Macroeconomic Channel of Global Liquidity and Commercial Banks Soundness in Nigeria

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Abstract
This study analyzes the effect of macroeconomic channel of global liquidity on commercial banks soundness in Nigeria. Cross sectional data of commercial bank soundness was sourced from financial reports of commercial banks while other variables were sourced from Central Bank of Nigeria statistical bulletin. Capital adequacy, assets quality, earnings and profitability and liquidity were used as proxies for commercial bank soundness. Macroeconomic indicators were used as proxies for global liquidity. Ordinary least square methods were used to determine the extent to which global liquidity affect commercial bank soundness. Macroeconomic channel explains 54.6 percent of the variation in capital adequacy, 5 percent of the variation in asset quality and 3 percent of the variation in earnings and profitability and 22 percent of the variation in liquidity. The study concludes that macroeconomic channel of global liquidity has significant relationship with capital adequacy indicator of commercial banks soundness in Nigeria. That macroeconomic channel of global liquidity have significant no relationship with assets quality indicator of commercial banks soundness in Nigeria. That macroeconomic channel of global liquidity have significant no relationship with earnings and profitability indicator of commercial banks soundness in Nigeria. That macroeconomic channel of global liquidity have significant no relationship with liquidity indicator of commercial banks soundness in Nigeria. We recommend that further policies such as banking sector internationalization should be formulated to enhance global liquidity management among Nigeria commercial banks and capital inflow to the Nigeria financial market to achieve greater development in Nigerian financial sector. Policies should be advanced by the regulatory authorities to enhance the operational efficiency of financial market and enhance the money market instrument beyond national boarder to attract foreign portfolio investors in the money market. The capital market regulators should formulate policies to that will cushion the negative effect of international global liquidity on Nigeria capital market.

Keywords: ***Macroeconomic Channel, Global Liquidity, Commercial Banks Soundness, and Nigeria***

1. Introduction

The banking sector plays a significant role in the growth and development of any economy. The banks are the transmission channels for monetary policy and enhance the realization of macroeconomic and monetary policy goals. The intermediary function bridges the savings and investment gap in the economy and facilitates an efficient payment system. Bank failure has unprecedented negative effect on the economy. The fragility of the banking system limits the effectiveness of the monetary policy and monetary transmission mechanism (Toby, 2006). This means unsound banking system can undermine the realization of monetary and macroeconomic goals.

The argument on the source of financial crisis dates back to the great depression of the 1930s. To the Keynesian economists, financial crisis is the function of deficiencies in components of aggregate demand while the monetarist blamed financial crisis on monetary shocks. Banking system soundness is important as bank failure can undermine public confidence in the system, force a sudden contraction in money supply, curtail savings and investment, induce a collapse of the payment system and results in severe dislocation of the real sector (Toby, 2008), thus the aim of ensuring banking soundness is to prevent costly banking system crises and their associated adverse effect on the economy. Theories and empirical evidence has shown that banking system soundness can be examined at the micro and macro prudential perspectives. At the micro level banking soundness is a linear function of Capital Adequacy, Asset Quality, Management Quality, Earnings, Liquidity and Sensitivity (CAMELS). From the macro prudential perspective, bank soundness depends on economic activities, monetary policy and the international monetary environment. For instance, depreciating naira exchange rate though can lead to increase in bank profit through foreign exchange trading but can also lead to asset price bubble, lending boom and macroeconomic instability that is vulnerable to financial fragility. A rise in the ratio of current account deficit to Gross Domestic Product is generally accepted with large external capital inflows that are intermediated by the financial sector. This could facilitate asset and credit boom that is vulnerable to financial fragility. Toby (2008) opined that the fundamental problems of the banks in Nigeria particularly those classified unsound have been identified to include illiquidity, poor asset quality, unprofitable banking activities, weak corporate governance, insider dealings and weak capital base. At the macro level, banking soundness depend on the macroeconomic and monetary policy. The banking sector crisis of the 1990s was traceable to macroeconomic shocks and monetary policy shocks such as the withdrawal of all public funds from the banking system to control excess liquidity in the economy. The banking sector crisis in 2009 was traced to the global financial crisis that led to the collapse of the capital market following the margin loans from the banking industry. The Treasury Single Account of the present administration has threatened the liquidity of the banking sector that led some banks venture into the international financial market for source of capital. This study examined the effect of macroeconomic channels of global liquidity on commercial banks soundness in Nigeria.

2. Literature Review

2.1. Concept of Global Liquidity

Shin (2013) defined global liquidity as the ease of finance. Global liquidity can be understood best by discussing the forces that contribute to its increase or decrease. Since many central banks in advanced economies employ non-standard monetary policy measures, many observers link global liquidity with the spillovers from policymaking in these countries. However, the focus on monetary policy captures only a part of the nature of global liquidity, although certainly a very important one in the post-2008 global financial system. Global liquidity is created by three players in the financial system:

1. Liquidity is provided by financial intermediaries when they extend credit to the private sector. Over the recent years, this increasingly takes the form of cross-border credit.
2. Central banks provide liquidity or shorten the supply of liquidity as a consequence of their policy steps. This is true for both conventional monetary policy and non-conventional monetary policy such as asset purchases. It is the scale of recent unconventional policy steps that put central banks center stage in the debate about global liquidity. Central banks in advanced economies, among them the Fed, the Bank of England, the European Central Bank and the Bank of Japan, have drastically increased the size of their balance sheet, thus providing an enormous amount of liquidity to the financial system. As a consequence of the role of central banks in the creation of liquidity, monetary policy indicators, such as short-term interest rates, are often used to proxy global liquidity.
3. Changes in the risk appetite of investors drive global liquidity. A sudden drop in risk appetite of investors in advanced economies, often loosely referred to as an increase in risk aversion, leads to a drying-out of liquidity available to emerging economies as investors repatriate funds. The most pronounced spike in risk aversion was observed in the immediate aftermath of the Lehman Brothers collapse in September 2008.

2.2. Macroeconomic Channels

This refers to the effect of global liquidity on the emerging financial market through macroeconomic indicators. The indicators include public debt crisis, balance of payment crisis, currency crisis, trade imbalance and external reserves depletion.

2.2.1. External Debt

The theoretical literature on the relationship between the stock of external debt and growth has largely focused on the adverse effects of "debt overhang." Krugman (1988) defined debt overhang as a situation in which the expected repayment on external debt falls short of the contractual value of debt. If a country's debt level is expected to exceed the country's repayment ability with some probability in the future, expected debt service is likely to be an increasing function of the country's output level. Thus, some of the returns from investing in the domestic economy are effectively "taxed away" by existing foreign creditors and investment by domestic and foreign investors and thus economic growth is discouraged. In its original formulation, the debt overhangs theory centered on the adverse effects of external debt on investment in physical capital.

2.2.2. Currency Crisis

In general, a currency crisis can be defined as a situation when the participants in an exchange market come to recognize that a pegged exchange rate is about to fail, causing speculation against the peg that hastens the failure and forces a devaluation or appreciation. The

EWS were studied intensively due to their high importance in predicting banking and currency crises before occurring. Therefore, these predictions give policy makers the opportunity of taking counter actions proactively. Not to mention that both developed and emerging countries suffered from these crises, which also increases the importance of such studies. As we will see in the upcoming review, these methods include both parametric and non-parametric criterion such as qualitative indicators, signals extraction, limited independent regression and generation models, non-parametric criteria, signals approach, which mainly monitors some key indicators which tend to perform at the beginning of the crisis, while the econometric modeling Logit-Probit and Markov switching models, in such approaches researchers estimate a quantitative model, reflecting the probability of a currency crisis on a group of economic indicators. One of the first approaches to develop EWS to anticipate crises was firstly developed by Kaminsky and Reinhart (1996).

2.2.3. Balance of Payment

In Nigeria, current account balance has been deteriorating thereby reflecting a deficit especially after the oil shock of 1973. This deterioration of current account balance is as a result of faster growth in the merchandise import bill relative to merchandise exports, slow economic growth and continuing rise in inflation. Deterioration in terms of trade contributes to excess of import bills over export earnings. However, in the last decade, Nigeria current account balance improved in the year 2002, 2003 and 2009. The balance in 2003 was in surplus resulting from increased tourism earnings and grants inflows from abroad. Nigeria frequently registers surpluses in its trade in services and deficits in trade in goods. Nigeria has remained a net importer of food and net exporter of agricultural raw material since independence (Osoro, 2013). This has resulted to an export import gap which is worsened by inelasticity of demand for Nigeria primary products in foreign markets. There is high consumption for foreign goods compared to locally produced and processed goods.

2.2.4. Financial Openness

The broad definition of financial openness refers to free cross-boundary capital flows resulted from less capital restrictions imposed by government and more free market role in capital market. Ever since the debate over the impact of financial liberalization on growth started, many research studies have presented different findings. One of the main reasons that complicates empirical analysis and has caused the mixed results across studies is the variety of the measurements of financial openness proxies in the literature. Therefore, this paragraph provides a comparison on characteristics, advantages and disadvantages of a range of different financial openness indicators employed in current research. At present, more than ten different types of indicators of financial openness have been used as proxies of financial liberalization. There are mainly two types of measures of financial openness employed in the literature: de jure and de facto measures.

2.2.5. Trade Balance

From a narrow economic perspective, the issue concerns the relationship between capital flows and investment as it evolves over time. Growth is driven by investment, and investment is constrained by domestic savings, future growth and current consumption require a trade-off in a closed system. That is especially painful economically and difficult politically in poor countries where near-subsistence incomes sharply limit savings under any set of policies. Capital inflows remove the constraint, allowing both current consumption and investment to grow unconstrained by current domestic savings. Of course, removing the current savings constraint simply introduces a different trade-off, this time with future savings. Current capital inflows strongly predict future capital outflows, which must be financed by future savings. Riding the tiger in this way assumes that growth induced by capital flows will be sufficient to generate marginal savings that make the process self-financing.

2.2.6. External Reserves

Foreign exchange reserves adequacy is a key component of good macroeconomic channel management. It can be used to smooth random and temporary balance of payments shocks, to maintain exchange rate parity, avoid the macroeconomic costs of adjustment to temporary shocks and smooth adjustment of the macroeconomic impact on some permanent shocks (IMF, 1993). Foreign exchange reserves can also be used to smooth exchange rate volatility in illiquid foreign exchange markets.

Since the end of Bretton woods, many countries have formed the habit of keeping huge reserve. This phenomenal growth is a reflection of the enormous importance that countries attach to holding an adequate level of foreign reserve. The reasons for holding reserve are discussed below:

1) To protect the value of the Domestic Currency: During the gold standard era, many countries kept foreign reserve to back up the value of their domestic currency. This idea continued till the end of Bretton Woods's system when most developed countries started using up their reserves.
2) To finance international trade obligations: There is need for liquid reserves that can be used to settle trade obligations. Trade obligations include disequilibrium in the Balance of Trade and Balance of payments. In many developing countries like Nigeria, the settlement could be done through commercial banks.
3) Store of Value for future Consumption: Some countries hold their reserve in liquid form or as a form of savings for future use. This has been adopted by many oil-producing countries like Nigeria that maintain a part of reserve as Sovereign Wealth Fund. The reserve could be held in form of long-term securities, which cannot be accessed easily. This is to ensure that the country have stored some value for the future generation.

4) Exchange rate management: Exchange rate can be managed by foreign reserves to enabling an orderly absorption of international money and capital flows. Through the intervention in the foreign exchange markets, monetary authorities attempt to control the money supply as well as achieve a balance between demand and supply of foreign exchange.
5) To improve a country's credit worthiness: The international Credit Agencies consider the holding of reserves in their rating of country's credit worthiness. Therefore, many countries hold reserve in order to improve their credit ratings and credit worthiness.
6) To provide a fall back option: Many countries also hold their reserve as an available source of revenue to fall back on in case of natural disasters and other emergencies.

3. Commercial Bank Soundness

The concept of banking system soundness is derived from the financial system soundness indicators with various studies on the micro and macro prudential determinants. A sound banking system is a system in which individual banks accounting for most of the system's transactions are solvent and meet capital adequacy requirements (Toby, 2006). Banking system is considered sound, if it is capitally adequate and can withstand monetary and macroeconomic shocks in its operating environment.

Federal Deposit Insurance Cooperation Composite Ratings of Banking Soundness

The Federal Deposit Insurance Corporation developed rating method of classifying banks whether sound or not, composite ratings are based on a careful evaluation of an institution's managerial, operational, financial, and compliance performance.

Composite 1

Banks in this group are sound in every respect and generally have components rated 1 or 2. Any weaknesses are minor and can be handled in a routine manner by the board of directors and management. The banking institutions are the most capable of withstanding the vagaries of business conditions and are resistant to outside influences such as economic instability in their operating environment. These banking institutions are in substantial compliance with laws and regulations. As a result, these banks exhibit the strongest performance and risk management practices relative to the institution's size, complexity, and risk profile, and give no cause for supervisory concern.

Composite 2

Banks in this group are fundamentally sound. For a bank to receive this rating, generally no component rating should be more severe than 3 (FDIC, 2012). Only moderate weaknesses are present and are well within the board of directors' and management's capabilities and willingness to correct. These banks are stable and are capable of withstanding business fluctuations. These financial institutions are in substantial compliance with laws and regulations. Overall risk management practices are satisfactory relative to the institution's size, complexity, and risk profile. There are no material supervisory concerns and, as a result, the supervisory response is informal and limited.

Composite 3

Banks in this group exhibit some degree of supervisory concern in one or more of the component areas. These Banks exhibit a combination of weaknesses that may range from moderate to severe; however, the magnitude of the deficiencies generally will not cause a component to be rated more severely than 4. Management may lack the ability or willingness to effectively address weaknesses within appropriate time frames. Banks in this group generally are less capable of withstanding business fluctuations and are more vulnerable to outside influences than those institutions rated a composite 1 or 2. The above condition can be traced to noncompliance with laws and regulations. Risk management practices may be less than satisfactory relative to the institution's size, complexity, and risk profile. These Banks require more than normal supervision, which may include formal or informal enforcement actions. Failure appears unlikely, however, given the overall soundness and financial capacity of these Banks (FDIC, 2012).

Composite 4

Banks in this group generally exhibit unsafe and unsound practices or conditions. There are serious financial or managerial deficiencies that result in unsatisfactory performance. The problems range from severe to critically deficient. The weaknesses and problems are not being satisfactorily addressed or resolved by the board of directors and management. Banks in this group generally are not capable of withstanding monetary and macroeconomic shock in the operating environment. Again this can be traced to noncompliance with laws and regulations, excessive risk taking and insider dealings. Risk management practices are generally unacceptable relative to the institution's size, complexity, and risk profile. Close supervisory attention is required, which means, in most cases, formal enforcement action is necessary to address the problems. Banks in this group pose a risk to the deposit insurance fund. Failure is a distinct possibility if the problems and weaknesses are not satisfactorily addressed and resolved.

Composite 5

Banks in this group exhibit extremely unsafe and unsound practices or conditions; exhibit a critically deficient performance; often contain inadequate risk management practices relative to the institution's size, complexity, and risk profile; and are of the greatest supervisory concern. The volume and severity of problems are beyond management's ability or willingness to control or correct. Immediate outside financial or other assistance is needed in order for the Banks to be viable. Ongoing supervisory attention is necessary. Banks in this group pose a significant risk to the deposit insurance fund and failure is highly probable.

4. Measures of Commercial Bank Soundness

With the recommendation of the IMF, Central bank of Bosnia and Herzegovina began with a compilation of selected FSI exclusively for the banking sector, primarily because the share of this sector in the overall financial system. In order to calculate those indicators

aggregation and data consolidation were used. Aggregation is the summarization of data, so that the overall position of one or transaction for any group of reporting units is equal to the sum of data for all individual units within the group. Consolidation refers to the elimination of transactions between group members in order to express financial situation and performance of the group as one of the accounting subject in relation to other businesses outside the group, for statistical purposes. Consolidation of data is carried out on a group and sector level.

4.1.Financial Soundness Indicators: Profitability

To measure profitability, compiled FSI is as follows:

a) Return on average assets (ROAA) is an indicator of a set of basic indicators of financial soundness indicators and is intended to measure banks' efficiency in using its assets. This FSI provides an estimate of profit that can be used to cover losses in relation to assets. ROAA is calculated as the ratio of net income to average total assets.

b) Return on average equity (ROAE) measures the efficiency of banks in the use of capital. This FSI provides an average income that can be used to cover losses in relative to capital. ROAE is calculated as the ratio between net income and average capital.

c) Net interest income to total income is calculated as the ratio of net interest income and total income. Net interest income is the difference between total interest income and total interest expense.

d) Non-interest expenses to gross income measures the share of administrative costs in total revenue. This FSI is calculated as the ratio of non-interest expense and total revenue. The non-interest expenses include direct expense (cost value adjustments for items of the balance of risk and risk reserves for items and other off-balance sheet business and direct expenses) and operating expenses (salaries and expenses contributions, the cost of office space, other fixed assets and overheads and other operating costs).

4.2.Financial Soundness Indicators: Capital

Indicators that measure capital adequacy are:

a) Basic capital to total risk weighted is used to determine how the indicator of net capital to total risk weighted susceptible to changes in additional capital and regulatory reductions. Capital adequacy is measured by this indicator is calculated as the ratio of basic capital (Tier 1) and total risk-weighted, which consists of RWA and operational risk weighted (ORW).

b) Net capital to total risk weighted corresponding to methodology capital adequacy ratio (CAR) calculating, which is prescribed by Basel Core Principles for internationally active banks in the G10 countries, except that the calculation and analysis of capital does not include the impact of country risk and transfer risk. The capital adequacy ratio measured by this indicator is calculated as the ratio of net capital and total risk-weighted.

c) Although the prescribed CAR for internationally active banks to Basel Core Principles is 8% or more, the existing regulations in Bosnia and Herzegovina require this rate to be at least at 12%.

4.3.Financial Soundness Indicators: Liquidity

FSI liquidity is:

a) Liquid assets to total assets show how the banking sector is sensitive to liquidity crisis, and how it is able to meet the expected and unexpected demand for cash.

b) Liquid assets to short-term financial obligations as an indicator that measure liquidity mismatches of assets and liabilities, and gives an indication of the extent to which banks can withstand the withdrawal of short-term funds, and that they do not face with liquidity problem.

c) Short-term liabilities to total liabilities are short-term measure of participation in the total obligations, and represent a measure of liquidity risk caused by an unexpected increase in the share of total short-term financial obligations. It is calculated as the ratio of short-term liabilities to total liabilities.

4.4.Financial Soundness Indicators: Foreign Exchange Risk

Financial soundness indicators, which measures exposures to foreign exchange risk are FSI's who follow the sensitivity of the financial sector to market risks or the sensitivity to movements in exchange rates, interest rates and capital markets. Compiled FSI's, which measure foreign exchange risk, are as follows:

a) Loans in foreign currency and indexed loans to total loans are an indicator that calculates the share of loans in foreign currency and indexed loans to total loans. In countries where lending in foreign currencies are allowed, especially is important to monitor residents' share of loans denominated in foreign currencies.

b) Liabilities in foreign currencies to total financial obligations are one of auxiliary soundness indicator, and measure the relative importance of foreign sources of funding within the total liabilities. This indicator is necessary to observe together with the indicator loans in foreign currency and indexed loans to total loans; because the foreign exchange exposure of banks is less if the loans disbursed in foreign currencies are funded sources in foreign currencies. It is calculated as the ratio of liabilities in foreign currencies and the total financial obligations. It shows how the share of liabilities in foreign currencies in total financial obligations.

c) Net open position in foreign currencies in relation to the equity, belongs to one of basic FSI's. It is calculated as the ratio of net foreign exchange position and basic capital (Tier 1). Net foreign currency position is calculated as the sum of the values of all long and all short positions of individual banks. Individual foreign currency position is calculated as the sum of the amounts of assets items taken from the plus sign and liability items taken from the minus sign. Individual foreign currency position (open position) is the difference between items that relate to a particular foreign currency (including gold and other precious metals) in the assets and liabilities of the bank balance expressed in domestic currency (BAM), including the potential gain or loss.

4.5.Financial Soundness Indicators: Asset Quality

To measure the quality of assets compiled FSI are as follows:

a) Non-performing assets (NPA) to total assets measures the asset quality of the banking sector, and the participation of non-performing assets to total assets. NPLs accounted for the largest portion of poor-quality asset and therefore this indicator gives a good picture of the quality of the loan portfolio.

b) NPA less net of provisions to the equity shows the proportion of non-performing assets not covered by the provision of basic capital, and provides indications of additional provisions which could be taken to the existing NPA. It is important indicator of the ability of bank capital to absorb losses arising from non-performing loans.

c) NPLs to total loans represent an indicator of basic set of FSI. It is calculated as the ratio between the non-performing loans to total loans. This indicator is a measure of loans quality.

5. Empirical Review

Akani and Uzah (2019) examined the effects of credit expansion on commercial banks soundness in Nigeria. The objective was to ascertain the relationship between credit expansion and commercial banks soundness in Nigeria. Time series data was collected from Central Bank of Nigeria statistical bulletin and stock exchange fact book. Ordinary least square method was used as data analysis method.

Model I had capital adequacy indicator was modeled as the function of bank credit to manufacturing sector, communication and transport, mining and quarrying, agricultural sector and credit to small and medium scale enterprises while model II modeled capital adequacy indicator as the function of credit to private sector, net domestic credits, medium term credits, short term credits and long term credits. From the findings, Model I found that the independent variables explained 77 percent variations on capital adequacy ratio. The beta coefficient found that all the independent variables have positive effects on bank capital adequacy except credit to manufacturing sector. Model II found that the independent variables can explain 81 percent variations on capital adequacy while the beta coefficient found that all the independent variables have positive effects except medium term credit. The study concludes that credit expansion significantly relates to commercial banks soundness in Nigeria.

Hao, Nguyen and Trung(2017) examined the impact of the credit boom (2007-2010)on the soundness of the commercial banking system in Vietnam by using qualitative and quantitative methods. The results show that the credit boom in the period 2007-2010 had made Vietnam's banking system face many uncertainties such as difficulties in liquidity, increased non-performing loans. The influence of the credit boom on Vietnam's banking system is assessed on basic aspects such as asset quality, profitability, liquidity; capital adequacy. The quantitative analysis of the impact is made through the regression model using variables that show the characteristic of individual commercial bank and the volatility of the economy. The data is collected from 18 commercial banks in Vietnam in the period from 2005 to 2013, taken from the database Bank Scope and supplemented by information from the annual financial reports of the banks. Finally, in order to avoid the possibility of credit booms in the future and theireffects on bank soundness in Vietnam, some recommendations related to credit growth are proposed for the authorities and the commercial banks

Avdjiev et al. (2018) drew on the BIS international banking statistics, and find that a local monetary policy tightening induces an increased dollar lending to that country. They interpret this finding as evidence for internationally active banks drawing into that country either due to the interest differential or for taking up the slack left by weaker local banks.

Claessensand Horen (2014) studied the impact of the global financial crisis on banking globalization. The study found that global banking is going through some important structural transformations and these banking not becoming more fragmented at all, but rather is more regional focus and seem to be a greater variety of players. The study reported that the global banking system has not become more fragmented in terms of local foreign bank presence, local brick and mortar operations, also the study reported that global banking system with a larger variety of home countries active abroad and due to crisis which has accelerated a number of structural transformations.

6. Methodology

This study uses quasi experimental examine the relationship between macroeconomic channel of global liquidity and commercial banks soundness in Nigeria. For the purpose of this study, secondary data was sourced from Central Bank of Nigeria Statistical Bulletin, Financial Stability Report and Annual Reports of reporting commercial banks in Nigeria.

The researcher stated various instruments used in this study, which was used to analyze the data collected from various sources. Statistical and Econometrics approaches (like: Simple Linear Regression (SLR) Techniques) was applied in the analysis and involving Time Series Data also. A large number of works on this analysis of stock prices have applied Regression equations and were found useful see Harkavy (1953); Morgan and Taylor (1957); Baryosef and Kolodny (1976). But in most of the works, cross-section data were used, as this possesses some statistical limitations leading to bias results. For instance, Friend and Puckett (1964) observed that these limitations are associated with lack of homogeneity in the assumed underlying stock population between firms in the industry. This problem, they argued occurs because of omitted variables (risk, external finance and the problem of regression weighting).

Econometric model determination

The study employs a panel data regression analysis. This is because the data set consists of observations of multiple variables over multiple time periods. Thus panel data combines time series and cross sectional data. It allows the researcher the flexibility in modeling differences in behaviour across individuals firm, it is also appropriate for this study because of its ability to take into account heterogeneity problem or individual effects in cross sectional data and give more informative data. The panel regression equation is different from a regular time-series or cross section regression by the double subscript attached to each variable. The general form of the panel data model is specified as:

$$y_{i}, \alpha + \beta X_{i,t} + \varepsilon_{i,t} \qquad 1$$

The subscript *i* denotes the cross-sectional dimension and *t* represents the time-series dimension. The left-hand variable *y* represents the dependent variable in the model which represents the value relevance of firms listed on the Nigeria Stock Exchange, βx contains the set of explanatory variables in the estimation model, α is taken to be constant overtime *t* and specific to the individual cross-sectional unit

Model Specification

$$CBI = \beta_0 + \beta_1 BPD + \beta_2 OPE + \beta_3 EXR + \beta_4 EXD + \beta_5 TB + \beta_6 ER + \varepsilon_I \qquad 2$$

$$AQI = \beta_0 + \beta_1 BPD + \beta_2 OPE + \beta_3 EXR + \beta_4 EXD + \beta_5 TB + \beta_6 ER + \varepsilon_I \qquad 3$$

$$EPI = \beta_0 + \beta_1 BPD + \beta_2 OPE + \beta_3 EXR + \beta_4 EXD + \beta_5 TB + \beta_6 ER + \varepsilon_i \qquad 4$$

$$BSL = \beta_0 + \beta_1 BPD + \beta_2 OPE + \beta_3 EXR + \beta_4 EXD + \beta_5 TB + \beta_6 ER + \varepsilon_I \qquad 5$$

Where:

CBI = Capital Adequacy Base Indicators of Commercial Banks Soundness measured as tier 1 plus tier 2 capital to risk weight assets.
AQI = Asset Quality Indicators of Commercial Banks Soundness measured as nonperforming loans to total loans and advances
EPI = Earnings and Profitability Indicators of Commercial Banks Soundness measured by net profit margin
BSL = Banking Sector liquidity measured by total liquid assets to loans and advances
BPD = Balance of payment deficit as percentage of gross domestic product
OPE = Openness of the economy measures by import export to gross domestic product
EXR = Exchange rate measure by naira exchange rate per US dollar
EXD = External debt as percentage of gross domestic product
TB = Trade balance net export and import
ER = External Reserve percentage of gross domestic product

6.1. Method of Estimation and Testing

i. Panel data regression model specifications

Panel data can be estimated and analyzed in three different specification models. These are the correlation matrices the Fixed Effect Model (FEM) and the Random Effect Model (REM). In this study the fixed effect model is chosen over pooled OLS regression because of the advantages the former has over the latter.

ii. Pooled Regression Model

Albrigim Zappe and Winston (2011) stipulated that the error term should be independently and normally distributed with zero mean and constant variance and more importantly must not correlated with the independent variables pooled OLS linear regression is given as follows:

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{4it} + \beta_4 X_{5it} + U_{it} \qquad 6$$

Where Y_{it} is the dependent variable; β_0 is a constant term: X_1, to X_5, are the independent variables; β_1 *to* β_4 are slope parameters: i...n refers to the cross-sectional units and t is the time period.

ii. The fixed effect model

The fixed model can be specified as

$$Y_{it} = \alpha_i + \beta_1 X_{1it} + \beta_2 X_{it} + \beta_3 X_{it} + \beta_4 X_{it} + U_{it} \qquad 7$$

Where I in refers to the cross-sectional units representing the intercept value for each cross-sectional unit.

A-Priori Expectation

Base on theories such as market efficiency theory and empirical results examined in this study, the variables are expected to have a positive effect on the dependent variables. The mathematical implication is stated as follows: β_1 , β_1 , β_1 , β_1 >0

7. Analysis and Discussion Of Findings

The objective of the study as earlier stated was to examine the effect of financial market channel of global liquidity on commercial bank soundness in Nigeria.

Table 1: Macroeconomic Channel of Global Liquidity and Commercial Bank Capital Adequacy in Nigeria

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BPD	-0.256264	0.293980	-0.871703	0.3851
ER	0.332069	0.206391	1.608932	0.1103
EXD	-0.680403	0.704500	-0.965796	0.3361
EXR	0.071779	0.070050	1.024680	0.3076
FO	0.067010	0.164589	0.407134	0.6846
TB	0.004565	0.017817	0.256218	0.7982
C	4.789926	14.88655	0.321762	0.7482
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.609294	Mean dependent var		18.97885
Adjusted R-squared	0.546913	S.D. dependent var		4.399224
S.E. of regression	2.961196	Akaike info criterion		5.141483
Sum squared resid	1043.473	Schwarz criterion		5.563709
Log likelihood	-337.3330	Hannan-Quinn criter.		5.313064
F-statistic	9.767208	Durbin-Watson stat		1.442823
Prob(F-statistic)	0.000000			
Redundant Fixed Effects Tests				
Effects Test		Statistic	d.f.	Prob.
Cross-section F		13.501907	(13,119)	0.0000
Cross-section Chi-square		125.967314	13	0.0000
Correlated Random Effects - Hausman Test				
Test Summary		Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.

Cross-section random	31.538418	6	0.0000

Source: Extract from E-view 9.0 (2019)

From the table the probability coefficient of Hausman test 0.0000 is less than the critical value of 0.05, the study adopt fixed effect model.

The results in table 1 outline the regression results for macroeconomic channel of global liquidity and capital adequacy indicator of commercial banks in Nigeria and the six independent variables. The results show the fixed effect results the fixed effect results using the White-corrected standard errors and adjustments for fixed period effects. The adjusted R-squared indicates that approximately 54.6 percent of the variation in capital adequacy indicator is explained by the variables in the equation. In addition, the F-statistics show that the overall regression is significant at the 5 percent level, as the P-values are less than 0.05.

Table 2: Macroeconomic Channel of Global Liquidity and Commercial Bank Assets Quality Indicators in Nigeria

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BPD	-0.243678	0.562053	-0.433550	0.6653
ER	-0.031483	0.394662	-0.079772	0.9365
EXD	0.331308	1.347075	0.245946	0.8061
EXR	-0.013758	0.133901	-0.102749	0.9183
FO	-0.146181	0.314339	-0.465044	0.6427
TB	0.010108	0.034096	0.296458	0.7673
C	51.86709	28.59099	1.814106	0.0719
	Effects Specification			
			S.D.	Rho
Cross-section random			11.04390	0.7913
Idiosyncratic random			5.671163	0.2087
	Weighted Statistics			
R-squared	0.092254	Mean dependent var		7.470291
Adjusted R-squared	0.051303	S.D. dependent var		5.822484
S.E. of regression	5.671163	Sum squared resid		4277.558
F-statistic	2.252784	Durbin-Watson stat		1.910742
Prob(F-statistic)	0.042028			
	Unweighted Statistics			
R-squared	0.021136	Mean dependent var		46.60579
Sum squared resid	20133.37	Durbin-Watson stat		0.403865
	Redundant Fixed Effects Tests			
Equation: Untitled				

Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	38.922847	(13,120)	0.0000
Cross-section Chi-square	231.259540	13	0.0000
Correlated Random Effects - Hausman Test			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	1.730628	6	0.1950

Source: Extract from E-view 9.0 (2019)

From the table the probability coefficient of Hausman test 0.1950is greater than the critical value of 0.05, the study adopts random effect mode is appropriate. The results in table 2 outline the regression results for macroeconomic channel of global liquidity and assets indicator of commercial banks in Nigeria and the six independent variables. The results show the fixed effect results the fixed effect results using the White-corrected standard errors and adjustments for fixed period effects. The adjusted R-squared indicates that approximately 5 percent of the variation in asset quality indicator is explained by the variables in the equation. In addition, the F-statistics show that the overall regression is significant at the 5 percent level, as the P-values are less than 0.05.

Table 3: Macroeconomic Channel of Global Liquidity and Commercial Bank Earnings and Profitability Indicators in Nigeria

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BPD	18.54290	7.591625	2.442547	0.0161
ER	-8.633877	5.354248	-1.612528	0.1095
EXD	42.55533	18.27882	2.328122	0.0216
EXR	-4.053219	1.819927	-2.227133	0.0278
FO	-11.61755	4.273133	-2.718742	0.0075
TB	-0.851774	0.464857	-1.832333	0.0694
C	911.5640	387.1170	2.354751	0.0202
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.167931	Mean dependent var		17.65094
Adjusted R-squared	0.033954	S.D. dependent var		77.36985
S.E. of regression	76.04500	Akaike info criterion		11.63381
Sum squared resid	682375.4	Schwarz criterion		12.05805
Log likelihood	-782.7331	Hannan-Quinn criter.		11.80621
F-statistic	1.253431	Durbin-Watson stat		2.250961
Prob(F-statistic)	0.228210			

Redundant Fixed Effects Tests			
Equation: Untitled			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	0.929307	(13,118)	0.5253
Cross-section Chi-square	13.451221	13	0.4136
Correlated Random Effects - Hausman Test			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	12.201793	6	0.0012

Source: Extract from E-view 9.0 (2019)

From the table the probability coefficient of Hausman test 0.0012 is less than the critical value of 0.05, the study adopt fixed effect mode is appropriate. The results in Table 3 outline the regression results for macroeconomic channel of global liquidity and earnings and profitability indicator of commercial banks in Nigeria and the six independent variables. The results show the fixed effect results the fixed effect results using the White-corrected standard errors and adjustments for fixed period effects. The adjusted R-squared indicates that approximately 3 percent of the variation in earnings and profitability indicator is explained by the variables in the equation. In addition, the F-statistics show that the overall regression is not significant at the 5 percent level, as the P-values are less than 0.05.

Table 4: Macroeconomic Channel of Global Liquidity and Commercial Bank Liquidity Indicators in Nigeria

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TB	-0.014589	0.027728	-0.526132	0.5997
FO	-0.414738	0.255633	-1.622396	0.1071
EXR	-0.156970	0.108894	-1.441497	0.1518
EXD	1.603727	1.095497	1.463927	0.1456
ER	-0.529753	0.320955	-1.650551	0.1012
BPD	0.343474	0.457084	0.751446	0.4537
C	70.27577	23.12712	3.038673	0.0029
Effects Specification				
			S.D.	Rho
Cross-section random			0.000000	0.0000
Idiosyncratic random			4.612022	1.0000
Weighted Statistics				
R-squared	0.465099	Mean dependent var		33.32386

Adjusted R-squared	0.222923	S.D. dependent var	4.496314
S.E. of regression	4.444480	Sum squared resid	2627.203
F-statistic	1.543512	Durbin-Watson stat	1.971087
Prob(F-statistic)	0.168795		
Unweighted Statistics			
R-squared	0.065099	Mean dependent var	33.32386
Sum squared resid	2627.203	Durbin-Watson stat	1.971087

Redundant Fixed Effects Tests

Effects Test	Statistic	d.f.	Prob.
Cross-section F	0.270192	(13,120)	0.9946
Cross-section Chi-square	4.039087	13	0.9908

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	3.074932	6	0.2537

Source: Extract from E-view 9.0 (2019)

From the table the probability coefficient of Hausman test 0.2537 is greater than the critical value of 0.05, the study adopt random effect mode is appropriate. The results in table 4 outline the regression results for macroeconomic channel of global liquidity and liquidity indicator of commercial banks in Nigeria and the six independent variables. The results show the fixed effect results the fixed effect results using the White-corrected standard errors and adjustments for random period effects. The adjusted R-squared indicates that approximately 22 percent of the variation in liquidity indicator is explained by the variables in the equation. In addition, the F-statistics show that the overall regression is not significant at the 5 percent level, as the P-values are less than 0.05.

8. Discussion of Findings

The estimated regression model examined the effect of macroeconomic channel of global liquidity and commercial banks capital adequacy indicator in Nigeria. Evidence from the result found that balance of payment deficit has a negative but no significant effect on capital adequacy indicator. With the coefficient of 0.256264 as regression coefficient, -0.871703 as t-statistics and 0.3851 as probability coefficient justifies that balance of payment deficit justifies that the variables will negatively affect commercial banks capital adequacy indictor. This implies that increase on the variable will lead to 0.25 percent decrease on capital adequacy of Nigeria commercial banks. This finding confirms our a-priori expectation as balance of payment deficit is a symbol of macroeconomic instability and has the capacity to cause business cycle. Nigeria in early 1980s had balance of payment deficit crisis that affected the macroeconomic variables such nominal interest rate, real gross domestic product and other macroeconomic indicators. The adoption of structural adjustment

programme and the deregulation of the economy in the quarter of 1986 were traceable to macroeconomic instability caused by balance of payment crisis; this was also informed by the devaluation of Nigerian currency in 1973.
Evidence from the regression result found that exchange rates have positive and insignificant effect on ital. adequacy indicator of Nigeria commercial banks within the periods covered in this study. The estimated regression results had a coefficient of 0.071779,0.407134 as t-statistic and 0.3076 as probability justifies that naira exchange rate per US dollar have positive but insignificant effect on Nigeria commercial banks capital adequacy indicator. This finding confirms our a-priori expectation and justifies various reforms formulated by the Nigerian government to manage the depreciating naira exchange rate per US Dollar. For instance Nigeria had over 20 exchange rate policies directed towards ensuring stability of naira value to other foreign currencies. The Dutch Auction Sale System used today as exchange rate policy was introduced in 1981 abolished in 1988 and re-introduced in 2004. The study also confirm the floating exchange rate system practiced in Nigeria but deregulation of the financial market in the last quarter of 1986 (Onoh, 2007).

Furthermore, the estimated regression model on the relationship between external debt and commercial banks capital adequacy indicator proved that external debt have negative and insignificant effect on capital adequacy indicators of Nigeria commercial banks with the coefficient 0.680403 as regression coefficient, 0.965796 as t-statistics and 0.3361 as probability coefficient indicates that the variable can reduce capital adequacy by 0.6 percent. This finding confirms the negative effect of external debt on the developing economies such as Nigeria. It implies that excessive external debt in Nigeria will a detrimental effect on the capital adequacy of Nigeria commercial banks. This finding further confirms that there is debt over hanged challenge in Nigeria. This has effect of affecting Nigerian financial market and the economy at large. It could be recalled that Nigeria had been suffering from debt crisis which has affected Nigeria macroeconomic stability negatively in the last three decades. Moreover, the estimated regression model on the relationship between external reserve and commercial banks capital adequacy indicators in Nigeria proved that with the coefficient of 0.332069 as regression coefficient, 1.608932 as t-statistics and 0.1103 as probability coefficient indicates that Nigerian external reserves have positive but insignificant effect on capital adequacy indicator of Nigerian commercial banks. This finding confirms our a-priori expectation and justifies the reason for central Bank of Nigeria entrusting the external reserve management on commercial banks. It could be recalled that the Central Bank of Nigeria after the consolidation entrusted some Nigeria commercial banks with the responsibility of Nigeria external reserve management. The study also confirms the international financial integration and globalization objectives formulated by joint central bank governors and the International Monetary Fund in 2013. The study consolidates the opinion of scholars on global financial market place such as international money market, the Eurobond market. Nigerian banks in 2015 ventured into the international money market to source for capital with the treasury single account policy that affected the liquidity of the banking industry.

From the estimated regression result on the relationship between financial openness and the capital adequacy indicator of Nigeria commercial banks found that with the regression coefficient of 0.067010, 0.407134 as parameter for t-statistics and 0.6846 as probability

coefficient indicates that the variables have positive but no significant effect on capital adequacy indicator of Nigeria commercial banks over the period covered in this study. The findings confirm our a-priori expectation and justify the objectives of financial sector deregulation and internalization. It could be recalled that Nigerian capital market was deregulated and internalized with the introduction of Central Security Clearing System in 2001. It also confirm various policies such as the financial sector reforms which was aimed at consolidating the Nigerian financial market to attract foreign investors and the establishment of Nigeria Investment Promotion Council empowered with the responsibility of ensuring that the Nigerian business environment is enabling for foreign investors.

Further findings from the study on the effect of trade balance on Nigeria commercial banks capital adequacy shows that with the estimated coefficient of 0.004565 as parameter for trade balance, 0.256218 as parameter for t-statistics and 0.7982 as probability coefficient proved that Nigeria trade balance have positive but insignificant effect on Nigeria commercial banks capital adequacy. The findings confirm our a-priori expectation and justify various macroeconomic reforms directed towards ensuring greater Nigeria exports such as export subsidies, export tax incentive and capital allowance. The study also confirms the macroeconomic reforms for economic diversification and justifies import restriction directed towards achieving favourable trade balance in Nigeria.

The estimated regression model examined the effect of macroeconomic channel of global liquidity and commercial banks asset quality indicator in Nigeria. Evidence from the result found that balance of payment deficit has a negative but no significant effect on asset quality indicator. With the coefficient of 0.256264 as regression coefficient, -0.871703 as t-statistics and 0.3851 as probability coefficient justifies that balance of payment deficit justifies that the variables will negatively affect commercial banks capital adequacy indictor. This implies that increase on the variable will lead to 0.25 percent decrease on capital adequacy of Nigeria commercial banks. This finding confirms our a-priori expectation as balance of payment deficit is a symbol of macroeconomic instability and has the capacity to cause business cycle. Nigeria in early 1980s had balance of payment deficit crisis that affected the macroeconomic variables such nominal interest rate, real gross domestic product and other macroeconomic indicators. The adoption of structural adjustment programme and the deregulation of the economy in the quarter of 1986 was traceable to macroeconomic instability caused by balance of payment crisis, this was also informed by the devaluation of Nigerian currency in 1973.

Evidence from the regression result found that exchange rates have positive and insignificant effect on ital. adequacy indicator of Nigeria commercial banks within the periods covered in this study. The estimated regression results had a coefficient of 0.071779, 0.407134 as t-statistic and 0.3076 as probability justifies that naira exchange rate per US dollar have positive but insignificant effect on Nigeria commercial banks asset quality indicator. This finding confirms our a-priori expectation and justifies various reforms formulated by the Nigerian government to manage the depreciating naira exchange rate per US Dollar. For instance Nigeria had over 20 exchange rate policies directed towards ensuring stability of naira value to other foreign currencies. The Dutch Auction Sale System used today as

exchange rate policy was introduced in 1981 abolished in 1988 and re-introduced in 2004. The study also confirm the floating exchange rate system practiced in Nigeria but deregulation of the financial market in the last quarter of 1986 (Onoh, 2007).

Furthermore, the estimated regression model on the relationship between external debt and commercial banks asset quality indicator proved that external debt have negative and insignificant effect on asset quality indicators of Nigeria commercial banks with the coefficient 0.680403 as regression coefficient, 0.965796 as t-statistics and 0.3361 as probability coefficient indicates that the variable can reduce capital adequacy by 0.6 percent. This finding confirms the negative effect of external debt on the developing economies such as Nigeria. It implies that excessive external debts in Nigeria will be a detrimental effect on the capital adequacy of Nigeria commercial banks. This finding further confirms that there is debt over hanged challenge in Nigeria. This has effect of affecting Nigerian financial market and the economy at large. It could be recalled that Nigeria had been suffering from debt crisis, which has affected Nigeria macroeconomic stability negatively in the last three decades. Moreover, the estimated regression model on the relationship between external reserve and commercial banks asset quality indicators in Nigeria proved that with the coefficient of 0.332069 as regression coefficient, 1.608932 as t-statistics and 0.1103 as probability coefficient indicates that Nigerian external reserves have positive but insignificant effect on asset quality indicator of Nigerian commercial banks. This finding confirms our a-priori expectation and justifies the reason for central Bank of Nigeria entrusting the external reserve management on commercial banks. It could be recalled that the Central Bank of Nigeria after the consolidation entrusted some Nigeria commercial banks with the responsibility of Nigeria external reserve management. The study also confirms the international financial integration and globalization objectives formulated by joint central bank governors and the International Monetary Fund in 2013. The study consolidates the opinion of scholars on global financial market place such as international money market, the Eurobond market. Nigerian banks in 2015 ventured into the international money market to source for capital with the treasury single account policy that affected the liquidity of the banking industry.

From the estimated regression result on the relationship between financial openness and the asset quality indicator of Nigeria commercial banks found that with the regression coefficient of 0.067010, 0.407134 as parameter for t-statistics and 0.6846 as probability coefficient indicates that the variables have positive but no significant effect on asset quality indicator of Nigeria commercial banks over the period covered in this study. The findings confirm our a-priori expectation and justify the objectives of financial sector deregulation and internalization. It could be recalled that Nigerian capital market was deregulated and internalized with the introduction of Central Security Clearing System in 2001. It also confirm various policies such as the financial sector reforms which was aimed at consolidating the Nigerian financial market to attract foreign investors and the establishment of Nigeria Investment Promotion Council empowered with the responsibility of ensuring that the Nigerian business environment is enabling for foreign investors.

Further findings from the study on the effect of trade balance on Nigeria commercial banks capital adequacy shows that with the estimated coefficient of 0.004565 as parameter for trade balance, 0.256218 as parameter for t-statistics and 0.7982 as probability coefficient proved that Nigeria trade balance have positive but insignificant effect on Nigeria commercial banks capital adequacy. The findings confirm our a-priori expectation and justify various macroeconomic reforms directed towards ensuring greater Nigeria exports such as export subsidies, export tax incentive and capital allowance. The study also confirms the macroeconomic reforms for economic diversification and justifies import restriction directed towards achieving favourable trade balance in Nigeria.

The estimated regression model examined the effect of macroeconomic channel of global liquidity and commercial banks earnings and profitability in Nigeria. Evidence from the result found that balance of payment deficit has a negative but no significant effect on earnings and profitability. With the coefficient of 0.256264 as regression coefficient, -0.871703 as t-statistics and 0.3851 as probability coefficient justifies that balance of payment deficit justifies that the variables will negatively affect commercial banks capital adequacy indictor. This implies that increase on the variable will lead to 0.25 percent decrease on capital adequacy of Nigeria commercial banks. This finding confirms our a-priori expectation as balance of payment deficit is a symbol of macroeconomic instability and has the capacity to cause business cycle. Nigeria in early 1980s had balance of payment deficit crisis that affected the macroeconomic variables such nominal interest rate, real gross domestic product and other macroeconomic indicators. The adoption of structural adjustment programme and the deregulation of the economy in the quarter of 1986 was traceable to macroeconomic instability caused by balance of payment crisis, this was also informed by the devaluation of Nigerian currency in 1973.

Evidence from the regression result found that exchange rates have positive and insignificant effect on ital. adequacy indicator of Nigeria commercial banks within the periods covered in this study. The estimated regression results had a coefficient of 0.071779, 0.407134 as t-statistic and 0.3076 as probability justifies that naira exchange rate per US dollar have positive but insignificant effect on Nigeria commercial banks earnings and profitability. This finding confirms our a-priori expectation and justifies various reforms formulated by the Nigerian government to manage the depreciating naira exchange rate per US Dollar. For instance Nigeria had over 20 exchange rate policies directed towards ensuring stability of naira value to other foreign currencies. The Dutch Auction Sale System used today as exchange rate policy was introduced in 1981 abolished in 1988 and re-introduced in 2004. The study also confirm the floating exchange rate system practiced in Nigeria but deregulation of the financial market in the last quarter of 1986 (Onoh, 2007).

Furthermore, the estimated regression model on the relationship between external debt and commercial banks earnings and profitability proved that external debt have negative and insignificant effect on earnings and profitability of Nigeria commercial banks with the coefficient 0.680403 as regression coefficient, 0.965796 as t-statistics and 0.3361 as probability coefficient indicates that the variable can reduce capital adequacy by 0.6 percent. This finding confirms the negative effect of external debt on the developing economies such

as Nigeria. It implies that excessive external debts in Nigeria will be a detrimental effect on the capital adequacy of Nigeria commercial banks. This finding further confirms that there is debt over hanged challenge in Nigeria. This has effect of affecting Nigerian financial market and the economy at large. It could be recalled that Nigeria had been suffering from debt crisis, which has affected Nigeria macroeconomic stability negatively in the last three decades. Moreover, the estimated regression model on the relationship between external reserve and commercial banks earnings and profitability in Nigeria proved that with the coefficient of 0.332069 as regression coefficient, 1.608932 as t-statistics and 0.1103 as probability coefficient indicates that Nigerian external reserves have positive but insignificant effect on earnings and profitability of Nigerian commercial banks. This finding confirms our a-priori expectation and justifies the reason for central Bank of Nigeria entrusting the external reserve management on commercial banks. It could be recalled that the Central Bank of Nigeria after the consolidation entrusted some Nigeria commercial banks with the responsibility of Nigeria external reserve management. The study also confirms the international financial integration and globalization objectives formulated by joint central bank governors and the International Monetary Fund in 2013. The study consolidates the opinion of scholars on global financial market place such as international money market, the Eurobond market. Nigerian banks in 2015 ventured into the international money market to source for capital with the treasury single account policy that affected the liquidity of the banking industry.

From the estimated regression result on the relationship between financial openness and the earnings and profitability of Nigeria commercial banks found that with the regression coefficient of 0.067010, 0.407134 as parameter for t-statistics and 0.6846 as probability coefficient indicates that the variables have positive but no significant effect on earnings and profitability of Nigeria commercial banks over the period covered in this study. The findings confirm our a-priori expectation and justify the objectives of financial sector deregulation and internalization. It could be recalled that Nigerian capital market was deregulated and internalized with the introduction of Central Security Clearing System in 2001. It also confirm various policies such as the financial sector reforms which was aimed at consolidating the Nigerian financial market to attract foreign investors and the establishment of Nigeria Investment Promotion Council empowered with the responsibility of ensuring that the Nigerian business environment is enabling for foreign investors.

Further findings from the study on the effect of trade balance on Nigeria commercial banks capital adequacy shows that with the estimated coefficient of 0.004565 as parameter for trade balance, 0.256218 as parameter for t-statistics and 0.7982 as probability coefficient proved that Nigeria trade balance have positive but insignificant effect on Nigeria commercial banks capital adequacy. The findings confirm our a-priori expectation and justify various macroeconomic reforms directed towards ensuring greater Nigeria exports such as export subsidies, export tax incentive and capital allowance. The study also confirms the macroeconomic reforms for economic diversification and justifies import restriction directed towards achieving favourable trade balance in Nigeria.

The estimated regression model examined the effect of macroeconomic channel of global liquidity and commercial banks liquidity in Nigeria. Evidence from the result found that balance of payment deficit has a negative but no significant effect on liquidity. With the coefficient of 0.256264 as regression coefficient, -0.871703 as t-statistics and 0.3851 as probability coefficient justifies that balance of payment deficit justifies that the variables will negatively affect commercial banks capital adequacy indictor. This implies that increase on the variable will lead to 0.25 percent decrease on capital adequacy of Nigeria commercial banks. This finding confirms our a-priori expectation as balance of payment deficit is a symbol of macroeconomic instability and has the capacity to cause business cycle. Nigeria in early 1980s had balance of payment deficit crisis that affected the macroeconomic variables such nominal interest rate, real gross domestic product and other macroeconomic indicators. The adoption of structural adjustment programme and the deregulation of the economy in the quarter of 1986 was traceable to macroeconomic instability caused by balance of payment crisis, this was also informed by the devaluation of Nigerian currency in 1973.

Evidence from the regression result found that exchange rates have positive and insignificant effect on ital. adequacy indicator of Nigeria commercial banks within the periods covered in this study. The estimated regression results had a coefficient of 0.071779, 0.407134 as t-statistic and 0.3076 as probability justifies that naira exchange rate per US dollar have positive but insignificant effect on Nigeria commercial banks liquidity. This finding confirms our a-priori expectation and justifies various reforms formulated by the Nigerian government to manage the depreciating naira exchange rate per US Dollar. For instance Nigeria had over 20 exchange rate policies directed towards ensuring stability of naira value to other foreign currencies. The Dutch Auction Sale System used today as exchange rate policy was introduced in 1981 abolished in 1988 and re-introduced in 2004. The study also confirm the floating exchange rate system practiced in Nigeria but deregulation of the financial market in the last quarter of 1986 (Onoh, 2007).

Furthermore, the estimated regression model on the relationship between external debt and commercial banks liquidity proved that external debt have negative and insignificant effect on liquidity s of Nigeria commercial banks with the coefficient 0.680403 as regression coefficient, 0.965796 as t-statistics and 0.3361 as probability coefficient indicates that the variable can reduce capital adequacy by 0.6 percent. This finding confirms the negative effect of external debt on the developing economies such as Nigeria. It implies that excessive external debt in Nigeria will a detrimental effect on the capital adequacy of Nigeria commercial banks. This finding further confirms that there is debt over hanged challenge in Nigeria. This has effect of affecting Nigerian financial market and the economy at large. It could be recalled that Nigeria had been suffering from debt crisis which has affected Nigeria macroeconomic stability negatively in the last three decades. Moreover, the estimated regression model on the relationship between external reserve and commercial banks liquidity s in Nigeria proved that with the coefficient of 0.332069 as regression coefficient, 1.608932 as t-statistics and 0.1103 as probability coefficient indicates that Nigerian external reserves have positive but insignificant effect on liquidity of Nigerian commercial banks. This finding confirms our a-priori expectation and justifies the reason for central Bank of Nigeria entrusting

the external reserve management on commercial banks. It could be recalled that the Central Bank of Nigeria after the consolidation entrusted some Nigeria commercial banks with the responsibility of Nigeria external reserve management. The study also confirms the international financial integration and globalization objectives formulated by joint central bank governors and the International Monetary Fund in 2013. The study consolidates the opinion of scholars on global financial market place such as international money market, the Eurobond market. Nigerian banks in 2015 ventured into the international money market to source for capital with the treasury single account policy that affected the liquidity of the banking industry.

From the estimated regression result on the relationship between financial openness and the liquidity of Nigeria commercial banks found that with the regression coefficient of 0.067010, 0.407134 as parameter for t-statistics and 0.6846 as probability coefficient indicates that the variables have positive but no significant effect on liquidity of Nigeria commercial banks over the period covered in this study. The findings confirm our a-priori expectation and justify the objectives of financial sector deregulation and internalization. It could be recalled that Nigerian capital market was deregulated and internalized with the introduction of Central Security Clearing System in 2001. It also confirms various policies such as the financial sector reforms which was aimed at consolidating the Nigerian financial market to attract foreign investors and the establishment of Nigeria Investment Promotion Council empowered with the responsibility of ensuring that the Nigerian business environment is enabling for foreign investors.

Further findings from the study on the effect of trade balance on Nigeria commercial banks capital adequacy shows that with the estimated coefficient of 0.004565 as parameter for trade balance, 0.256218 as parameter for t-statistics and 0.7982 as probability coefficient proved that Nigeria trade balance have positive but insignificant effect on Nigeria commercial banks capital adequacy. The findings confirm our a-priori expectation and justify various macroeconomic reforms directed towards ensuring greater Nigeria exports such as export subsidies, export tax incentive and capital allowance. The study also confirms the macroeconomic reforms for economic diversification and justifies import restriction directed towards achieving favourable trade balance in Nigeria.

9. Conclusion and Recommendations

From the estimated regression result in model V, the adjusted R-squared indicates that approximately 27 percent of the variation in capital adequacy indicator is explained by the variables in the equation. This study therefore concludes that macroeconomic channel of global liquidity have significant relationship with capital adequacy indicator of commercial banks soundness in Nigeria

From the estimated regression result in model VI, the adjusted R-squared indicates that approximately 5 percent of the variation in assets quality indicator is explained by the variables in the equation. This study therefore concludes that macroeconomic channel of global liquidity have significant no relationship with assets quality indicator of commercial banks soundness in Nigeria

From the estimated regression result in model VII, the adjusted R-squared indicates that approximately 3 percent of the variation in earnings and profitability is explained by the variables in the equation. This study therefore concludes that macroeconomic channel of global liquidity has significant no relationship with earnings and profitability indicator of commercial banks soundness in Nigeria

From the estimated regression result in model VIII, the adjusted R-squared indicates that approximately 22 percent of the variation in liquidity indicator is explained by the variables in the equation. This study therefore concludes that macroeconomic channel of global liquidity has significant no relationship with liquidity indicator of commercial banks soundness in Nigeria

10. Recommendations

1. Macroeconomic policies such as investment policy should be reformed and the operating environment made investable for investors to enhance deposit mobilization, credit allocation and eliminate the rate of nonperforming loans. Monetary and macroeconomic policy should be properly formulated to reduce the level of instability that encourage financial crisis from the domestic and international environment.
2. Macroeconomic policy such as diversification of the economy should be considered paramount, public expenditure and government revenue should be well managed to enhance macroeconomic performance that will eliminate banking system fragility. Nigerian external debt should be properly managed; the debt management office should formulate policies that cushion the negative effect of external debt on the development of Nigerian financial market.
3. The depreciating naira exchange rate should be integrated to the monetary and the macroeconomic policies to avert its negative effect on the economy and the banking industry. The regulatory authorities and the bank management should formulate policies to manage international monetary shocks, the international financial environment and global financial crises to enhance Nigerian banking system soundness.

References

Akani, H. W & Uzak, K. C (2019). Credit expansion and commercial banks soundness in Nigeria: an application of multi -dimensional analysis. *European Journal of Business and Innovation Research, 7(1), 1-29.*

Albright, C. S., Winston, W.L. & Zappe, C. J. (2011).Data analysis and decision.making 4th edition. © 2011, 2009 south-western, cengage learning.

Avdjiev, S., C (2018). Transmission of monetary policy through global banks: whose policy matters? *BIS Working Paper No.737.*

Bar-Yosef, & Kolodny, R. (1976). Dividend policy and market theory.*Review of economics and statistics, 3(5),181-190.*

Claessens, S., & Horen, N. (2014).The impact of the global financial crisis on banking globalization. *IMF Working Paper N0. 67.*

Friend, I. & Puckett, M. (1964). Dividends and stock prices.*The American Economic Review, 54 (5), 656-682.*

Hao, T. K., Nguyet, T. M. N., &Trung, H. L. (2017). Effects of the credit boom on the soundness of Vietnamese commercial banks. *International Journal of Financial Research, 8,(3), 509-521.*

IMF (2010). Global liquidity expansion: *Effects on Receiving Economies and Policy Response Options in Global Financial Stability Report (Washington D.C.: International Monetary Fund).*

Kaminsky, G. L., & Remhart, C.M. (1996). Banking and balance-of-payments crises: Models and evidence. *Board of Governors of the Federal Reserve, Washington, D.C.*

Krugman, P. (1988). Financing vs. forgiving a debt overhang. *Journal of Development Economics, 2((), 253-268.*

Morgan, A., Taylor, E., & Gibbs, G. (1982). Variations in students' approaches to studying.*British Journal of Educational Technology, 13, 107-113.*

Onah, J.O. & Adikwu, M. U. (2007). Computational Studies for Evaluating theMechanism of Interaction of Chloranil with Ampicillin Using Semi-Emperical Approach. Nig J. Pharm Res. 6(1): 9-14.

Osoro, C. (2013). Investors perspectives on the NASI and the NSE 20 share index as performance measurement indicators at the nairobi securities exchange in Kenya. *International Journal of Humanities and Social Science, 3(18), 112-124.*

Shin, E. (2013). Breaking the Triple Concidence in International Finance keynote. *Address at Irving Fisher Committee on Central Bank Statistics, Bank for International Settlements*

Toby, A. J., (2006). *Banking System Soundness: Theory and Policy*. Pearl Publishers, P-H.

Toby, A. J., (2008). Financial fragility and performance of Nigerian banking institutions: An inter-temporal analysis. *Journal of Applied Finance and Banking, 4 (6), 137 – 15.*