International Liquidity Channel and Performance of Commercial Banks in Nigeria

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ABSTRACT: This study examined the effect of international liquidity channels on the profitability of quoted commercial banks in Nigeria. The objective was to examine the direction which international liquidity channel affects commercial banks profitability. Return on equity was used as dependent variable while Monetary policy channels proxy by percentage of net foreign assets, financial market channel proxy by percentage of net foreign portfolio investment, international trade channel proxy by percentage of Nigeria terms of trade, capital mobility channel proxy by net foreign direct investment and currency channel proxy by variation of Nigeria naira to US dollar. Panel data of return on equity were sourced from financial reports of the commercial banks while international liquidity variables were sourced from Central banks of Nigeria statistical bulletin. Ordinary least square methods were used as data analysis methods. The study found that 50.3 percent of the variation in return on equity of the commercial banks is explained by the variables in the equation. Monetary policy channel, international trade channel and currency have negative effect on return on equity while financial market channel and capital mobility channel has positive and no significant effect on return on equity of the commercial banks. The study recommends that Central Bank of Nigeria should adopt an appropriate macro prudential framework to enable Nigeria banks become internationally active in terms of liquidity and solvency. 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.

KEYWORDS: International Liquidity Channel, Performance, Commercial Banks, Nigeria

INTRODUCTION

International liquidity is a multi-dimensional and complex phenomenon, which has repeatedly been proffered as one explanation for financial developments. It has at times, been associated with a number of financial market development such as stock market rallies, low bond yields, rising commodity prices, real estate booms or strong increases in global monetary and credit aggregates. International liquidity from the viewpoint is most convenient for the purpose of monetary policy. Monetary liquidity comprises the holdings of liquid financial assets by domestic residents and the portfolio investment in such liquid assets by non-residents. The cross-border liquidity provided by international financial markets and internationally active banks constitutes the incremental element in international liquidity (Alqahtani and Mayes, 2018 and Akani and Lucky 2020).International liquidity builds on the two concepts of global monetary liquidity, defined as the ease of converting monetary assets into goods and services, domestically and across borders, and global financial market liquidity, defined as the ease of trading in assets relative to trading in money, reflecting the cost of converting a financial asset into money.

International liquidity channels are transmission mechanisms in which global monetary policies, macroeconomic policies and financial market volatility is spread to other countries or financial markets. It includes the currency channel, the credit channel and the balance of payment channels, the financial market and the monetary policy channels (Alqahtani and Mayes, 2018). Several financial crises have been preceded by periods of fast growth of foreign currency-denominated credit to domestic banks that frequently lacked a stable source of foreign exchange revenues. These transactions shift the foreign exchange risk to banks; this implies higher credit risk that affects bank performance.

However, with the deepening of financial integration came a spate of currency and banking crises since 1980s. Nigeria has been hit by several serious international liquidity crises. The merits of international financial integration are also under forceful attack

and doubt. Hutchinson (2011), argued that financial globalization such as international liquidity can increase the propensity to financial crises while Stiglitz (2012) argued that increasing capital account liberalization and unfettered capital flows are the important keys causing global financial stability. This means that opinion of scholars on the effect of international liquidity on performance of commercial banks in emerging countries like Nigeria is inconclusive and requires further research.

Furthermore, Nigeria banking sector play a crucial role in connecting external shock and investment collapses. Joyce and Nabar (1016) argued that if a Nigeria banking sector is fragile, banking sector crises will easily occur following international liquidity crises. The financial globalization cause crises in a case of imperfect international markets which cause banking sector panic that have fragile banking system. Such markets can generate irrational behavior, speculative assaults and similar in conventions. There are many studies on the effect of global liquidity, some of these studies focused on the effect of international liquidity on the financial market of the developing countries (Alqahtani and Mayes, 2018; Alshammari, 2017, Akani and Lucky 2014). Farooq and Zaheer (2015) used financial data from Pakistan to compare Islamic and commercial banks during the financial crisis. This study is foreign and cannot be used for Nigeria. Alqahtani and Mayes (2018) examined the financial stability of Islamic and commercial banks during the global financial crisis by utilizing panel data of banks in the Gulf Cooperation Council region. From the above problems and knowledge gap, this study examined the effect of international liquidity channels on the performance of commercial banks in Nigeria.

LITERATURE REVIEW

International Liquidity Channels

Global liquidity channels define the transmission mechanism which global monetary shocks spread abroad. Global liquidity is captured by the holdings of liquid assets by households, non-financial corporations and financial intermediaries. Liquidity holdings can be measured in a narrow or broader sense. Narrow measures incorporate cash holdings and current account balances, relative to total assets, equity or GDP. Broader measures add to them also other assets that can be easily converted into current account balances or cash. Since some time the literature has pointed towards a secular increase of liquidity holdings by non-financial corporations in major economies (Bates et al. 2009, IMF 2011a and 2014a, Agwor and Akani 2020, Iskandar-Datta and Jia 2012 or Horioka and Terada-Hagiwara 2013). The phenomenon is to some extent paradoxical, because one would expect that with technical progress and financial development the need to hold cash for corporations would decrease rather than increase. An active corporate finance literature has discussed the factors that can explain (high) corporate liquidity holdings.

They include, for example, agency problems or weak corporate governance frameworks that allow managers to retain free cash flows for personal motives rather than investing them or paying dividends, cash flow or general business uncertainty that strengthens precautionary motives, the needs of firms that operate in sectors that require particular flexibility in investment or hiring patterns (firms that are in the technology race or rely on mobile human capital for making intangible investments), scarcity of investment and growth opportunities (including the value of waiting for better times), external financing constraints and underdeveloped or malfunctioning financial systems as well as national tax regimes and international tax loopholes that provide incentives for holding funds abroad rather than for repatriating profits.

Monetary Channel of Global Liquidity

The concept of monetary liquidity attempts to capture the ability of economic agents to settle their transactions using money, an asset the agents cannot create themselves. Money is typically seen as the asset which, first, can be transformed into consumption without incurring transaction costs, and second, has an exchange value that is not subject to uncertainty in nominal terms, rendering it the most liquid asset in the economy. Strictly speaking, these characteristics apply only to currency. The question of which other assets can be defined as money depends on the degree of substitutability between currency and these other assets. In practice, the definition of money in an economy generally includes those other assets which can be easily converted into currency: short-term bank deposits are an obvious example. Generally, a higher level of money holdings allows for a higher volume of immediate transaction settlement.

However, agents' liquidity, for instance, varies according to the synchronization of their receipts and payments. For a given amount of money held, the more synchronized the agents' receipts and payments, the greater the agents' liquidity. Additional factors may affect agents' ability to obtain liquidity and thus their "potential" liquidity situation. For instance, the soundness of agents' balance sheets determines their credibility as sound counterparties and, therefore, their ability to trade less liquid assets for liquid assets. Translating the main aspects of defining monetary liquidity (the ease of convertibility into consumption and capital certainty) into a multi-country setting is not straightforward, implying that even if liquidity were appropriately determined at the domestic level, a similar measure used for different countries may not correctly capture the global dimension of liquidity.

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Currency Channels

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)

Capital Mobility Channels

There is reason to believe that the capital flows to developing countries (before netting out the investment of their large reserves in external markets) were driven more by supply-side push factors, rather than developing country demand. It is undoubtedly true that this capital could not have crossed borders without relaxed regulations regarding the inflow of foreign equity and debt in the developing countries. But liberalization has not ensured large inflows either in all countries or at all times. It appears that an expansion of liquidity in the global financial system has driven funds into emerging markets, as it did before the debt crisis in the early 1980s and the East Asian crisis in 1997. Markets are liquid when those who hold assets can sell them at prices that do not involve significant losses, so as to access the finance they need to meet other commitments (Doha et al, 2009).

Given its definition, measuring liquidity is near impossible. But, as is well recognized, a market is more liquid when there are more investors active in that market. So the volume of transactions occurring in markets is an indicator of the extent of liquidity in the system (Khaims, 2010). Despite the diversified and complex nature of financial markets today, the banking sector sits at the center of the financial system, mobilizing and allocating much of the capital that goes to determine the overall state of liquidity.

International Trade Channels

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.

Financial Market Channel

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.

The former, determined by policy makers, reflects the degree of a country's restrictions on capital market integration, international financial investment, and foreign exchange rate regime; the latter captures the actual capital account flows across border. There are four scenarios showing how these two measures are related: countries with openness policies experiencing high volume of capital flows, as industrialized countries; countries with openness policies but still facing low volume of capital flows, as certain less developed countries with undeveloped infrastructure; countries with highly regulated and thus restricted policies but still attracting large financial flows, as emerging economies; and countries with fully closed policies resulted in low flows of

capital. Thus, it is essential to consider these two types of measures in the analysis to test for the robustness of the effect of financial liberalization on growth.

Conceptual Framework of Profitability

Profitability connotes a situation where the income generated during a given period exceeds the expenses incurred over the same length of time for the sole purpose of generating income Banwo (1997),Akani and Akani (2020), Sanni (2006). The fundamental requirements here are that the income and the expenses must occur during the same period of time (Matching Concept) and the income must be a direct consequence of the expenses. The period of time may be one week, three months, one year etc.Sabo (2007). It is not immaterial whether or not the income has been received in cash nor is it compulsory that the expenses must have been paid in cash. The term profit can take either its economic meaning or accounting concept which shows the excess of income over expenditure viewed during a specified period of time.

On one hand, profit is one of the main reasons for the continued existence of every business organization. On the other hand, profit is expected so as to meet the required return by owners and other outsiders. John J. Hampton (2009) clarified profitability ratio as a class of financial metrics that are used to assess a business's ability to generate earnings as compared to its expenses and other relevant costs incurred during a specific period of time. Accordingly, the term profitability is a relative measure where profit is expressed as a ratio, generally as a percentage. Profitability depicts the relationship of the absolute amount of profit with various other factors. Similarly, Michael Koller (2011) argued that profitability is the most important and reliable indicator as it gives a broad indicator of the ability of company to raise its income level. In practice, executives define profits as the difference between total earnings from all earning assets and total expenditure on managing entire asset-liabilities portfolio Kaur and Kapoor, (2007).

THEORETICAL FRAMEWORK

Efficiency Theory

The efficiency theory was formulated by Demsetz (1973) as an alternative to the market power theory. The efficiency theory presupposes that better management and scale efficiency results to higher concentration thus greater and higher profits. Accordingly, the theory posits that management efficiency not only increases profits, but also results to larger market share gains and improved market concentration (Athanasoglou, Brissimis & Delis, 2005). The efficiency theory also states that a positive concentration profitability relation may be a sign of a positive connection relating to efficiency and size. The theory postulates that positive association between the concentration and profit arise from a lower cost which is mainly achieved through production efficient practices and increased managerial process (Birhanu, 2012).

The efficiency theory supports that the most favorable production can be attained through economies of scale. Thus, maximum operational efficiency in the short run is achieved at a level of output where all economies of scale available are being employed in an efficient manner (Odunga et al., 2013). Additionally, the efficiency theory explains that attaining higher profit margins arises from efficiency which allows banks to obtain both good financial performance and market shares (Mirzaei, 2012).

The Traditional Approaches

Global reserves are widely defined as all the assets of monetary authorities that can be used, directly or through assured convertibility into other assets, to support its rate of exchange when its external payments are in deficit (Group of Ten, 1965). The corresponding measurement of global reserves is foreign exchange, gold, SDRs and net IMF position. In contrast, there is much less agreement on the meaning, definition and measurement of global liquidity. After three decades of discussion, the latter concept remains "surprisingly ill-defined (Kane, 1965).

Global Reserves

There are two distinctive features of the above definition of global reserves: convertibility and intervention by official users. The rationale for the first function derives from the liquidity property: reserves need to be assets that can be converted into foreign exchange with certainty and rapidly. The rationale for the second feature stems from the requirement that central banks intervene in the foreign exchange market under fixed exchange rates. Included convertible assets are assumed to be perfect substitutes for official holders (central banks, treasuries) with an implicit elasticity of substitution of infinity. However, a cursory inspection of the set of reserve assets demonstrates different store-of-value and liquidity properties. For example, while SDRs and foreign exchange holdings yield market rates of return (the latter invested in short-term bonds to maintain high liquidity), IMF net reserve position and gold do not offer yields. Further, the purchasing power of SDRs (the weighted average of the five currencies that make up the SDR basket) has fallen in real terms since their inception (Thakur, 1994).

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Aggregation of Global Reserves: A New Approach

As noted in the previous section, traditional approaches to reserve-demand analysis are usually based on a framework where demand for global reserves, which is defined as the sum of the values of various reserve assets, is determined by a few variables that are more or less arbitrarily chosen. Frenkel (1980) assumes that the demand for global reserves, which is the sum of gold, SDRs, foreign exchange, and reserve position at the IMF, is a function of the variability of reserve holdings, GNP, and the average propensity to import; while Ben-Bassat and Gottlieb (1992a) assume that it is a function of the variability and the opportunity cost of reserve holdings. In these approaches, it is implicitly assumed that various types of global reserves are perfectly substitutable for one another.

However, a country's global reserves consist invariably of various assets with different degrees of liquidity and other reserve services like store of value and safe haven in crisis. Hence, they are not perfect substitutes for one another. This, in turn, implies that adding the face values of different reserve assets results in a misleading measure of total reserves held by a country. This is the case because the simple sum is a valid aggregate of different components only if all the components are perfect substitutes. Kane (1965) and Grimes (1993) explicitly incorporate the concept of different levels of liquidity of different reserve assets into their analyses. Kane as noted above is concerned with the concept of aggregate liquidity, and he defines a country's global liquidity as a weighted sum of various reserve assets, liabilities, commitments, and lines of credits.

The Reformed Approach

There is an emerging consensus that the growth of private credit markets has shifted concerns from fears of a global liquidity shortage to regional shortage and unequal distribution as well as the effective functioning of global credit markets (Buira, 1995; Goldstein and others, 1992). However, proposed global policy response and the role of the Global Monetary Fund differ widely.

 Three proposals for liquidity reform are discussed below; the first by Buira (1995) addresses the question of unequal liquidity distribution; the second by Goldstein and others (1992) addresses the functioning of global capital markets and the third by Davidson (1992-93) proposes an overall strengthening of the global monetary system that ensures a redistribution of liquidity from surplus to deficit countries. Notably, none of the proposals address directly the issue of composition of global reserves.

(i) Goldstein (1992) proposal do not offer a reform proposal but instead seek to determine the existence of market failures in the present system for pricing risk and access to global liquidity. Two factors suggest market failures; contagion effects and policy spillovers. Contagion effects arise when credit access for one country is curtailed as a result of external developments, as demonstrated in the recent Asian crisis. One explanation is that lending and borrowing decisions are being undertaken in an environment that underestimates risk owing to lack of country-specific information. If this is the case, the appropriate policy response is to make transparent information more available to investors as well as strengthen corporate and public sector governance as is presently underway in East Asian reform programs.

Application of Theory

This study is built on efficiency theory formulated by Demsetz (1973). The efficiency theory presupposes that better management and scale efficiency results to higher concentration thus greater and higher profits. The management of the commercial banks have the function of managing the global liquidity channels to achieve greater profitability of the banking sector.

Empirical Review

Akani (2019) examined the effects of cross boarder banking on the growth of deposit money banks in Nigeria. The objective was to examine the relationship that exists between Nigeria cross boarder banking and deposit money banks in Nigeria. Time series data was sourced from Central bank of Nigeria statistical bulletin. Growth of Nigerian deposit money banks was modeled as the function of cross boarder credit, cross boarder banking claims, cross boarder banking assets, cross boarder banking liabilities and cross boarder bank branches. The ordinarily least square method was used as data analysis method. Findings shows that cross boarder bank branches, cross boarder banking liabilities and cross boarder banking assets have positive relationship with the growth of Nigerian deposit money banks while cross boarder bank credit and cross boarder banking claim have negative effect on the growth of Nigerian deposit money banks. The study concludes that cross boarder banking have moderate effects on the Nigerian deposit money banks. We recommend that international financial policies such as cross boarder banking should be formulated by management of deposit money banks and regulatory authorities to achieve positive impact of cross boarder banking on the growth of Nigeria deposit money banks.

Alqahtani and Mayes (2018) examined the financial stability of Islamic and commercial banks during the global financial crisis by utilizing panel data of banks in the Gulf Cooperation Council region. Their study revealed small Islamic banks were more stable during the financial crisis, escaping the instability of other financial systems (financial instruments, markets, and institutions). Cerovi´c et al. (2017) compared the stability and efficiency of conventional and Islamic banks before, during, and after the recent

global financial crisis. Their study showed Islamic banks experienced more stability and efficiency than conventional banks. They contended the regulation of financial markets and financial institutions is very important for the financial stability and efficiency of the banking system.

Alshammari (2017) found that the 2008 subprime crisis affected the performance of CBs, but not the IBs in Saudi Arabia, Kuwait, and United Arab Emirates. Mollah et al. (2017) examined whether the difference in governance structures influences the performance of Islamic banks compared to commercial banks. They used a sample of 52 Islamic banks and 104 conventional banks in 14 countries during the period of 2005–2013. They concluded that the governance structure of Islamic banks played a critical role in their financial performance and helped IBs achieve better performance than conventional banks.

Farooq and Zaheer (2015) used financial data from Pakistan to compare Islamic and commercial banks during the financial crisis. Their findings indicate that IBs were less exposed to withdrawals of deposits during the financial crisis. According to a comparative study by Ambreen Zeb Khaskhelly (2015) of six IBs and six CBs in the Gulf Cooperation Council (GCC) countries, IBs were less affected by the recent global financial crisis than CBs. In addition, the study revealed that IBs were equity-based financed, while CBs were debt-based financed. Furthermore, selected IBs experienced a higher growth rate on their total assets (22%) than selected CBs (18%) over the study period of 2005–2010.

Beck et al. (2013) found little difference in efficiency between Islamic and conventional banking. Nevertheless, these results showed that IBs are less likely to fail during a financial crisis due to their higher capitalization and higher liquidity reserves, which in turn explains their better performance relative to CBs during the global financial crisis of 2007–2009. Furthermore, risk-sharing intermediation and observance of Sharia-compliant banking banned IBs from investing in high-risk securities, which helped contribute to the crisis. Bourkhis and Nabi (2013) used regression analysis to examine the comparative financial stability of 34 Islamic banks and 34 commercial banks. The authors found that there was no significant difference in terms of the effect of the recent global financial crisis on the stability of the two types of banks. Rajhi and Hassairi (2013) applied the Altman Z-score model to examine the insolvency risk of IBs and CBs in a sample of 16 Middle East, North African, and South East Asian countries. Their results showed that Islamic banks were more stable (higher Z scores) than conventional banks.

Literature Gap

Berglöf et al. (2009) found that a higher market share of foreign financial institutions was positively correlated with a lower reduction of cross-border lending in the fourth quarter of 2008. This study is a foreign study, concluding from this study on Nigeria will lead to type one or types two error, this study therefore will examine the effect of global liquidity channels on the performance of commercial banks in Nigeria

Ongena et al. (2012) analyzed the lending behaviour of two international channels, the internationally borrowing domestic banks and foreign banks, over the period from 2005 to 2009. The dataset consists of 238 banks and 43,847 firms located across countries in Eastern Europe and Near Asia. This study does not focus on the relationship between global liquidity channels and the performance of commercial banks in Nigeria, from the above gap the present study will focus this study on the effect of global liquidity channels on the performance of commercial banks in Nigeria

Mulder, Arjen and Slager (2008) investigated the impact of internationalization on banking performance. Using a novel data set that incorporated world's 46 largest banks in the period spanning 1980-2004, the findings showed that internationalization decreases performance measures especially on return-on-assets or return-on-sales. This study is a foreign study, concluding from this study on Nigeria will lead to type one or types two error, this study therefore will examine global liquidity channels on the performance of commercial banks in Nigeria**.**

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 (Baridam, 2003). It enables us therefore to observe the effects of explanatory variables on the dependent variables. For the purpose of this study, secondary data will be collected from publication of Stock Exchange Fact Book and annual reports and financial statement of the quoted deposit money banks. The target population of this study includes all 24 commercial banks in Nigeria. However, the sample size was limited to the 13 quoted commercial banks that are reporting to the Nigerian stock exchange. The reason for the sample size is for easy source and reliability of required data from the annual reports submitted to the exchange.

Data Analysis Method

The method of data analysis to be used in this study was the panel data multiple linear regressions using Ordinary Least Square (OLS) method. Other tests that will be 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 will be employed.

1. **Coefficient of Determination (r^2) Test** –This measures the explanatory power of the independent variables on the dependent variables. For example, to determine the proportion of economic growth in our model, we used the coefficient of determination. The coefficient of determination varies between 0.0 and 1.0. A coefficient of determination says 0.20 means that 20% of changes in the dependent variable is explained by the independent variable(s).

2. **F-Test:** This measures the overall significance. The extent to which the statistic of the coefficient of determination is statistically significant is measured by the F-test. The F-test can be done using the F-statistic or by the probability estimate. We use the F-statistic estimate for this analysis.

3. **Student T-test:** measures the individual statistical significance of the estimated independent variablesat 5% level of significance.

4. **Durbin Watson Statistics**: This measures the colinearity and autocorrelation between the variables in the time series. It is expected that a ratio close to 2.00 is not auto correlated while ratio above 2.00 assumed the presence of autocorrelation.

5. **Regression coefficient:** This measures the extent in which the predictor variables affect the dependent variables in the study.

6. **Probability Ratio:** It measures also the extent in which the predictor variables can explain change to the dependent variables given a percentage level of significant.

Model Specification

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

Pooled Effect Model

$$ROE_{it} = \beta_0 + \beta_1 MPC + \beta_2 FMC + \beta_3 ITC + \beta_4 CMC + \beta_5 CH + U. \qquad 1$$

Fixed Effects

The fixed effects focus on whether there are differences by using a fixed intercept for each of the different cross-sectional structures. If we assume that the dummy variable for a conglomerate company is 1 or 0, then D_i, which is the dummy variable for firm i, can be expressed as:

$$D_i = \begin{cases} l, i-1 \\ 0, otherwise \end{cases} \quad D_2 = \begin{cases} l, i-2 \\ 0, otherwise \end{cases} \cdots D_N = \begin{cases} l, i-1 \\ 0, otherwise \end{cases}. \qquad (2)$$

The regression of total samples can be expressed as:[1] $\qquad\qquad$ (3)

$$Y_{it} = \sum_{i=1}^{N} \beta_{oi} D_i + \beta_i D_s + \beta_2 D_{ma} + \beta_3 s_1 + \beta_{oi} D_4 s_2 + \varepsilon_{it}$$

The dummy variables are expressed as follows: if $j = i$, then Di= 1; otherwise Di= 0.[2]

To further investigate the fraud effect, Adebayo (2012) analyzed whether the independent variables affect the dependent variable, this regress the effect of the independent variables on the dependent variables.

$$ROE_{it} = \beta_0 + \beta_1 MPC + \beta_2 FMC + \beta_3 ITC + \beta_4 CMC + \beta_5 CH + U. \qquad (4)$$

Because the fixed effects account for both cross-sectional and time-series data, the increased covariance caused by individual-firms differences is eliminated, thereby increasing estimation-result efficiency.

$$ROE_{it} = \beta_0 + \beta_1 MPC + \beta_2 FMC + \beta_3 ITC + \beta_4 CMC + \beta_5 CH + U. \qquad (5)$$

Random Effects

Random effects focus on the relationship with the study sample as a whole; thus, the samples are randomly selected, as opposed to using the entire population. The total sample regression (a function of the random effect) can be expressed as:

$$ROE_{it} = \sum_{j=1}^{N} \beta_0 + \beta_1 MPC + \beta_2 FMC + \beta_3 ITC + \beta_4 CMC + \beta_5 CH + UT \qquad (6)$$

If this is represented with random variables, then $\beta_{oj} = \overline{\beta}_0 + \mu_j$, which indicates that the difference occurs randomly, and the expectation value of β_{oi} is $\overline{\beta}_0$.[5] $\qquad$ (7)

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ROE = Return and equity
MPC = Monetary policy channels proxy by percentage of net foreign assets
FMC = Financial market channel proxy by percentage of net foreign portfolio investment
ITC = International trade channel proxy by percentage of Nigeria terms of trade
CMC = Capital mobility Channel proxy by net foreign direct investment
CH = Currency Channel proxy by variation of Nigeria Naira to US dollar

Hausman Test

The Hausman test (YairMundlak 1978) is the most commonly used method for evaluating fixed and random effects. If variables are statistically correlated, then the fixed-effects estimation is consistent and efficient, whereas the random- effects estimation is inconsistent, and the fixed-effects model should be adopted. Conversely, if the variables are statistically uncorrelated, then the random-effects estimation is consistent and efficient, whereas the fixed-effects estimation is consistent but inefficient, and the random-effects model should be adopted.-

A-priori Expectation of the Result

The explanatory variables are expected to have negative effects on the dependent variables. That is, a unit increase in any of the variables is expected to have a negative effect on ROE if the bank is financially deficient. This can be express mathematically as $a_1, a_2, a_3, a_4, a_5 < 0$.

ANALYSIS AND DISCUSSION OF FINDINGS

Table 1: Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	7.936025	5	0.0000

Source: Extract from E-view 9.0 (2019)

The Hausman (1978) specification test can be used to determine the appropriate method fixed or random effects models. However, econometricians seem to be united generally that the random effects model is more appropriate to be used if individual intercepts are drawn randomly from a large population. By contrast, the FEM is more appropriate in the case of focusing on specific sets of the firms.

According to above table shows Hausman specification test the model has the value of p=0.0000 for the regression model of dependent and independent variables. This shows fixed effect model is more appropriate, because the null hypothesis is not accepted. Therefore, this includes insignificant P-value, Prob>chi2 larger than 0.05, then it is more suitable to use random effects. However, if we have a significant P-value, then we should use fixed effects models. 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.

Table 2: Pooled Regression Results on International Liquidity Channels and Return on Equity of Commercial Banks

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MPC	-0.943824	1.426828	-0.661484	0.5095
ITC	-4.118680	5.440472	-0.757045	0.4505
FMC	2.782306	1.630289	1.706634	0.0904
CMC	0.981611	1.777567	0.552222	0.5818
CH	0.929228	1.014732	0.915737	0.3616
C	-179.6256	175.3837	-1.024186	0.3077
R-squared	0.049637	Mean dependent var		18.36946
Adjusted R-squared	0.011315	S.D. dependent var		79.67599
S.E. of regression	79.22392	Akaike info criterion		11.62749
Sum squared resid	778277.3	Schwarz criterion		11.75984
Log likelihood	-749.7867	Hannan-Quinn criter.		11.68127
F-statistic	1.295280	Durbin-Watson stat		2.038647
Prob(F-statistic)	0.270218			

Source: Extract from E-view 9.0 (2021)

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The results in Table 2 outline the regression results for international liquidity channels and return on equity of commercial banks in Nigeria. The adjusted R-squared indicates that approximately 0.1 percent of the variation in return on equity of the commercial banks 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. The Durbin Watson statistic justifies the absence of serial autocorrelation. The regression coefficient indicates that monetary policy channel has negative and no significant effect on return on equity of the commercial banks, international trade channel has negative and no significant effect on return on equity of the commercial banks, financial market channel has positive and no significant effect on return on equity of the commercial banks, capital mobility channel has positive and no significant effect on return on equity of the commercial banks while currency channel has negative and no significant effect on return on equity of the commercial banks.

Table 3: Fixed Regression Results on International Liquidity Channels and Return on Equity of Commercial Banks

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MPC	-0.943824	1.437205	-0.656708	0.5127
ITC	-4.118680	5.480040	-0.751578	0.4539
FMC	2.782306	1.642146	1.694311	0.0330
CMC	0.981611	1.790495	0.548234	0.5846
CH	0.929228	1.022113	0.909125	0.3652
C	-179.6256	176.6593	-1.016791	0.3114
	Effects Specification			
Cross-section fixed (dummy variables)				
R-squared	0.629076	Mean dependent var		18.36946
Adjusted R-squared	0.503118	S.D. dependent var		79.67599
S.E. of regression	79.80011	Akaike info criterion		11.72481
Sum squared resid	713222.5	Schwarz criterion		12.12186
Log likelihood	-744.1129	Hannan-Quinn criter.		11.88615
F-statistic	4.976412	Durbin-Watson stat		2.239903
Prob(F-statistic)	0.000455			

Source: Extract from E-view 9.0 (2021)

The results in Table 3 outline the regression results for international liquidity channels and return on equity of commercial banks in Nigeria. The adjusted R-squared indicates that approximately 50.3 percent of the variation in return on equity of the commercial banks 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. The Durbin Watson statistic justifies the absence of serial autocorrelation. The regression coefficient indicates that monetary policy channel has negative and no significant effect on return on equity of the commercial banks, international trade channel has negative and no significant effect on return on equity of the commercial banks, financial market channel has positive and no significant effect on return on equity of the commercial banks, capital mobility channel has positive and no significant effect on return on equity of the commercial banks while currency channel has negative and no significant effect on return on equity of the commercial banks.

Table 4: Random Regression Results on International Liquidity Channels and Return on Equity of Commercial Banks

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MPC	-0.943824	1.437205	-0.656708	0.5126
ITC	-4.118680	5.480040	-0.751578	0.4537
FMC	2.782306	1.642146	1.694311	0.0927
CMC	0.981611	1.790495	0.548234	0.5845
CH	0.929228	1.022113	0.909125	0.3650
C	-179.6256	176.6593	-1.016791	0.3112
	Effects Specification			
			S.D.	Rho

International Liquidity Channel and Performance of Commercial Banks in Nigeria

Cross-section random		0.000000	0.0000
Idiosyncratic random		79.80011	1.0000
	Weighted Statistics		
R-squared	0.449637	Mean dependent var	18.36946
Adjusted R-squared	0.411315	S.D. dependent var	79.67599
S.E. of regression	79.22392	Sum squared resid	778277.3
F-statistic	1.295280	Durbin-Watson stat	2.038647
Prob(F-statistic)	0.270218		
	Unweighted Statistics		
R-squared	0.049637	Mean dependent var	18.36946
Sum squared resid	778277.3	Durbin-Watson stat	2.038647

Source: Extract from E-view 9.0 (2019)

The results in Table 4 outline the regression results for international liquidity channels and return on equity of commercial banks in Nigeria. The adjusted R-squared indicates that approximately 41.3 percent of the variation in return on equity of the commercial banks 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. The Durbin Watson statistic justifies the absence of serial autocorrelation. The regression coefficient indicates that monetary policy channel has negative and no significant effect on return on equity of the commercial banks, international trade channel has negative and no significant effect on return on equity of the commercial banks, financial market channel has positive and no significant effect on return on equity of the commercial banks, capital mobility channel has positive and no significant effect on return on equity of the commercial banks while currency channel has negative and no significant effect on return on equity of the commercial banks.

DISCUSSIONS OF FINDINGS

The objective of this model is to analyses the relationship between international liquidity channels and profitability of commercial banks. The estimated regression results found that the independent variables can explain 50.3 percent changes on return on equity of Nigeria commercial bank within the covered in this study. The model formulated was tested with the aid of F-statistics and F-probability justified that the model is significant. Evidence from the regression coefficient proved that monetary policy channel and international trade channel have negative effect on the return on equity of the quoted commercial banks. The estimated regression coefficient indicates that a unit increase on the independent variables proved that a unit increase on the variables reduces commercial banks return on equity by 0.9 and 4.1 units. This finding contradicts our expected results as we expected a positive relationship international liquidity and commercial banks profitability.

The negative effect of the variables could be traced to international monetary and liquidity shocks such as the global financial crisis in 2007/2008. It could be recall that the global financial crisis led to the crash of the capital market and affected negatively the operations of banking industry as a result of the margin loans granted by the commercial banks. The negative effect of the variable contradict the findings of Akani and Uzah (2019) credit boom explained 77 percent variations on assets quality ratio while beta coefficient found that all the independent variables have positive effects on bank assets quality except credit to manufacturing sector, the findings of Hao, Nguyet and Trung (2017) 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.

However, evidence from the regression coefficient proved that financial market channel, capital mobility channel and currency channel have positive effect on the return on equity of the quoted commercial banks. The estimated regression coefficient indicates that a unit increase on the independent variables proved that a unit increase on the variables increases commercial banks return on equity by 2.7, 0.98 and 0.92 units. This finding confirms our expected results as we expected a positive relationship international liquidity and commercial banks profitability. The positive effect of the variables confirms the objectives of financial globalization and validates the principle of international banking.

Empirically, the positive finding confirm the findings of Avdjiev et al. (2018) that a local monetary policy tightening induces an increased dollar lending to that country which is 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, the findings of Claessens and Horen (2014) 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 and the findings of Maiwada (2013) that country started

to affect by the global financial crisis after it has already started in the developed and advanced economies of the world, when the crisis results spread over the world economy.

CONCLUSION

The estimated regression model results for the model indicate that adjusted R-squared indicates that approximately 50.3 percent of the variation in return on equity is explained by the variables in the equation. The F-statistic show that the overall regression is significant at the 5 percent level, as the P-value is less than 0.05. The regression coefficient indicated that monetary policy channel has negative and no significant effect on return on equity of the commercial banks, international trade channel has negative and no significant effect on return on equity of the commercial banks, financial market channel has positive and no significant effect on return on equity of the commercial banks, capital mobility Channel has positive and no significant effect on return on equity of the commercial banks while currency channel has negative and no significant effect on return on equity of the commercial banks.

RECOMMENDATIONS

1.   Central Bank of Nigeria should adopt an appropriate macro prudential framework to enable Nigeria banks become internationally active in terms of liquidity and solvency.

2.   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.

3.   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.

4.   Supervisors should regularly perform a comprehensive assessment of a bank's overall liquidity risk management framework and liquidity position to determine whether they deliver an adequate level of resilience to liquidity stress given the bank's role in the financial system.

5.   Inflow of portfolios should supplement regular assessments of a bank's liquidity risk management framework and liquidity position by monitoring a combination of internal reports, prudential reports and market information.

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