive drain of the country's foreign exchange reserve as excess demand for goods and services is shifted outside the domestic economy. On one hand inflation is considered to be due to an increase in the money supply.

On the other, the fiscal explanation views inflation as rising from budget deficits which are considered fundamental causes of inflation. In the balance of payments aspect, emphasis is place on the exchange rate. Masha, Essien and Musa (2004) distinguish two features of inflation which are worth noting. First, inflation is generally associated with an increase in an individual good and service. Secondly, a once and for all increase in the price level does not necessarily add impetus to the underlying inflation. On the other hand, a onetime increase in the price of certain goods may trigger a chain of price increases which can lead to a sustained increase in inflation.

Many economists have analyzed the relationship among these variables over the years. Economist agreed that there is a causal relationship between "monetary inflation" (the supply of money) and "price inflation" (increases in the price of goods and services measured in monetary terms). But there is neither a common view about the theoretical exact mechanism and relationship, nor about how to measure it exactly in reality. Inflationary rate in Nigeria has been on the increase leading to major economic distortions since the late 1970s. Inflation has been widely described as an economic situation where increase in money supply is faster than the new goods and services in the same economy (Hamilton, 2001). According to Afolabi (1991), inflation is a sustained rise in the general level of prices. Inflation emerges in the economy on account of the 13 increase in the money income of certain sectors of the economy without any corresponding increase in their productivity, giving rise to an increase in the aggregate demand for goods and services which cannot be met at the current prices by the total available supply of goods and services in the economy.

Gross Domestic Product

Economic growth is the increase in the inflation-adjusted market value of the goods and services produced by an economy over time. It is conventionally measured as the percent rate of increase in real gross domestic product, or real GDP (IMF, 2012) Economic growth means an increase in real GDP which means an increase in the value of national output/national expenditure. Economic growth is an important macro-economic objective because it enables increased living standards, improved tax revenues and helps to create new jobs (Economicshelp, 2017).

According to Investopedia (2017) Economic growth is an increase in the capacity of an economy to produce goods and services, compared from one period of time to another. It can be measured in nominal or real terms, the latter of which is adjusted for inflation. Traditionally, aggregate economic growth is measured in terms of gross national product (GNP) or gross domestic product (GDP), although alternative metrics are sometimes used. In simplest terms, economic growth refers to an increase in aggregate productivity. Often, but not necessarily, aggregate gains in productivity correlate with increased average marginal productivity. This means the average laborer in a given economy becomes, on average, more productive. It is also possible to achieve aggregate economic growth without an increased average marginal productivity through extra immigration or higher birth rates.

Economic growth is the increase in the goods and services produced by an economy, typically a nation, over a long period of time. It is measured as percentage increase in real gross domestic product (GDP) which is gross domestic product (GDP) adjusted for inflation. For example, let's say that a special berry grows naturally only in the country of Nigeria. Natives to Nigeria have used this berry for many years, but recently, a wealthy German traveler discovered the berry and brought samples back to Germany. His German friends also loved the berry, so the traveler funded a large berry exporting business in Nigeria. The new berry exporting business hired hundreds of Nigerians to farm, harvest, wash and box and ship the berries to grocers in Germany. In one calendar year, the berry exporting business added over one million dollars to Nigeria's GDP because that's the total value of the goods and services produced by the new berry exporting business. Since Nigeria's GDP increased, this means that Nigeria experienced economic growth (Study.com 2017).

According to Kimberly (2017) economic growth is how much more the economy produces than it did in the prior period. To be accurate, the comparison must remove the effects of inflation. If the economy is producing more, businesses are more profitable and stock prices rise. That gives company's capital to invest and hire more employees. As more jobs are created, incomes rise. Consumers have more money to buy additional products and services. Purchases drive higher economic growth. For this reason, all countries want positive economic growth. This makes economic growth the most watched economic indicator. GDP is the market value of all final goods and services produced in an economy or nation. A country's economic growth is usually indicated by an increase in that country's gross domestic product, or GDP.

Generally speaking, gross domestic product is an economic model that reflects the value of a country's output. In other words, a country's GDP is the total monetary value of the goods and services produced by that country over a specific period of time (Study.com, 2017). According to Kimberly (2017) Gross domestic product is the best way to measure economic growth. That's because it takes into account the country's entire economic output. It includes all goods and services that businesses in the country produce for sale. It doesn't matter whether they are sold domestically or overseas. GDP measures final production. It doesn't include the parts that are manufactured to make a product. It includes exports because they are produced in the country. Imports are subtracted from economic growth. Most countries measure economic growth each quarter. They use real GDP to compensate for the effects of inflation. GDP leaves out child care, unpaid volunteer work or illegal black-market activities. It doesn't count the environmental costs. For example, the price of plastic is cheap because it doesn't include the cost of disposal. As a result, GDP does not measure how these costs impact the well-being of society.

A country will improve its standard of living when it factors in environmental costs. A society only measures what it values. Similarly, societies only value what they measure. For example, Nordic countries rank high in the World Economic Forum's Global Competitiveness Report. That's because their budgets focus on the drivers of economic growth. These are world-class education, social programs and a high standard of living. These factors create a skilled and motivated workforce. These countries have a high tax rate. But they use the revenues to invest in long-term economic growth. The Nigerian economy is characterized by structural challenges that limit its ability to sustain growth, create jobs and achieve real poverty reduction. The economy is highly dependent on a single commodity for economic activities, fiscal revenues and foreign exchange oil and must import raw materials and intermediate goods to sustain the manufacturing sector. The economy is also skewed towards consumption rather than investment, with gross domestic investment (GDI) to GDP ratio hovering at 13-14 per cent. Nigeria is one of the most developed countries in Africa.

Services are the largest sector of the economy, accounting for about 50 percent of total GDP. One of the fastest growing segments in services is Information and Communication, which together account for about 10 percent of the total output. Agriculture, which in the past was the biggest sector, now weights around 23 percent. Crude Petroleum and Natural Gas constitute only 11 percent of total GDP, while being the main exports. Industry and Construction account for the remaining 16 percent of GDP. According to National Bureau of statistics (2017), the GDP in Nigeria shrank by 2.1 percent year-on-year in the second quarter of 2016, compared to a 0.36 percent drop in the previous period and worse than market consensus of a 1.5 percent decline. It is the first contraction in 20 years due to a decline in oil prices.

Non-Performing Loans (NPLs)

According to Caprio & Klingebiel (1999) non-performing loans (NPLs) refers to loans which for a relatively long period of time do not generate income; that is the principal and/or interest on these loans has been unpaid for at least 90 days. Non-performing Loans (NPLs) could also occur when

the amortization schedules are not realized as at when due resulting in over-bloated loan interest due for payments. Non-Performing Loans (NPLs) reduces the liquidity of banks, credit expansion, it slows down the growth of the real sector with direct consequences on the performance of banks, the firm which is in default and the economy as a whole. According to the theory of finance, there are various risks facing financial institutions. They include: credit risk, liquidity risk, market risk, operating risk, reputation risk and legal risk. The system is highly sensitive while the activities of the operators need to be conducted within the laid down and agreed rules and procedures, in order to achieve a reasonable level of efficiency. The immediate consequence of large amount of non-performing loans in the banking system is firm's failure. Many researches on the cause of firms' failures find that asset quality is a statistically significant predictor of insolvency (Sere-Ejembi et al 2014), and that failing banking institutions always have high level of non-performing loans prior to failure (Mensah and Adjei, 2015). Non-performing loans can lead to efficiency problem for bank market. It is found by a number of economists that failing mortgage tends to be located far from the most efficient frontier, because mortgage firms do not optimise their portfolio decisions by lending less than demanded. In a high NPL condition, firms increasingly tend to carry out internal consolidation to improve the asset quality rather than distributing credit. Further, the high level of nonperforming loans requires mortgage to raise provision for loan loss that decreases the firms' revenue and reduces the funds for new lending

Deflation theory
The Deflation theory developed by Fisher in 1934 suggests that when the debt bubble bursts, the following sequence of events occurs; debt liquidation leading to distress selling and contraction of deposit currency, as bank loans are paid off. This contraction of deposits causes a fall in the level of prices, which leads to greater fall in the net worth of business, hence precipitating bankruptcies which leads the concerns running at a loss to make a reduction in output, in trade and in employment of labor. These cycles cause complicated disturbances in the rates of interest and a fall in the money value. The complicated turbulences described above can be summed up as both external and internal forces (macro and micro factors) influencing state of over indebtedness existing between, debtors or creditors or both which can compound to loan defaults. Assuming that at some point of time, a state of over-indebtedness exists, this will tend to lead to liquidation, through the alarm either of debtors or creditors or both. Then we may deduce the following chain of consequences in nine links: (1) Debt liquidation leads to distress selling and to (2) Contraction of deposit currency, as bank loans are paid off, and to a slowing down of velocity of circulation. This contraction of deposits and of their velocity, precipitated by distress selling, causes (3) A fall in the level of prices, in other words, a swelling of the dollar. Assuming, as above stated, that this fall of prices is not interfered with by reflation or otherwise, there must be (4) A still greater fall in the net worths of business, precipitating bankruptcies and (5) A like fall in profits, which in a "capitalistic," that is, a private-profit society, leads the concerns which are running at a loss to make (6) A reduction in output, in trade and in employment of labor. These losses, bankruptcies, and unemployment, lead to (7) Pessimism and loss of confidence, which in turn lead to (8) Hoarding and slowing down still more the velocity of circulation. The above eight changes cause

(9) Complicated disturbances in the rates of interest, in particular, a fall in the nominal, or money, rates and a rise in the real, or commodity, rates of interest.

Financial Accelerator theory

The Financial Accelerator theory was developed by Bernanke and Gertler (1989) and Bernanke, Gertler, & Gilchrist (1998). The theory argues that credit markets are procyclical and that information asymmetries between lenders and borrowers as well as the balance sheet effect work to amplify and propagate credit market shocks to the economy. This theory seeks to explain how lending and borrowing activities of 48 organizations are largely affected by small economic tremors. The theory also designates that due to economic tremors, borrowers may not have the aptitude to borrow and there is a probability of them avoiding repaying their loans or external finance. The financial accelerator framework has been widely used in many studies but the term "fiancial accelerator" has been introduced to the macroeconomics literature in their 1996. The motivation of this research was the longstanding puzzle that large fluctuations in aggregate economic activity sometimes seem to arise from seemingly small shocks, which rationalizes the existence of an accelerator mechanism. They argue that financial accelerator results from changes in credit market conditions, which affect the intrinsic costs of borrowing and lending, associated with asymmetric information.

The principle of acceleration, namely the idea that small changes in demand can produce large changes in output, is an older phenomenon which has been used since the early 1900s. Although Aftalion's (1913) seems to be the first appearance of the acceleration principle, as a well-known example of the traditional view of acceleration, Samuelson (1939) argued that an increase in demand, for instance in government spending, leads to an increase in national income, which in turn drives consumption and investment, accelerating the economic activity. As a result, national income further increases, multiplying the initial effect of the stimulus through generating a virtuous cycle this time. The roots of the modern view of acceleration go back to Fisher in his seminal work on debt and deflation, which tries to explain the underpinnings of the Great Depression, he studies a mechanism of a downward spiral in the economy induced by over-indebtedness and reinforced by a cycle of debt liquidation, assets and goods" price deflation, net worth deterioration and economic contraction. His theory was disregarded in favor of Keynesian economics at that time. With the rising view that financial market conditions are of high importance in driving the business cycles, the financial accelerator framework has revived again linking credit market imperfections to recessions as a source of a propagation mechanism. Many economists believe today that the financial accelerator framework describes well many of the financial-macroeconomic linkages underpinning the dynamics of The Great Depression and the ongoing subprime mortgage crisis

Business Cycle Theory

The theory of business cycle Schumpeter (1939) indicates the process of economic change or evolution that consists of two distinct phases "prosperity" and "recession". One under which the impulse of entrepreneurial activity, draws away from an equilibrium position, and the second of which it draws toward another equilibrium position. Schumpeter calls those fluctuations/cyclical

processes in economic life business cycle. Schumpeter shows the intermediary role of financial sector between those who save and invest, through a process referred to credit creation by bank financing that leads to economic growth and development. The effect of this process leads to profit and loss generation by the lender and the borrower. According to Bikker and Hu (2002), certain macroeconomic variables typically display unique pattern of boom and recession in a business cycle. A crisis is said to occur at the peak of expansion when growth in real GDP and domestic demand decline leading to acceleration in inflation.

During periods of economic expansion, firms and their respective sectors profits increases, asset prices rises aggregate sectoral demand for credit facilities expands leading to growth in bank lending resulting to increased interest income. Banks may underestimate their risk exposures, relaxing credit standards and reduce provisions for future losses while the economy indebtedness rises. As the downturn sets in individual's, firms and sector profitability deteriorates. Decline in profitability result in fall of asset prices, non-performing loans, lowers borrower's financial capacity, fall in employment levels, and depresses the value of collaterals as secondary means of servicing debts. Banks risk exposure increases, and consequently raises the need for larger loan provisions and higher levels of capital, exactly when it is more expensive or simply not available. This may lead to banks reacting by reducing the amount of lending, especially if they have low capital buffers above the minimum capital requirement, thus increasing the effects of the economic downturn as well as increasing the lending rates. Although business cycle theory could explain why only a limited share of loans from commercial banks has been allocated to agricultural sector it is not exhaustive.

Empirical Review

Mansor (2006) employed Vector Autoregressive (VAR) technique to investigate the relationship between bank credits, lending and some macroeconomic variables such as real output, stock prices and exchange rate in Malaysia for quarterly data spanning 1978 quarter 1 to 1998 quarter 2. The study demonstrated that bank credits were positively influenced by real output but no influence of bank loans on real economic activity was found. He further observed that exchange rate fluctuations affected bank lending activities through its effects on real output and stock prices. In another study in Malaysia, Abdul et al, (2011) noted that bank lending was negatively influenced by interest rates, while controlling other macroeconomic variables such as GDP and Inflation. Otuori (2013) in his study investigated the determinant factors of exchange rates and their effects on the performance of commercial banks in Kenya. He observed that exports and imports Interest rates, inflation and exchange rates were all highly correlated. By manipulating interest rates, central banks exert influence over both inflation and exchange rates, and changing interest rates impact inflation and currency values. Higher 20 interest rates offer lenders in an economy a higher return relative to other countries, attract foreign capital and cause the exchange rate to rise. The impact of higher interest rates is mitigated, however, if inflation in the country is much higher than in others, or if additional factors serve to drive the currency down. The opposite relationship exists for decreasing interest rates that is; lower interest rates tend to decrease exchange rates (Bergen, 2010). Mehmet (2012) analyzed the correlation between non-performing loan ratios of banks and

macroeconomic variables. The main motivation behind these studies is to reveal whether macroeconomic factors have an impact on non-performing loan ratio of banks and to determine lag length in cases in which these factors have an impact. This study examines the effect of macroeconomic variables (commercial loan interest rates and public debt stock/GDP ratios) on the consolidated non-performing loan ratio of banks involved in Borsa Istanbul (BIST) XBANK index in quarterly basis during 2002-2013 period. The result of econometric analysis revealed that changes in non-performing loan ratio can be explained by above mentioned macroeconomic variables.

Gremi (2013) analyzed the link between the macroeconomic developments especially GDP growth and interest loan rate and the banking credit risk measure by NPLR. The paper analyzes the data of commercial banks in Albania over the time period from 2005Q1 to 2013Q1. The study includes 36 observations from banking system. Besides bank many specific characteristics, in this study is included a set of macroeconomic and industry-specific variables into our regression analyses. The results show that there exist significant differences in profitability between commercial banks in Switzerland and that these differences can to a large extent be explained by the factors included in our analysis. Also, this model specification, which includes several variables that have not been considered before, generates new insights for a better understanding of banking performance. Employing dynamic panel data approaches, it concluded that the banking credit risk is significantly affected by the macroeconomic environment: the credit risk increases when GDP growth and is also negatively affected by the rise of the interest loan rate. The set of 2 independent variables as factors determining the changes in amount of doubtful and non-performing loans was created. These variables were calculated from data imported by Central Bank and annual reports the research has confirmed that the amount of doubtful and non-performing loans in banks highly depends on macroeconomic changes.

Nkoro and Uko(2016) analyzed the impact of the main macroeconomic variables in the non-performing loans level in the Albanian banking system. This study is motivated by the hypothesis that macroeconomic variables have an effect on the non-performing loans level. The paper will be focused to find out the relations of the non-performing loans ratio and the GDP, inflation rate, exchange rate euro/all and base interest rate by using a simple regression model. The Albanian banking system from 2008 is suffering from an ongoing growth level of the non-performing loans and this is a big problem for the individual banks and for the banking system as a whole. Actually the level of nonperforming loans in the Albanian banking system is very concerning reaching up to 23.1% of the total loans. The Bank of Albania during the global financial crises has to be more vigilant of potential weaknesses of our banking system. This study is meant to be added to the actual field of research papers in the non-performing loans issue.

Siddiqui and Malik (2012) examined the macroeconomic determinants of non-performing loans in Namibia. The study was based on quarterly data covering the period 2001:Q1 to 2014:Q2, utilizing the technique of unit root, co-integration, Granger causality, impulse response functions and forecast error variance decomposition. The results for cointegration found a long run relationship between non-performing loan and log of gross domestic product, interest rate and inflation rate.

The results for Granger causality found unidirectional causality from interest rate to non-performing loan in the long run. Moreover, there is also unidirectional causality running from all the macroeconomic determinants to non-performing loans in the short run. The results of the impulse response functions revealed that all the macroeconomic determinants play a role in determining non-performing loans, while in the short run only log of gross domestic product and exchange rate. Radhe and Anjana (2015) examined the effect of firm specific and macroeconomic variables on non-performing loans of Nepalese commercial banks. The study is based on the panel data analysis of 21 Nepalese commercial banks with 147 observations for the period of 2008 to 2014. As a first approximation to the theory, this study hypothesizes that the non-performing loans depend on several bank-specific and microeconomic variables such as return on asset, return on equity, loans to total deposit, capital adequacy ratio, inflation, gross domestic product and annual money supply growth. The multiple regression models are estimated to test the significance of non-performing loans in Nepalese commercial banks. The result shows that return on asset has a positive and significant relationship with non-performing loans. It implies that increase in return on assets, increases the non-performing loans. Similarly, loans to total deposit ratio also has a positive and significant impact on non-performing loans which means that increase in loans to total deposit would increase the non-performing loans. Likewise, return on equity has negatively significant influence on non-performing loans. Thus, the result indicates that lower the nonperforming loans, higher would be the return on equity. Hence, the overall study concludes that return on asset, return on equity and loans to total deposit ratio are major determinants of non-performing loans in Nepalese commercial banks

Baum, Caglayan and Ozkan (2004) investigated the link between bank lending and macroeconomic uncertainty using annual and quarterly U.S. bank level data. For both data sets, they show that as macroeconomic uncertainty increases, captured by an increase in the variability of industrial production, banks behave more conservatively, leading to a narrowing of the cross–sectional distribution of banks' loan–to-asset ratios. Their results are robust to the inclusion of macroeconomic factors, and provide broadly similar findings across three major categories of bank loans and total loans. Hezron (2004) analyzed macroeconomic indicators for the period 1982, 1992 and 1997 on agricultural sector performance on income and expenditure. They found a decline in agricultural prices and production. The performance of the agricultural sector in the 1990s was dismal, with annual growth in agricultural GDP averaging 2 percent compared with 4 percent in the 1980s. Agricultural export growth after the policy reforms showed mixed trends due to market access limitations for Kenyan exports. Market access for imports into the Kenyan market had improved since the reforms, occasioning tremendous import growth. After the reforms the country moved from broad self-sufficiency in production of most food staples to a net importer the balance of trade between Kenya and the rest of the world worsened against Kenya. Sandra, Boris and Florence (2012) analyzed how bank lending to the private nonbank sector responds dynamically to aggregate supply, demand and monetary policy shocks in Germany and the euro area. The results suggest that the dynamic responses in the two areas are broadly similar, although there are some differences in the relative contribution of the three shocks to the development of output, prices, interest rates and bank loans over time. In order to assess the role of bank lending in the

transmission of macroeconomic shocks, we perform counterfactual simulations and analyze the dynamic responses of German loan sub-aggregates in order to test the distributional implications of potential credit market frictions. The results suggest that there is no evidence that loans amplify the transmission of macroeconomic fluctuations or that a "financial accelerator" via bank lending exists.

Festic and Beko (2008) examined macroeconomic variables affecting non-performing loan (NPL) ratios in five central European economies (CEEs). The study reached four main conclusions. First, a slowdown in economic activity can be expected to deteriorate the NPL ratios in the CEEs. Second, in four out of the five countries, foreign direct investment growth appears to improve NPL ratios. Third, an increase in real interest rates has a negative impact on the financial position of borrowers and loan portfolio quality in all the five CEEs. Fourth, in a majority of CEEs, increasing credit to the private sector increases the NPL ratio, indicating a need to strengthen the supervision of banks' lending activities. Nkusu (2011) examined the effect of macroeconomic developments on performance, credit quality and lending behavior of banks in Kenya, by estimating a dynamic panel data model using Generalized Method of Moments. The study suggested that banks need to continue pursuing risk sensitive loan pricing policies to ease the extent of procyclical/countercyclical behaviour during economic upswings/downswings respectively, which in turn reduces the chances of supply driven credit crunch effects. Djiogap, et al, (2012) studied the interplay between banks and the macroeconomic importance for financial and economic stability in U.S. for the period 1985 quarter1 to 2008 quarter 2. They studied more than 1,500 commercial banks and analyzed the data using factor-augmented vector autoregressive model which extends a standard VAR. The model included GDP growth, inflation, the Federal Funds rate, house price inflation, and a set of factors. Their main findings were; average bank lending increases following expansionary shocks, average bank risk declines after most expansionary macroeconomic shocks, house price and monetary policy shocks are particularly important for bank risk and that, there was a substantial degree of heterogeneity across banks both in terms of idiosyncratic shocks and the asymmetric transmission of common (banking and macroeconomic) shocks.

Were and Wambua (2014) in assessing determinants of NPLs in Ethiopia, depicted that poor credit assessment, failed loan monitoring, underdeveloped credit culture, lenient credit terms and conditions, aggressive lending, compromised integrity, weak institutional capacity, unfair competition among banks, willful default by borrowers and their knowledge limitation, fund diversion for unintended purpose, over/under financing by banks ascribe to the causes of loan default. The study indicated that poor credit assessment ascribing to capacity limitation of credit operators, institutional capacity drawbacks and unavailability of national data for project financing that had also led to setting terms and conditions that were not practical and/or not properly discussed with borrowers had been the cause for occurrences of loan default. Messai and Jouini (2013) conducted a study in order to determine the causes of NPLs of Zimbabwe. They found internal factors such as poor credit policy, weak credit analysis, poor credit monitoring, inadequate risk management and insider loans have a limited influence towards non-performing loans. Factors

namely natural disaster, government policy and the integrity of the borrower were the major factors that caused NPLs. Findings indicated that there is an upward trend in NPLs since the adoption of multicurrency in 2009. The agricultural sector has not been performing well owing to climate changes and expensive costs related with farming in Zimbabwe. Ahmad and Bashir (2013) examined the effect of non-performing loans and the existing literature on macroeconomic variables, which suggests that many macroeconomic variables do strongly influence them. Over the last few years the literature that examines NPLs has expanded in line with the interest afforded to understanding the factors responsible for financial vulnerability. The study aimed to investigate the explanatory power of macroeconomic variables as determinants of NPLs. This study used time series data of NPLs ratio and nine macroeconomic variables over the period of 1990-2011 and OLS was used to test the explanatory power of macroeconomic variables as determinants of NPLs.

Kamau (2013) investigated the effect of macroeconomic factors on commercial banks' lending to agricultural sector in Kenya. The findings have established the effect of Inflation rate, Interest rate, Exchange rate and (GDP) on commercial banks' lending to Agricultural sector. The population of the study comprised of all commercial banks in the entire period in Kenya that were licensed and registered under the Kenya banking act. All the commercial banks in Kenya were sampled in order to provide a complete picture on the effect of macroeconomic factors on commercial banks' lending to agricultural sector in Kenya. The data required for the study was obtained from secondary source in the central bank of Kenya that was used to investigate the relationship between dependent and independent variables. The theoretical framework that was used in this study explored business cycle theory and contemporary banking theory of financial intermediation as the main root of limited percentage share of commercial banks" lending to agricultural sector in Kenya. The researcher employed descriptive survey design and data analysis used descriptive statistics, correlation analysis and regression analysis. While commercial banks were found involved in lending activity, they continued to lend low to agricultural sector. It was clear from the study that, a unit increase in interest rate, inflation rate and exchange rate negatively affected the amount of credit provided by the commercial banks respectively. This resulted to decrease in the amount of credit. GDP was found to have a positive relationship to lending. A unit increase of GDP led to increase to amount of credit provided by commercial banks. To cater for the credit needs of agricultural sector, it is incumbent upon the commercial banks to review its lending dimension. The study has important implications in terms of policies that will enhance economic growth through agricultural financing. There is need to increase the amount of lending to agricultural sector through the reduction of interest rates and controlling the negative effect of exchange rate and inflation to allow more economic growth in the country.

Onchomba (2014) argued that the non-performing loans are one of the major causes of the economic stagnation problems and the current study sought to determine relationship between non-performing loans and macroeconomic factors in mortgage banks in Kenya. The general objective of the study is to identify the major macroeconomic causes of nonperforming loans in the mortgage institutions in Kenya. The study adopted a census survey where the entire mortgage provider Institutions. The study used secondary data information that was obtained from articles, books,

newspapers, internet and magazines. The study collected for a period of four years from 2010 to 2013. Data was analyzed through description statistics, means and standard deviations to determine the extent to which macroeconomic factors influence level of nonperforming loans in mortgage institutions. Further inferential statistics regression analysis was done to establish whether there exists a significant relationship between macroeconomic factors and non-performing loans in mortgage institutions. The study concluded that GDP growth rate, high rate of unemployment, high rate of real interest rate, loan losses reserve ratio, significantly led to occurrence of Non-Performing Loans. The study concluded that there existed significance strong and positive correlation between unemployment, real Interest rates in the economy contribute to Non-Performing loans in mortgage firms in Kenya. The study concluded that rate of unemployment would lead to a significant positive increase in Non-Performing Loan as without salary, Mortgage loan could not be paid and therefore when unemployment rate is high, NPLs increase. The study recommends that management in mortgage sectors should carefully study the growth rate of the economy when determining their mortgage loan. The study recommends that management in mortgage sectors should consider employment status of their customers as high rate of employment would results to high rate of salary which empowers customer to honor their obligation to pay for their mortgage loan and reduces occurrence of Non-Performing Loan as without salary, Mortgage loan could not be paid and therefore when unemployment rate is high, NPLs increase.

Clichici and Colesnicova (2014) in their research pointed out the impact of several macroeconomic variables on nonperforming loans (NPLs) in the banking sector of the Republic of Moldova recently affected by global crisis. Using econometric multivariate linear regression analysis, we conclude that banking NPLs are not affected nor only by distinctive features of the banking sector and the policy choices of each bank but also by macroeconomic environment: NPLs increase when GDP, exports, remittances decrease and when unemployment increases, however, our assumption about the relation between NPLs and private indebtedness has not been validated. We observed a substantial increase in the credit risk during the recent financial crisis period. Beck et al (2015) investigated the impact of macroeconomic instability on banking sector lending behaviour in Ghana using data on commercial banks and macroeconomic instability from 1992 to 2009. My results under the Co-integration and Vector Error Correction Modeling framework show that bank lending has a long-run relationship with macroeconomic instability. The study therefore, recommends that while banks should pay adequate attention to the consequences of their firm specific characteristics in their lending activities both in the short-run and long-run, their worries about macroeconomic instability should be limited to the long-run consequences on their lending behaviour. It is also pertinent that appropriate measures be taken to curtail inflation and sporadic money supply growth making banks become unfavorably disposed to lending given the attendant negative consequences of loan curtailment on economic growth in the long run.

Mileris (2014) analyzed macroeconomic factors and their impact on the percentage of non-performing loans (NPLs) in commercial banks of the EU countries. This problem is relevant because in recent years many EU countries had the economic downturns that can be visible in the

main macroeconomic indicators. Also, banks have met the growth of non-performing loans when the debtors were not able to meet their financial obligations. The Basel III Agreement notes the necessity to consider the economic conditions of a country when assessing the credit risk of loan applicants. The results of this research can be useful for banks, because the main relations between macroeconomics and non-performing loans have been revealed. Since 2009, Lithuania has one of the highest NPL percentages in the EU, and the meaningful impact of economic deterioration on the debtor's ability to repay debts to banks has been proven. The same situation was ascertained in other EU countries with imperfect economic conditions. Conversely, it has been estimated that banking systems in the EU countries with developed economies are not very sensitive to the business cycle fluctuations. So, in Lithuanian banks, when managing credit risk, the consideration of economic conditions is very important.

Mondal(2016) examined the effect of macroeconomic variables on the downfall of loans. The data used in this study range from 2005 to 2014 and cover 22 commercial banks operating in Bangladesh. Failure of credit policy is measured with the rate of non-performing loan (NPL) which indicates vulnerability of credit system in banking and financial industry. Several researches have been conducted in many countries where mix pattern of relationships has been found. In this research work, four macroeconomic variables named GDP growth rate, inflation rate, interest rate spread of banking sector and rate of unemployment are tested with NPL ratio in order to ascertain significant relationship for commercial banks of Bangladesh. The result of econometric analysis revealed that NPL is negatively sensitive to inflation rate and interest rate spread and positively sensitive to GDP and unemployment rate. Aminu (2015) investigated the macroeconomic determinants of non-performing loans in Nigeria, using time series data for the period 2005 to 2014 collated from Central Bank of Nigeria Statistical Bulletin, Nigeria Deposit Insurance Corporation annual report, World Bank Development Indicators and International Financial Statistics. The choice of the period 2005 to 2014 was because of its significance as the number of banks was reduced from 89 to 25 in 2005 due to the banking recapitalization exercise embarked upon by the regulatory authority which led to the consolidation of banks. The variables used in the study are nonperforming loan (NPL) as the dependent variable, while gross domestic product growth rate (GDPGR), inflation (INF), lending rate (LR), exchange rate (ER), money supply to gross domestic product (M2GDP) and unemployment rate (UR) as independent variables. The outcome of the regression result showed that GDPGR has a positive relationship with NPL. In addition, the result also revealed that INF and ER have a positive relationship with NPL while LR, M2GDP, and UR have a positive and significant relationship with NPL. Out of the six macroeconomic variables used in the study, it can be observed that only LR, M2GDP, and UR determines NPL in Nigeria while GDPGR, INF, and ER has a positive relationship with NPL but does not influence or determine NPL in Nigeria. Hence, the policy implication of this study is that the monetary authorities should ensure that the lending rate of interest charged on loans by deposit money banks is realistic to enable borrowers conveniently repay the borrowed fund. Finally, the government should direct its monetary and fiscal policies towards reducing unemployment by creating an enabling environment for business growth through the provision of social and infrastructural facilities.

Ofori-Abebrese, Pickson and Opare (2016) assessed the macroeconomic factors that influence loan performance of commercial banks in Ghana using HFC bank as a case study. The sample period used for the study was based on a quarterly data from 2008 to 2015. Using the ARDL bounds test of co-integration as an estimation technique, the results showed evidence of long run relationship among the variables. The results suggested that macroeconomic factors that influenced loan performance were inflation and T-bills. These therefore show that macroeconomic instabilities do have significant impact on loan performance. Hence, there is the need for policy makers to manage the economy well, embark on fiscal discipline and reduce government domestic borrowing to reduce Treasury bill rates in order to improve on loan performance. Fofack (2016) investigated the impact of macroeconomic dynamics on bank lending behavior in Nigeria between 1976 to 2016 using ordinary least square equation estimation, Johansen multivariate co integration and granger causality techniques. The findings of this study leads to various conclusive remarks. The result of the integration shows a long run equilibrium impact between macroeconomic variables and bank lending behavior in Nigeria. The OLS result reveals that bank capitalization ratio is the most important bank internal variables that explain their lending behavior given the vagaries of the macroeconomic environment in Nigeria while the money supply was found to be the most important macroeconomic variable that explains bank lending behavior in Nigeria. These variables (MOS & CAP) were found to be positive and significant at 5% level. Additionally, it was found that dynamics associated with monetary and macroeconomic variables (EXR, GDP, INF, and MPR& LIQ) have a negative impact on bank lending behavior in the short run. The result of causality shows a unidirectional causality flowing from CPS to GDP, CPS to MPR and CPS to CAP in all cases excerpt for EXR to CPS. There is also evidence of bidirectional causality between CAP & EXR, CAP & GDP, LIQ & MPR and CAP & LIQ. From the findings of this study and the conclusion derived there from, we recommend that macroeconomic policy makers should adopt policy measures geared toward controlling the rising trend of inflation, exchange rate, and interest rate in Nigeria. While frantic effort should be made by the manager of the economy toward restoring the Nigeria economy to the path of sustainable and inclusive growth with the view of aborting the harmful effect of loan curtailment on investment and economic growth in the long-run.

Khemraj and Passa (2014) investigated the impact of macroeconomic determinant of non-performing loans in Nigeria. Data from 1982-2015 was sourced from Secondary sources. Using the error correction methodology, the study reveals a strong positive relationship between non-performing loans and selected macroeconomic variables in the short run including Money supply (MOS) and Gross Domestic Product (GDP). Further, the study recommends for the introduction of measures that will minimize the incidence of non-performing Loans in Nigeria. Saba and Kouser (2016) examined the Macroeconomic determinants of non-performing loans in Kenya. Time series data for periods 1998 to 2015 was analyzed using a linear regression model. The dependent variable was the ratio of nonperforming loans to total loans. The independent variables were GDP growth rate, inflation rate, interest rate, exchange rate, remittances, unemployment rate and public debt. The empirical results indicated that inflation rate, interest rate, GDP growth rate, public debt, and exchange rate were not statistically significant while unemployment rate and

remittances were statistically significant at 0.05 level of confidence. The study concludes that the significant macroeconomic determinants of non-performing loans in Kenya for periods 1998 to 2015 were remittances and the unemployment rate. EL-Maude, Abdul-Rahman and Ibrahim (2017) in their study, examined the relationship between bank specific and macroeconomic determinant of non-performing loans in Nigerian deposit money banks over the period of 5 years (2010 to 2014). A sample of 10 banks out of 15 quoted by the Nigerian Stock Exchange (NSE) was considered on a cross sectional basis. The study adopted non-survey research design and secondary data was used, generated from the bank's annual reports and accounts, Central Bank of Nigeria (CBN) and Nigerian Stock Exchange fact book respectively. The data were analyzed using descriptive statistics, correlation coefficient and multiple regressions. As thus, Stated was used as a statistical tool for data analysis. The findings reveal positive significant relationship between Non-Performing loans and Loan to deposit and Bank size; whereas relationship between capital adequacy ratio and Inflation reveals a positive insignificant relationship; whereas Return on asset had negative insignificant relationship with the rate of non-performing loans. Based on the findings, it is recommended that CBN for policy purposes should frequently assess the lending habit of deposit money banks in Nigeria. Finally, strengthening securities market will have a positive impact on the general improvement of the banking institutes" thereby increasing the effectiveness of the financial sector.

Bloem and Gutter (2016) examined the determinants of NPAs in the Indian Banking sector and to study if these determinants vary across the three different ownership structures viz., public sector banks (PSBs), private banks (PBs) and foreign banks (FBs), of banks in India. The panel data for all the banks from 2005 to 2014 is collected from the official website of Reserve Bank of India (RBI), the Central Bank of the country. The econometric technique of Fixed Effects model and Random Effects model is used for the purpose. The results reveal that Macro economic factors, like log of per capita income (LPCY) and Inflation (INFN), are significantly affecting NPLs in Public Sector Banks (PSBs). In case of private banks (PBs) LPCY is highly significant while bank specific variables like size and total loans to total loans of the banking sector (TLTLBS) are significant at 10% level. For FBs none of the variables were significant. Berge and Boye, (2007) investigated whether macroeconomic uncertainty has a negative effect on Nordic banks loan supply. To test this, a model is defined with a gross loans/total asset ratio as the dependent variable and a proxy for macroeconomic uncertainty is used as the explanatory variable. A crucial step is the definition of macroeconomic uncertainty. In the paper five different measures of uncertainty is utilized as an attempt to create robust and extensive results. Three of the measures are indices and the remaining two are model-based GARCH variables. In total, 21 OLS regressions were performed and the results indicate that there might exist a negative relationship between macroeconomic uncertainty and Nordic banks' loan supply. However, this result is not robust for all of the five macroeconomic uncertainty proxies. In general, the indices seem to have a greater impact on the dependent variable in comparison to the GARCH variables. Joseph (2018) identified the macroeconomic and specific banking factors affecting the rate of non-performing loans in the banking sector of Bosnia and Herzegovina (BiH). The authors assume that the three macroeconomic and five specific banking factors influence the quality of the loan portfolio.

Aggregate data were used, which are taken from the Central Bank of BiH, Agency for Statistics of BiH and Labour and Employment Agency of BiH, and analyzed by descriptive statistics, correlation and regression analysis in the period from the first quarter of 2006 to the end of the fourth quarter of 2016. The empirical results show that there is a correlation between nonperforming loans and unemployment rate, inflation rates measured by the growth rate of consumer prices, return on assets and credit growth rates, while the impact of the growth rate of real gross domestic product, capital adequacy ratio, return on equity and active interest rates is not statistically significant.

Lafunte (2018) analyzed the impact of bank specific and macroeconomic variables on investment of commercial banks in Nepal. This study is based on secondary data commercial banks for the period of 2009/10 - 2015/16. The data are obtained from annual report of concerned banks. The descriptive and causal comparative research design has been used for the study. The relationship between investment and size(SZ), non-interest income(NII), credit to deposit ratio (CD), Spread, cost of production(COP), cash, return on assets(ROA), profit before tax(PRFT), gross domestic product(GDP), Interest rate, exchange rate(ER), inflation rate has been analyzed with the help of the multiple regression technique from SPSS- 18 version. The limitation of this research is that only sample commercial banks annual reports for the period 2009/2010 to 2015/2016 have been taken in order to address the subject under investigation. The predictors of investment have been limited by size (SZ), non-interest income(NII), credit to deposit ratio (CD), Spread, cost of production(COP), cash, return on assets(ROA), profit before tax(PRFT), gross domestic product(GDP), Interest rate, exchange rate(ER), inflation rate(IR). Thus, this study concludes that NII, CD, GDP and ER the major factors are affecting the investment of commercial banks in Nepal. Whereas NII is positive impact on Investment and rest three variables are negative effects. The findings of the study is valuable for bank managers, board of directors and regulator in assessing the strengths and weakness of the banks in the management of investment, where as its impact heading about in the future.

METHODOLOGY

This study used quasi-experimental research design approach for the data analysis. This approach combines theoretical consideration (a prior criterion) with the empirical observation and extract maximum information from the available data. It enables us therefore to observe the effects of explanatory variables on the dependent variables. The research also adopted descriptive research method. In designing this research, the type of data to be collected, nature of variables and technique of analysis were considered. The study relied on historical time series for its secondary data which formed the entire source for the study. Panel data collected from secondary sources were purely used. An initial investigation of the time series properties of the data is followed by examination of the existence of the possible long-run relationship between financial condition index and commercial bank stability by applying the multivariate co-integration methodology suggested by Johansen (1995). Nogales (2002) defined population as the total number of elements that conform to the characteristics needed for the purpose of the study. Thus, the population for this study includes the 22 licensed commercial banks in Nigeria as at December, 2019 (CBN,

2019). The population is further pruned to a sample of 13 banks as the study is focused on Banks that are listed on the floor of the Nigerian Stock Exchange. The rationale for the sample size is the relative ease in getting relevant and reliable data for the study from the annual reports submitted to the Exchange. The requirement was that the bank was in operation and has published accounts for the ten-year period 2015 to 2024. Dawson (2009) defined secondary research as collecting data using information from studies of other researchers in an area or subject. According to Ember and Ember (2009), secondary data is one collected by other people. Secondary panel data were collected from the annual reports and various databases of the banks for financial statement for the period 2015 to 2024.

3.7   Data Analysis Method

The method of data analysis used in this study was the panel data multiple linear regressions using Ordinary Least Square (OLS) method. This approach, which is a quantitative technique, includes tables and the test of the hypotheses formulated by using ordinary least square regression analysis at 5% level of significance. To arrive at a result that was lead to spurious regressions, the study will test for stationarity at different levels in the variables making up the model. Other tests that was carried out on the model include test of Normality, Durbin Watson Test of serial correlation, test of heteroskedasticity and test of model specification so as to achieve the objectives of our study as well as answer the research question and hypotheses. Moreover, in order to undertake a statistical evaluation of our analytical model, so as to determine the reliability of the results obtained and the coefficient of correlation (r) of the regression, the coefficient of determination (r^2), the student T-test and F-test was be employed.

Model Specification

The study adopts the panel data method of data analyses, which involve the pooled, fixed effect, the random effect likelihood test and the Hausman Test.

$$NPL = f(EXR, INTR, IFR, RGDP, M3) \tag{1}$$

Transforming equation 1 to econometrics form

$$NPL = \beta_0 + \beta_1 EXR + \beta_2 INTR + \beta_3 IFR + \beta_4 RGDP + \beta_5 M3 + \mu \tag{2}$$
Where:

NPL= Nonperforming loans as percentage of total loans and advances

EXR = Official Naira exchange rate per US Dollar

INTR = Interest rate measured by real interest rate

IFR = Inflation rate as composite price index

RGDP = Real gross domestic product

M3 = Broad money supply as percentage of GDP

μ =   Error Term

$\beta_1 - \beta_4$ =   Coefficient of Independent Variables to the Dependent Variables

β_0 = Regression Intercept

Panel Data

The main types of data that are generally available for empirical analysis are cross section, time series and panel. In cross-section data, values of one or more variables are collected for several sample entities, or units, at the same point in time. In time series data observe the values of one or more variables over a period of time. In panel data the same cross-sectional units (say firm or families or states) is surveyed over time. In short, panel data have space as well as time dimensions (Gujarati, 2003). All the previous studies used different types of regression approaches, usually panel. Baltagi and Giles (1998); Gujarati (2003); Green (2003) state the following advantages of panel data;

   i.   Using prior or extraneous data
   ii.   Combining time series and cross-sectional data
   iii. The omission of variables displaying high collinearity
   iv.   Obtaining new or transforming existing data

Two main panel data regression models (the fixed effects model and the random effects model) have different assumptions about the error term. The fixed effect model assumes that the individual effect term is constant. However, the random effect assumed that the individuals effect to be random disturbances drawn from probability distribution. Green (2003) stated that a general panel data regression model is written as:

$$\gamma_{it} = X'_{it}\,\beta + Z'_i\,\alpha + \varepsilon_{it}$$

(3)

Where:

γ_{it} is the dependent variable.

X'_{it} are the independent variables.

β and α are coefficients.

Z'_i is an unobserved individual specific effect

i and t are indices for individuals and time.

ε_{it} is the error term.

The heterogeneity or the individual effect is $Z_i \, \alpha$ where Z_i contains a constant term and a set of individual or group specific variables. These might be observed (e.g. sex, race and location) or unobserved (e.g. individuals heterogeneity in skill or preference and family specific characteristics) which are taken to be constant over time t (Green, 2003). As it stands, this model is a classical regression model. If Z_i is observed for all individuals, then the entire model can be treated as an ordinary linear model and fit by least squares (Green, 2003). The various cases we will consider are:

Pooled regression: if Z_i contains only a constant term, then the then ordinary least squares provides consistent and efficient estimates of the common intercept α and the slope vector of β. In this instance, the model reduces to:

$$\gamma_{it} = X'_{it} \, \beta + \alpha_i + \varepsilon_{it} \tag{4}$$

Panel data models can be also specified as fixed effects or a random effect that helps in capturing the effects of firm and time specific heterogeneities.

Fixed effect

If Z_i is unobserved, but correlated with X_{it} then the estimator of β is biased and inconsistent as a consequence of omitted variables. The fixed effect model provides consistent estimates in this case and it is specified as:

$$\gamma_{it} = X'_{it} \, \beta + \alpha_i + \varepsilon_{it} \tag{5}$$

Where:

γ_{it} is the dependent variable (= entity) and (= time)

β is the coefficient for the independent variable

X_{it} Represents one independent variable

α_t (i =1….n) is the unknown intercept for each entity (n entity-specific intercepts)

ε_{it} is the error term.

Where $\alpha_i = Z'_i \alpha$ embodies all the observable and specifics an estimable conditional mean. This fixed effects approach takes α_i to be a group specific constant term in the regression model. It should be noted that the term fixed effect does not vary over time (Green, 2002). Fixed effect is suitable as:

Random effect

If the unobserved individual heterogeneity, however formulated, can be assumed to be uncorrelated with the included variables, a random effects model is appropriate. Then the model can be formulated as:

$$\gamma_{it} = X'_{it}\,\beta + \alpha_i + u_i + \varepsilon_{it} \qquad\qquad (6)$$

That is, as a linear regression model with a compound disturbance that may be consistently, albeit inefficiently, estimated by least squares. This random effects approach specifies that u_i is a group specific random element, similar to ε_{it} except that for each group there is but a single draw that enters the regression identically in each period.

ANALYSIS AND DISCUSSION OF FINDINGS

Table 4.1: Hausman Test Analysis

	Chi-Sq. Statistic	Chi-Sq. d.f	Prob.	Decision	Remark
Model 1	9.174853	5	0.0000	Reject H0	Fixed effect model valid

Source: Computed from E-view 9.0

Following the various methods of panel data analysis, the question of which is the most appropriate or suitable methods arises. Therefore, some means of selecting the most suitable method among the different approaches especially between the FEM and REM is needed. In literature, a basic test that has been employed by most empirical studies to choose the most appropriate method is the Hausman Chi-square (Judge et al., 2007; Tian and Zeitun, 2007; Salawu, 2007). The Hausman (1978) specification test is the conventional test of whether the fixed or random effects model should be used. The question is whether there is significant correlation between the unobserved unit of observation specific random effects and the regressors. If no such correlation exists, then the Random Effects Model (REM) may be more appropriate. But when such a correlation exists, the Fixed Effects Model (FEM) would be more suitable because the REM model would be inconsistently estimated. However, if we are to go by the identification test, the Hausman's Chi-square statistics, the fixed effect result is more reliable as the P-value of the test is significant at 5% level while the P-values for the other two estimators are not significant. Table 1 summaries the Hausman test results for the regression models.

Table 2: The Estimated Regression Coefficient

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EXR	-0.057355	0.059729	-0.960261	0.3390
INTR	0.267256	0.158349	1.687762	0.0342
IFR	0.121605	0.194033	0.626723	0.5321
RGDP	-0.002133	0.067415	-0.031634	0.9748
M3	-0.042753	0.047549	-0.899146	0.3705
C	-2.116964	2.517495	-0.840901	0.4022
	Effects Specification			

Cross-section fixed (dummy variables)

R-squared	0.877068	Mean dependent var	5.176462
Adjusted R-squared	0.858409	S.D. dependent var	4.152610
S.E. of regression	1.562568	Akaike info criterion	3.858426
Sum squared resid	273.4612	Schwarz criterion	4.255469
Log likelihood	-232.7977	Hannan-Quinn criter.	4.019757
F-statistic	47.00442	Durbin-Watson stat	1.281918
Prob(F-statistic)	0.000000		

Source: Computed from E-view 9.0

The adjusted R^2 is satisfactory and ranges from 0.858409 which indicates that more than 85.8 of the variations in the nonperforming loans of the commercial banks have been explained by the variation in the Nigeria macroeconomic variables as modeled in the regression. The F-statistics and D-W statistics also showed significant values. The value of the DW statistics which ranges from 1.281918 further indicates that the regression equation is free from the problem of auto correlation. Hence, the results can be relied upon to make meaningful inferences. The F-statistics (Fisher statistics which is a measure of the overall goodness of fit of regression) is 47.00442. However, the prob (F-statistics) of 0.000000 is highly significant for nonperforming loans of commercial banks, which implies that the regression model fitted the data, therefore there, is goodness of fit. Further findings of the model as presented in the table is that exchange rate have negative and no significant effect, interest rate positive and significant effect, inflation rate have positive and no significant effect, real gross domestic product have negative and no significant effect while broad money supply have negative and no significant effect on nonperforming loans of the quoted commercial banks.

Based on empirical review such as the works of Kargbo (2000) which examined the implementation of macroeconomic factors that is exchange rate policies by West African countries and found that they had tremendous impacts on food prices, real incomes of farmers, and the terms of trade between tradable and non-tradable, further, he stated that reforms were a response to significant balance of payments. This provides evidence that indeed when developing countries make concerted efforts to curb exchange rate a corresponding effect could be felt on non-performing loans and this is because one key component of the movement towards bank credit is by curbing exchange rate because of large volume of importation. Failure of credit policy is measured by the rate of nonperforming loan (NPL) which indicates vulnerability of credit system in banking and financial industry. The findings of this research are in no isolation from previous researches such as the works of Lafunte (2018) which analyzed the impact of bank specific and macroeconomic variables on investment of commercial banks in Nepal.

Conclusion

This research work examined the effect of macroeconomic variables on quoted commercial banks nonperforming loans in Nigeria. The independent variables; Exchange rate, Interest rate, Inflation rate and gross domestic product and broad money supply was used as proxies for macroeconomics variables; while nonperforming loans the dependent variable. Existing literature shows that

researchers are yet to reach a consensus about the effect of macroeconomic variables on nonperforming loans in Nigerian commercial banks. Therefore, the effect is yet to be well established. This study has contributed to the research effort at empirical measure of the effect of macroeconomic variables on nonperforming loans in Nigeria. Failure of credit policy is measured by the rate of nonperforming loan (NPL) which indicates vulnerability of credit system in banking and financial industry. Data analysis revealed that a relationship exists between macroeconomic variables and nonperforming loans in Nigeria, and that exchange rate have negative and no significant effect, interest rate positive and significant effect, inflation rate have positive and no significant effect, real gross domestic product have negative and no significant effect while broad money supply have negative and no significant effect on nonperforming loans of the quoted commercial banks.

Recommendations

i. The government should direct their monetary and fiscal policies towards curbing the exchange rate by creating an enabling environment for credits expansion. To minimize the incidence of NPL, the authorities should create encouraging environment to further improve on the nation's exchange rate

ii. Sound credit management will achieve banking growth in Nigeria by CBN frequently assessing the lending habit of deposit money banks in Nigeria. This suggests that the supervisory authorities should ensure that the lending rate of interest charged on loans by commercial banks is realistic to enable borrowers conveniently repay the borrowed funds.

iii. The study recommends that government should control inflation rate which will improve on national price stability, controllable inflation accelerates employment increase, and aggregate output and income increase which will unexpectedly result to low rate of loan defaulters.

iv. Fluctuations in macroeconomic variables are major factors that cause bank creditors to default. As a result, NPLs cuts down banks' profitability, capital and causes stagnation of economic resources as stated in the discussion of findings. High rate of NPLs will decline the confidence of financial system.

v. Government should do more to improve economy activities that will enhance bank credits performance. Because unstable growth rates in GDP would results into poor loan quality. That is, both public and private sectors of the economy should be encouraged to repay their loans to the financial institutions, so that the process of financial intermediation can yield practical and positive results for the economy.

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