ASSESSING LIQUIDITY DETERMINANTS AND CASH HOLDINGS DECISIONS OF SYSTEMATICALLY IMPORTANT BANKS (SIBS) IN NIGERIA: THE PRE AND POST ECONOMIC RECESSION EXPERIENCE

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Abstract
This study to evaluates the relationship between liquidity determinants and the cash holding decisions of Systematically Important Banks (SIBs) in the pre and post economic recession periods in Nigeria. Specifically, it intends to determine ascertain the relationship between firm liquidity and cash holding decisions of SIBs in the pre and post economic recession period in Nigeria. It also intends to determine the relationship between Investing activities, Financing activities and Cash holdings of SIBs in Nigeria. The secondary sources of data collection were solely utilized, hence, the adoption of the ex-post facto research design. A total of seven (7) SIBs in Nigeria were purposively sampled, and extracts from their respective financial statements for the pre-economic recession (2011 - 2014) and post economic recession (2015 – 2018) periods duly subjected to relevant analyses using Altman Z-Score model for emerging markets, Pearson Correlation, and the Multiple regression statistical tools. Findings obtained from analyses showed that there is a significant relationship between firm liquidity and cash holding decisions of SIBs in the pre and post economic recession period in Nigeria. It was also observed that the relationship between selected SIBs' Investing activities, Financing activities and Cash holdings significantly differed. The study thus concluded that although many financial institutions in Nigeria like the (SIBs) were noted to hold cash for varying reasons, most of them maintain cash holdings for investment decision's purpose. The study therefore recommends that proactive review effort should be made to understand why Systematically Important Banks' liquidity status across two different periods increased in order to timely rescue possible sick banks from failing. It also recommends that discretion should be adopted by regulatory agencies of the banking sector in Nigeria to ascertain from time-to-time reasons why Systematically Important Banks chose to hold cash to help minimise/curtail risks of unprofitable cash outflow decisions among SIBs in Nigeria.

Key words: Cash holding decisions, firm liquidity, financing activities, investing activities, liquidity determinants, Systematically Important Banks,

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INTRODUCTION

The significance of efficient and effective cash management practices of firms has become an important research area in recent years due to the increasingly competitive financial environment that firms operate (Tahir, Alifiah, Arshad & Saleem, 2015). Cash management is a broad area of finance involving the collection, handling, and usage of cash. It involves assessing market liquidity, cash flow and investment. Cash is an essential component of company's Statement of Financial Position. The decision about the amount of money to hold as liquid cash and cash equivalent remains one of the most difficult issues facing some firms in Nigeria today. Though there exist no standard cash holding level for firms, it pertinent that firms reach a consensus from time to time on the optimal cash holding level to maintain, as cash is quite fundamental to a firm's operational purpose. Thus, the decision on cash holding

is considered very crucial to the survival and growth of the firm. This is more as ideal cash is least productive because it yields little or no interest when not in use. Similarly, holding more or little cash than required are all all risky. Therefore, there is no established standard level of cash holding that exist. The question is, are companies sitting on cash because they have no growth opportunities or are there other reasons to do so? This observation raises researchable query that if cash is a least productive Asset, then why do firms hoard large amount of cash when if it is not profitable to do so.

Račić and Stanišić (2017) concur to this stressing that there abound several relevant concepts explaining determinants that motivate corporate organizations and/or Managers of entities to maintain cash holdings at certain level. The determinants of corporate cash holdings decision could be seen as those crucial situations that explain the reasons and purposes why firms can decide to hold liquid cash and cash equivalent. These reasons can as well have some benefits attached to them. The determinants of cash holdings have been studied in the past, however, due to difficulties encountered by firms in reaching or making cash holdings decisions, more studies on the determinants of cash holdings is still being carried out and there has been a good progression to explain how these factors affect the level of a firm's cash held. In Japan, Alam (2010) reports that firms hold US$2.1 trillion in cash, which translates to 44% of their GDP. For Korean firms, Mosavi, Karimipoua, Zarei, and Heidari (2015) noted that US$4.4 billion was withheld by Korean firms in cash and this is equal to 34% of their GDP. The above readily attests to the relevance of cash holding decisions to every corporate organization, especially where enterprises strive daily to remain liquid and solvent in the competitive market.

Liquidity is the ability of a firm to have enough cash in order to meet its day-to-day activities and emerging obligations. Studies have shown that liquidity and cash holding have strong positive relationship, implying that a firm facing variable demand can add value by maintaining liquidity that will permit it to operate flexibly since changes in operating levels can be more expensive than changes in liquidity or working capital of a firm. In Nigeria, the banking industry is worst hit by illiquidity challenges, a product of cash holding decision. Nigeria bank distress experience of 2008 still trails the financial sector to date.

Suffice it to say that this decision to hold cash at corporate organisational level is highly influenced by the Board of Directors of corporate entities. Aside the need for the banking industry in Nigeria to maintain from time to time, a given Cash reserve ratio (CRR) as stipulated by the Central Bank of Nigeria (CBN) for the effective regulation of cash in circulation and consequent control of the inflation rate in the country, this class of corporate Regulators are responsible for determining the amount of cash that should be retained or withheld by the firm within a financial period. The implication is that the competence of the Board is of utmost importance in addressing and justifying cash reserves of corporate entities.

The collapse and/or consequent takeover of notable Deposit Money Banks in Nigeria such as AfriBank, Oceanic Bank, Intercontinental Bank, Bank PHB, First Inland Bank, and Skye Bank, are typical examples that are still fresh in the minds of Investors and Depositors in Nigeria (Nwoye, Obiorah & Ekesiobi, 2015). Inference from the pre and post consolidation experiences in Nigeria also showed that the number of Commercial Banks in Nigeria stood at eighty-nine (89) Banks as at 2004. By 2005 year end, the number fell to twenty-four (24) Commercial Banks which also got renamed as Deposit Money Banks. In 2009, eight (8) more Deposit Money Banks in Nigeria lost their operational licenses bringing the total number of remaining

Banks in Nigeria to sixteen (16) Deposit Money Banks. By 2015 year end, the total number of banks stood at fourteen (14) as Access Bank Nigeria Plc took over 75% interest in the stocks of Intercontinental Bank Nigeria Plc. In December 2018, Access Bank Nigeria Plc acquired Diamond Bank Nigeria Plc due to cash holding related challenges facing Diamond Bank Nigeria Plc of which illiquidity was confirmed the chief problem. The merger between both banks was completed in April 2019. As at 31st December 2018, the total Assets of all Commercial Banks in Nigeria was averaged at N3,151,203,823, in (N000); an equivalent of US$8.7billion. While the banking industry in Nigeria has continued to decline in the operational number of Banks in the country despite several past and current banking reforms of the CBN, the situation appears not to have received commendable scholarly attention due to observed dearth of studies on cash holding decisions related issues in the Nigeria banking industry. Although scholars such as Onyeka, Nnado and Iroegbu (2018); Liman and Mohammed (2018); Ikueze and Egungwu (2017); Bassey and Moses (2015); Danjuma, Umar and Hammawa (2015) and Inyiama, Ugbor and Chukwuma (2017) have all carried out studies on corporate cash holdings in Nigeria, none of them executed a comparative investigative study on the cash holding decisions of Systematically Important Banks (SIBs) in Nigeria. While some studies on cash holdings discussed profitability as a determinant of cash holdings, this paper intends to understand the cash holding decisions (proxied as cash holding ratio and cash & cash equivalent) of Deposit Money Banks in Nigeria during the target periods by focusing on selected bank' liquidity status, investing activities, and financing activities as proxies to the independent variable (liquidity determinants). It is against this backdrop that the study seeks to evaluate the relationship between liquidity determinants and the cash holding decisions of Systematically Important Banks in Nigeria. Specifically, the study intends to ascertain the relationship between firm liquidity and cash holding decisions of DMB in Nigeria. Secondly, the study will attempt to determine the relationship between Investing, Financing activities and cash holdings of DMB in Nigerian.

In order to effectively look into the above objectives, the following research questions were formulated

1. What is the relationship between firm liquidity and cash holding decisions of DMB in Nigeria?

2. How does investing activity and financing activities relate to cash holding decisions of SIBs Nigeria?

Hypotheses

H_1:   There is no significant relationship between firm liquidity and Cash holding decisions of   SIBs in the pre and post economic recession period in Nigeria

H_2:   Relationship between Investing activities, Financing activities and Cash holdings of SIBs   do not significantly differ in the pre and post economic recession   period in Nigeria

LITERATURE REVIEW

Overview on Cash Holding
In a world of rising capital costs and the related importance of opportunity cost of excess cash, liquid assets have become a key focus of companies' Statement of Financial Position in the

optimal capital allocation problem (Pettit, 2007). A close look at academic literature on cash holdings show that two main categories of factors that can influence company's cash holdings are identified. One category consists of macroeconomic environment factors, the other category relates to firm specific characteristics factors.

Cash holdings in non-financial sector are influenced by the status of economy. In times of recession, the cash could be a good way to ride out the storm without having to ask existing shareholders or the bank for extra funding. That is the reason for which big companies tend to increase their cash holdings in periods of crisis (Yurdagul & Sánchez, 2013). Worthen (2010) noted that most companies used cash for funding external and internal investments at a time when many companies were in financial difficulties. Cash provides operating and strategic flexibility. Because of the uncertainty of the economy, considerable cash holding is often encouraged to permit companies to assume risks that smaller companies cannot afford. Cash has become king to a greater extent than in the past because of the credit crunch. A company with so much cash occupies a disproportionately strong position than obtainable in normal times (Worthen, 2010).

Rizwan (2012) maintains that when the macroeconomic environment is uncertain the companies demand for cash increases due to the fact that external financing became difficult to obtain. Series of studies investigated the impact of financial crises on companies' cash holdings. For instance, Song and Lee (2012) examined how the Asian financial crisis affected the long-term liquidity management policies of Asian firms by investigating their cash holdings before and after the crisis. They found out that the median cash ratio remained stable in the early 1990s and suddenly increased after the crisis of 1997-1998. The Asian firms increased cash holdings by decreasing investment activities such as capital expenditures. The reason for this increase was that the Asian firms became more conservative in investing and in cash holding policies after their experience of macroeconomic shocks.

Therefore, financial crisis may have changed the cash holding policies & behaviour of companies and this is considered to have a long-term effect. A similar study to those of Song and Lee was conducted on companies by Pinkowitz, Stulz and Williamson (2013). They investigated whether the cash holdings of companies are unusually high after the financial crisis compared to before, and whether the change in these cash holdings can be explained by poor investment opportunities, excessive regulation and tax reasons. They found out that American companies held more cash after the crisis than companies with similar characteristics in the late 1990s. They called cash holdings that cannot be explained by cash holding patterns from the late 1990s "abnormal cash holdings". They showed that abnormal cash holdings increased but for different reasons from the late 1990s to before the crisis and from before the crisis to after the crisis.

Cash and Cash Management Concepts

Management is a generic term that is subject to diverse interpretations. A number of different ideas are attributed to the meaning of management and to the work of a manager. Management is required in all areas of life. It enables operations of all types to be carried out effectively,

smoothly and efficiently. It is the specific organ of modern institutions. This is to say that performance and survival of any institutions depends on management. It is important to note that about ninety percent (90%) of what makes business to succeed or fail comes from management. However, management is based on how organizations are managed or specifically how manager(s) can help other members of the organization set and achieve a series of goals and objectives.

Cash management is a main area of working capital management. Other parts of it are inventory management, credit management and management of short-term liabilities. Cash management covers the management of the company's cash in the normal course of business i.e. making sure the company always has enough cash on hand to meet its bills and expenses, and investing any surplus cash.

According to Oladejo, Akande and Yinus (2017), cash management entails all actions and activities necessary to maintain appropriate levels of cash to meet operational requirements of a company. Cash holding control is therefore crucial to ensuring that a business remains liquid and able to meet payment obligations. This is carried out through the effective management of cash receipts and payments, cash balances and cash transfers between the different parts of a business. Cash is the important current asset for the operations of the business. Cash is the basic input needed to keep the business running on a continuous basis: it is also the ultimate output expected to be realized by selling the service or product manufactured by the firm. Pandey (2007) stressed that firms should keep sufficient cash, neither more nor less. Cash shortage will disrupt the firm's manufacturing operations while excessive cash will simply remain idle without contributing anything towards the firm's profitability. Thus, a major function of the financial manager is to maintain a sound cash position.

Cash is the money which a firm can disburse immediately without any restriction. The term cash includes coins, currency and cheques held by the firm and balances in its bank accounts. Sometimes near-cash items such as marketable securities or bank time's deposits are also included in cash. The basic characteristic of near-cash assets is that they can readily be converted into cash. Therefore, it can be said in a simply term that cash management is more closely related to how a firm optimises mechanisms for collecting and disbursing cash.

Systematically Important Banks (SIBs) In Nigeria

The financial system forms the cornerstone of the modern economy. Under the Reserve Bank Act, the Reserve Bank has a legislative mandate to promote the soundness and efficiency of the financial system.

According to Reserve Bank (2019) a framework for identifying domestic systemically important banks (D-SIBs) invariably leads to the question as to whether banks that sit outside the group of D-SIBs are not important. This is categorically not the case. All banks, irrespective of size, are important. All banks have customers who want their banks to be sound and efficient, and subject to an appropriate degree of prudential oversight. Contagion is a risk to the financial system. Smaller banks can trigger, and sometimes even cause, financial instability. A D-SIB framework does not deny the importance of smaller banks, nor does it focus the attention only on those banks that are given the D-SIB label.

According to Atuanya (2013) Central Bank of Nigeria (CBN) has officially released a memo to designate 8 Nigerian banks as Systemically Important Banks (SIBs) or 'too big to fail'. The CBN designated them as "too big to fail", based on the fact that their failure could pose a systemic risk to the banking industry and the larger economy. Besides, the banks that made the list were determined by assessing four criteria: Size, as defined by total assets; Interconnectedness, as defined by interbank exposures and volumes of other intra-industry assets and liabilities; Substitutability, as defined by ease with which the institution can be replaced as a financial services provider; and Complexity, as defined by how difficult it would be to liquidate the institution.

The eight banks alone account for 75 per cent of the banking sector in terms of earnings, profitability assets, customer deposits and branch networks. The banks designated as "too big to fail" or Systemically Important Banks (SIBs) in the CBN draft paper includes First Bank of Nigeria, United Bank for Africa, Zenith Bank, Access Bank, Ecobank Nigeria, Guaranty Trust Bank, Skye Bank, Diamond Bank. And Access Bank Nigeria Plc. The Central Bank of Nigeria has therefore adopted a more robust regulatory regime to monitor and scrutinise the eight banks, in order to ensure that they are healthy. The apex bank also mandated the eight banks to increase their capital base in order to give them a buffer against internal and exogenous shocks. Top financial Consultants, Renaissance Capital analysed the import of this designation thus: Too-big-to-fail designation to reduce banks' Return on Equity (ROE). According to them, the CBN draft document which has designated eight banks as "too big to fail", due to the risk their failure could pose to the entire financial system, will induce an additional cost to banks and may lead to a reduction in return on equity.

The year 2013 could after all, be referred to as the year of regulatory headwinds in the Nigerian banking sector. Ren Cap analysts, Nothando Ndebele and Adesoji Solanke had said in a note released on the 14th of November, 2013. "We welcome measures to increase the viability and stability of the banking sector, but we believe some are unnecessarily punitive and make it harder for banks to deliver value-creating returns.

A big impact of being named an SIB is that some banks would require additional capital. The current capital adequacy ratio (CAR) in Nigeria is 10 percent for local banks and 15 percent for banks with international operations. The proposed changes for SIBs would, however, mean a minimum CAR level of 15 percent, irrespective of whether a bank is deemed local or has international subsidiaries. It was also noted that all banks' CARs are above 15 percent as of nine months (9M 2013) and half year (1H 2013), as per disclosure.

Zenith leads the pack with 28.3 percent at 9M13, while Ecobank Nigeria has the lowest at 16.0 percent as of August 2013, followed by Skye and Diamond at c.17.0 percent, respectively, at 9M in 2013. The draft report also mentioned that SIBs would be required to provide an additional 1 percent of capital as a Higher Loss Absorbency (HLA) charge, in addition to the prescribed minimum CAR, and hold more liquid assets and meet a liquidity ratio of 5 percent above the minimum requirement currently set at 30 percent.

The aim of the HLA, according to the CBN, is to ensure that a large portion of these banks' statement of financial positions are funded by permanent capital, and to deal with cross-border risks. The additional 1 percent surcharge can only be funded by tier-1 capital.

Zenith Bank has the highest liquidity ratio at 63.1 percent at 9M13, followed by First Bank at 62.7 percent at 1H13 (First Bank has not yet reported 9M13 results). At the other end of the spectrum are Skye at 31.5 percent and Diamond at 36.7 percent. Skye – and Diamond – would need to raise liquidity. The CBN regulations such as the hike in the CRR – the minimum cash, as a percentage of customer deposits, that each bank must set aside as a reserve – to 50 percent are seen by analysts as putting pressure on banks' earnings going forward.

Concept of Cash holdings and Firm Liquidity

The performance of any economic activity is primarily conditioned by the existence of liquidity in terms of cash in hand and bank accounts, as well as of cash derivatives: the survival of any company on the market depends on the claim receipt and on the payment of debts on schedule, (Breuer, Frumusanu & Manciu, 2012).

Liquidity refers to investment in current assets and current liabilities which are liquidated within one year or less and is therefore crucial for firm's day to day operations (Kesimli & Gunay, 2011). Liquidity is very closely related to working capital which is the money needed to finance the daily revenue generating activities of the firm. The liquidity of an entity consisting of cash, cash equivalents and short-term investments are of great importance to the activity of the entity because the most significant and visible side for entity is its ability to pay, i.e., the possibility to honour its obligations in due time.

An entity is considered to be out of cash when it cannot pay its debts in due time to creditors, suppliers and the lack of cash rises from the fact that the period of use is longer than that of resources. The lack of cash may have immediate consequences: the inability to perform purchases in optimal conditions; damage to the company's image due to payment delays; obligation of short-term loans. Liquidity management is an important tool for the management of organizations; it reflects the organization's ability to repay short-term liabilities, which include operating expenses and financial expenses resulting within the organization in the short term. As well as part of long-term debt during the financial year or the operating cycle, whichever is longer (Omar, Abdul, Sijed & Nour, 2016).

There are many liquidity ratios used by organizations to manage their liquidity such as (current ratio, quick ratio, cash ratio, defensive interval ratio) which can greatly affect the financial performance of companies (Robinson, 2015). Liquidity ratios show the entity's ability to meet its short-term liabilities, as the weakness of the value of these ratios indicates that the organization may face difficulties in meeting short-term financial liabilities (Amengor, 2010).

The cash ratio is one of the ratios calculated under liquidity ratio, its usefulness is limited to investors and financial analysts. It is the least popular of the liquidity ratios and is used only when the company under question is under absolute duress. Only in desperate circumstances do situations arise where the company is not able to meet its short-term obligations by liquidating its inventory and receivables and this is when the cash ratio comes handy.

Cash holding of firms can be evaluated using the cash ratio which is measured as:

$$\frac{\text{Cash \& Cash Equivalent}}{\text{Current liabilities}}$$

Cash ratio takes a critical look at a company's ability to cover its debts and obligations. Thus, the ratio is commonly utilised to measure a firm's liquidity. The implication is that when the outcome of the ratio's computation is equal to 1, it is believed that the amount of the firm's current liabilities and cash & cash equivalent to settle such debts are the same. Having an outcome that is less than 1 readily indicates that the affected firm has insufficient cash to pay off short term debts. A situation whereby the ratio's result is greater than 1 means that the firm has more cash and cash equivalent than current liabilities, indicating its ability to settle short term debts and still maintain some cash balance.

Concept of Cash Flow

Cash flow information assists its financial statement users in obtaining the relevant information concerning the use and source of the entire financial resources over a given time period. The main focus of the cash flow statement is to determine whether an entity can generate positive cash flows from its normal operations.

Suborna and Saha (2015) in their work concluded that cash flow information has explanatory power and the results indicate that cash flow ratios are sometimes providing the better and accurate picture of the companies. Cash flow statement provides information about cash provided (or used) in a company's investing and financing activities. This information allows the analyst to answer such questions as:

i.   Does the company generate enough cash from its operations to pay for its new investments, or is the company relying on new debt issuance to finance them?

ii. Does the company pay its dividends to common stockholders using cash generated from operations, from selling assets, or from issuing debt?

Cash flow activities are classified into three categories: operating activities, investing activities, and financing activities. Significant non-cash transaction activities are reported by using a supplemental disclosure note to the cash flow statement.

The advantage of cash flow statement is that it provides information that enables users to evaluate the change in the net assets, its financial structure (like liquidity and solvency) and its ability to affect the amounts and timing of cash flow in order to change the circumstances and opportunities. Sometimes due to accrual basis of accounting a company may have satisfactory net income but one and only cash flow statement can tell us how many cash is generated from these sales and other operation. If most of the sales are on credit then it means a risk is associated with this. So, any decision based on only income statement can sometimes be overestimated or underestimated.

Economic Recession

In line with the National Bureau of Statistics (NBS), the Nigerian economy slid into recession path and was declared in the first quarter of 2016 which actually was established in 2015 with real GDP of -0.36 percent. According to Adeatyo and Sidiq (2018), recession is when the economy declines significantly for at least six months. It means there is a drop in the real Gross

Domestic Product (GDP), income level of individual and revenue generation of government, employment, manufacturing and retail sales.

A recession will typically be characterized by high unemployment, falling average incomes, increased inequality and higher government borrowing, et cetera (Tejvan, 2012). When a recession lasts for a long time it becomes depression, hence, a depression is a deep and long lastly recession (Investopedia, 2017). However, an economic recession is typically defined as a significant decline in economic activity, real GDP, real income, employment industrial production and sales following a decline in the aggregate demand for at least two consecutive quarters. On the other hand, the National Bureau of economic research (NBER) defined recession as a "significant decline in economic activity. The National Bureau of Economic Research (NBER) defined a recession as a "significant decline in economic activity spread across the economy, lasting more than a few months, normally visible in a real gross domestic product (GDP), real income, employment, industrial production and wholesale-retail sales" (Noko, 2016; NBER, 2008).

Tejvan (2012) noted that problems such as falling output (less produced resulting to lower real GDP and lower average incomes), wages rise much more slowly or not at all, rise in cyclical unemployment, higher government borrowing (increase in government borrowing leads to higher interest rates costs), devaluation in exchange rate, falling asset prices, falling share prices, social problems associated with rising unemployment; and increased inequality are all induced by economic recession.

Prior Related Studies

Charmler, Musah, Akomeah and Gakpetor (2018) examined twenty-one (21) universal banks in order to investigate the impact of liquidity on performance using three different measures of both liquidity and profitability for the periods 2007 – 2016. Data extracted were analysed with the aid of correlation and regression analytical tool. Findings showed that liquidity is positively associated with Return on Assets using both measures of bank liquidity. Regarding Return on Equity, there is a weak positive relationship between the ratios of liquid assets to total assets (LIDQ1). An insignificant negative relationship was observed between Return on Equity (ROE) and liquid assets to total interest-bearing liabilities (LIQD2). On the control variables, the study reported a positive association between net interest margin, bank size, capital adequacy ratio, foreign ownership and bank profitability.

Edem (2017) carried out a study on twenty-four (24) deposit money banks in Nigeria between 1986 and 2011 towards obtaining empirical evidence on the impact of liquidity management on the performance of deposit money banks. Using Multiple Linear Regression analysis, it was discovered that there exist a significant relationship between liquidity management and the performance of Deposit Money Banks in Nigeria as the correlation results equally revealed a positive impact between return on equity and liquidity management variables: liquidity and cash reserve ratios, whereas loan to deposit ratio showed a negative impact.

Onyeka, Nnado, and Iroegbu, (2018) examined the relationship between cash (including liquid substitutes) and profitability of listed firms in the manufacturing sector of the Nigerian Stock Exchange. Data from audited annual reports of thirty-six (36) manufacturing firms listed on the Nigerian Stock Exchange for the period 2003-2017 were analysed with the aid of Multiple

Regression analytical tool. Findings made showed that cash and cash equivalents had significant positive influence on Return on Assets.

Bassey and Moses (2015) examined the liquidity-profitability trade off of fifteen (15) Deposit Money Banks in Nigeria using a panel data of 2010 - 2012. Using the Ordinary Least Squares (OLS) technique for analyses purpose, it was discovered that there is a statistically significant relationship between bank liquidity measures-current ratio, liquid ratio, cash ratio, loans to deposit ratio, loans to asset ratio- and return on equity.

Mihai, Radu, and Dragan (2018) investigated the determinants of cash holdings for ninety (90) Romanian companies for the period 2006 – 2015. Data extracts from the Annual Reports covered were analysed with aid of Regression statistical tool using E-views statistical software. Their findings suggest that, for non-financial companies, cash holdings are influenced by the state of the economy implying that in times of recession, cash could be a good way to ride out the storm without having to ask for extra funding. Thus, companies tend to use internally generated cash before seeking external financing.

Umrya and Diantimala (2018) empirically investigated the determinants of cash holdings of manufacturing companies listed on the Indonesian Stock Exchange for the period 2012 – 2017. Adopting the Multiple Linear Regression analysis in testing its hypothesis, the study found out that debt maturity structure has negative significant relationship on cash holdings and probability of financial distress has positive significant relationship on cash holdings.

Barasa, Achoki and Njuguna (2018). Their paper looked at the determinants of cash holding of 44 non-financial firms listed in Nairobi securities exchange (NSE) for the period 2002 to 2013 using secondary data in annual reports and financial statements. They tested for trade off, pecking order and the free cash flow theories using correlational and non-experimental research design. The results of OLS with year and industry dummies and panel data models shows that there exists significant positive and negative relationship between cash holding and cash flow and leverage respectively and insignificant relationship between cash holding and market-to-book value and firm size. Interest rests were found to be a significant mediator of the relationship between cash holding and MTB, size, leverage and cash flow. Industrial sector of a firm's main activity influences its cash holding policies. This study adds to the frontier knowledge on the determinants of cash holding by helping managers decide on their firm's optimal cash holding while also serving to inform investors on whether portfolio managers are adopting the right cash holding practices.

Khalil and Mukhtiar (2017) investigated the identification of the determinants of Cash holding in thirteen (13) firms of the Oil and Gas sector of Karachi Stock Exchange, Pakistan. Data from 2008 – 2015 financial reports of the companies were analysed and results obtained revealed that Cash flow and Net Working Capital are insignificant in relation to cash holding decision of selected firms while Market to Book value and Leverage showed a positive and significant in relationship to cash holding decision of such firms.

Arfan (2017) was carried out at identifying significant factors that affect the level of cash holding of 77 manufacturing companies listed in the Indonesian Stock Exchange for the period 2009 - 2013. Using the panel regression method, he found out that while the level of growth opportunity has a positive effect on the level of cash held by the companies studied, the

networking capital and financial leverage had insignificant and a negative effect on the cash holding of selected companies studied.

Guizani (2017) investigated the determinants of the cash holdings for a sample of seventy 70 Saudi firms over the period 2006 – 2014. The Ordinary Leaset Square (OLS) was adopted for the relevant analyses carried out. Their findings showed that conservative firms are less leveraged, have large size, have low investment expenditures and have low cash flow fluctuation even as Saudi firms do adjust their liquidity holdings quickly towards an endogenous target cash ratio.

Amahalu and Ezechukwu (2017) studied the Effect of cash holding on financial performance of selected quoted Insurance firms in Nigeria. The study assessed the extent at which cash holding affects financial performance of quoted insurance firms in Nigeria. Three hypotheses were formulated in line with objective of the study; Ex-post facto research design and time-series data were adopted and the data for the study were obtained from fact books, annual reports and account of the quoted insurance companies under study. Pearson coefficient of correlation and multiple regression were applied for the test of the three hypotheses formulated with aid of STATA 13 statistical software. Findings showed that cash holding (proxy by cash to total book value of assets and cash) has a positive and statistically significant effect on financial performance (proxy by Return on Asset, Return on Equity and Tobin's Q) at 5% significant level.

Račić and Stanišić (2017) carried out an empirical study of 2,352 non-financial companies towards evaluating the determinants of cash holdings on the sample of non-financial companies operating in the Republic of Serbia for the period 2008 to 2013. The study adopted the generalised method of moments (GMM) for relevant analyses conducted. Their findings showed that companies operating in the Republic of Serbia tend to hold the optimal level of cash and prefer internal sources of financing, which is in line with the principles of trade-off theory and pecking order theory.

METHODOLOGY

The study adopts the ex post facto research design to enable it maximize data extracts from the audited financial statements of selected Deposit Money Banks formally categorized as Systematically Important Banks (SIBs) in 2013 by the Central Bank of Nigeria (CBN). The choice of these financial institutions stems not only from their statutory role in the economy in aiding the CBN achieve a sustainable financial stability but also from their identity as "too big to fall" banks amid the trend of financial crisis trailing the banking industry in Nigeria. A total of seven (7) out of the eight (8) officially recognised SIBs such as Access bank plc, Diamond bank plc., Ecobank Transnational Incorporated, First Bank of Nigeria Plc, Guaranty Trust Bank Plc, United Bank for African Plc, and Zenith Bank Plc were sampled based on availability and accessibility to all financial statements for the years 2011 – 2018 (2011 – 2014 serve as the pre-recession periods and 2015 – 2018 as the post-recession periods). Given the above criteria, Skye/Polaris Bank (one of the SIBs in Nigeria) was excluded from the sample in this study.

The Altman model for emerging economies was deployed to estimate the liquidity capacity of each of the sampled SIBs for the period covered. This data analysis was further complemented through SPSS version 25 using Pearson Correlation and Multiple Regression Analytical

techniques to measure the extent of relationship between variables as well as reveal the extent of predictive contribution made by proxies to the independent variable (Liquidity determinants measures with firm liquidity, investing activities and financing activities) in explaining the dependent variable (cash holding decisions measures as cash ratios and cash & cash equivalent) towards understanding how and whether the presence of one variable (independent variable) improves or weakens the performance of the second variable (dependent variable).

Altman (Z-Score) Liquidity Test Model for emerging markets

$Z = 3.25 + 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4$

Table 1: Altman Model's financial ratios and their measurement

S/N	Financial Ratios	Measurement
1	X1	(Current Assets – Current Liabilities)/Total Asset
2	X2	Retained Earnings/Total Assets
3	X3	Earnings Before Interest and Tax/Total Asset
4	X4	Book value of Equity/Total Liabilities
5	Cash Ratios	Cash and Cash Equivalent/Current Liabilities
6	Cash Flow Coverage Ratio	Operating Cash Flows/Total Debts

Source: Author's compilation, 2019.

Model Estimation for Hypothesis Two

1. CCE $= \alpha + B_1 INVA_1 + B_2 FINA + \mu$

Where:

α	=	Constant
μ	=	error term
$B_1 - B_3$	=	Coefficients of the Independent Variables
CCE	=	Cash & Cash Equivalent value for the period.
INVA	=	Investment activities represented as value of investment decisions made
FINA	=	Financing activities represented as value of dividend and interest paid.

Decision Criteria

i. Accept the null hypothesis if Z score observed is greater than the absolute Z value of 1.96, otherwise refute and accept the alternate hypothesis.

ii. P-value less than 0.05 signifies that variable's predictive position is statistically significant.

iii. Do not accept null hypothesis when F-critical value is greater than the F-table value, otherwise accept and reject the alternate hypothesis.

Z-Score Decision criteria/zones of discriminations

i. $Z > 2.99$ = Safe Zone

ii. $2.77 < Z < 2.9$ = Grey Zone

iii. $Z < 1.88$ = Distress" Zone

RESULTS AND DISCUSSION

Using the Pearson Correlation statistical tool, the liquidity status and cash holding decisions of SIBs in Nigeria in the pre and post economic recession period were statistically investigated towards understanding whether there is any significant relationship between the two variables during the periods covered.

H_0:   There is no significant relationship between firm liquidity and cash holding decisions of SIBs in the pre and post economic recession period in Nigeria.

Table 2: Correlations for pre-economic recession period

		Pre-Economic Recession Period - *Firm liquidity*	Pre-Economic Recession Period- *Cash holding Decisions*
Pre-Economic Recession- *Firm liquidity*	Pearson Correlation	1	-.216
	Sig. (2-tailed)		.642
	N	7	7
Pre-Economic Recession- *Cash holding Decisions*	Pearson Correlation	-.216	1
	Sig. (2-tailed)	.642	
	N	7	7

Source: SPSS Ver. 25

Table 3: Correlations for post economic recession period

		Post-Economic Recession Period - *Firm Liquidity*	Post-Economic Recession Period- *Cash holding Decisions*
Post-Economic Recession –*Firm liquidity*	Pearson Correlation	1	.281
	Sig. (2-tailed)		.542
	N	7	7
Post-Economic Recession -*Cash holding Decisions*	Pearson Correlation	.281	1
	Sig. (2-tailed)	.542	
	N	7	7

Source: Author's Computation. 2020

Discussion of Result

The Pearson *r* value shown in tables 4.4 and 4.5 above are -.216 and .281. Using the Fisher's Pearson *r* to *z* transformation table, the Z equivalent of these Pearson *r* values (-.216 and .281) for the pre and post economic recession period relationship state of the liquidity status and cash holding of selected Systematic Important Banks (SIBs) were .219 and .289 respectively.

These *z* scores were thus compared and analyzed for statistical significance by computing an observed *z* test statistic. The following formula is implemented:

$Z_{observed} = (z_1 - z_2) / (\text{square root of } [(1 / N_1 - 3) + (1 / N_2 - 3)]$

The resulting $Z_{observed}$ score was -0.7184.

Decision

Accept the null hypothesis if Z score observed is greater than the absolute Z value of 1.96, otherwise refute and accept the alternate hypothesis. Since the Z score observed (-0.7184) is less than (<) the absolute Z value (1.96), we refute the null hypothesis and accepts the alternate, thereby implying that the two correlations are significantly different. Thus, we accept the alternate hypothesis and this means that *there is a significant relationship between firm liquidity and cash holding decisions of SIBs in the pre and post economic recession period in Nigeria.*

Using the Pearson Correlation and the Multiple Regression analytical tools, the SIBs' Investing activities, and Financing activities were evaluated towards understanding whether and the extent to which they relate with the cash flows of Systematically Important Banks in Nigeria.

H_{02}: Relationship between Investing activities, Financing activities and Cash holdings of SIBs do not significantly differ.

Table 4: Correlations

		Cash & cash equiv.	Investing activities	Financing activities
Pearson Correlation	Cash & cash equiv.	1.000		
	Investing activities	.711	1.000	
	Financing activities	-.274	.940	1.000
Sig. (1-tailed)	Cash & cash equiv.	.		
	Investing activities	.037	.	
	Financing activities	.277	.471	.
N	Cash & cash equiv.	7	7	7
	Investing activities	7	7	7
	Financing activities	7	7	7

Source: Author's Computation. 2020

Discussion of Result

Table 4 shows that Investing activities has positive relationship with cash and cash equivalent at .711 while financing activities maintained a negative relationship (-.274) with cash and cash equivalent. This possibly goes to show that SIBs actually held cash but purposely for investment reasons but did not quiet rely wholly on such cash held for their financing decisions.

The Sig. (p-value) statistics supported the above belief as it showed that only Investing activities maintained a statistically significant relationship with cash and cash equivalent (p-values of 0.037 is less than 0.05). The relationship of the financing activities with cash and cash equivalent revealed a statistically insignificant situation (p-value of .277 which is greater than 0.05). This entails that SIBs hold cash mainly for investment purposes and not necessarily because they have financing activities such as dividends and interests to pay to shareholders and cash depositors/customers. Below is a more detailed regression analysis investigation of the situation

Table 5: Model Summary[b]

Model	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.99281	0.98196	1583311.

a. Predictors: (Constant), INVA AND FINA
b. Dependent Variable: CCE
Source: Author's Computation. 2020

Table 6: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1610613514044111.000	3	536871171348037.000	23647.199	.000[b]
	Residual	68110118655.986	3	22703372885.329		
	Total	1610681624162767.000	6			

a. Predictors: (Constant), INVA AND FINA
b. Dependent Variable: CCE
Source: Author's Computation. 2020

Table 7: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	63445.190	75739.321		.838	.464
	INVA	.095	.001	1.483	120.528	.000
	FINA	-.920	.015	-1.230	-132.65	.000

a. Dependent Variable: CCE
Source: Author's Computation. 2020

Table 5- Model summary show that the R^2 which measured the overall goodness fit of the regression model recorded values of 0.992 (adjusted R^2 were 0.981) signifying that the model is fit for use in testing hypothesis three. Outcome of the ANOVA table (Table 6) equally shows that the equation is statistically significant (p-value of .000 is less than 0.05).

Decision

Adopting the "df" statistics of Table 6, we looked up 3 under 3 in the F-table distribution (5% significance level). The outcome reveals that the F-table value obtained is 5.390 against *F-critical value* of 23647.199. Thus, when *F-critical value* is greater than the *F-table value*, the null hypothesis is rejected and the alternate hypothesis accepted. Since *F-critical value* is greater, the null hypothesis is rejected and the alternate accepted. This implies that *the relationship between selected SIBs' Investing activities, Financing activities and Cash holdings significantly differed.*

CONCLUSION AND RECOMMENDATIONS

Maintaining liquidity may add value to a firm. A firm that faces variable demand can add value by maintaining liquidity to permit it operating flexibly since changes in operating levels can be more expensive than changes in liquidity or working capital. This goes to show that although many financial institutions in Nigeria like the Systematically Important Banks (SIBs) were noted to hold cash for varying reasons, most of them maintain cash holdings for investment decision's purpose. Thus, liquidity can enhance firm value by reducing the systematic components of its risk as it reduces the firm's susceptibility to economic fluctuations.

The study therefore recommends that proactive review effort should be made periodically by the Central Bank of Nigeria towards understanding why Systematically Important Banks' cash holding attitude change periodically for timely intervention purpose towards rescuing possible sick banks and the economy from falling. It is also recommended that more discretion should be adopted by regulatory agencies of the banking sector in Nigeria to ascertain from time to time reasons why Systematically Important Banks chose to hold cash and prioritised areas where such cash held are channelled to help minimise/curtail risks of unprofitable cash outflow decisions among SIBs in Nigeria.

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APPENDICES

SIBs Z SCORES AS COMPUTED

BANK	2011	2012	2013	2014	2015	2016	2017	2018
Access Bank	4.084712	2.564269	4.862315	5.040052	5.150519	6.059407	5.146352	5.622672
Diamond Bank	4.35531	4.672505	4.528145	4.853086	5.111888	5.249766	5.007102	-2.14217
Eco Bank	4.434713	4.429004	3.965041	4.288199	4.13771	4.32291	4.633176	59.32315
First Bank	5.248815	5.018934	4.778299	5.300902	5.240105	5.483283	115.4823	109.2498
Guaranty Trust Bank	5.802941	5.839566	5.484433	5.121078	5.52408		5.469575	5.828057	4.901602
United Bank for Africa	4.563777	5.101797	4.417946	4.963622	5.399067	5.705139	5.716941	8.53909
Zenith Bank	5.630969	5.663024	5.683532	6.238052	6.509318	6.56227	6.893744	6.703284
Financially sound if greater than	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
Caution required if between 1.1<Z<2.6	1.1<Z<2.6	1.1<Z<2.6	1.1<Z<2.6	1.1<Z<2.6	1.1<Z<2.6	1.1<Z<2.6	1.1<Z<2.6	1.1<Z<2.6
Likelihood of bankruptcy is high if below	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1

Sources: Author's Excel Computation and compilation, 2011 – 2018

SIBs CASH RATIO AS COMPUTED

	2011	2012	2013	2014	2015	2016	2017	2018
Access Babk	0.000565	0.06908	0.056012	-0.08478	0.039587	-0.00717	0.023295	0.086601
Diamond Bank	0.029141	0.120353	-0.03148	0.068185	-0.05869	-0.0298	-0.00247	-0.01346
Eco Bank	0.021152	0.037376	-0.00589	0.04683	0.04683	0.04683	0.022919	0.031392
First Bank	0.004577	0.026425	0.079324	-0.12913	0.004925	-0.0638	66.65385	88.2549
GTB	0.109722	-0.06954	0.012381	-0.06439	0.002875	-0.01266	0.115815	-0.02595
United Bank for Africa	-0.03921	0.189073	-0.15247	0.062121	-0.02919	-0.0673	-0.01006	0.05326
Zenith Bank	-0.05221	0.051144	0.109383	0.013328	-0.08925	-0.03693	-0.01185	0.027216

Sources: Author's Excel Computation and compilation, 2011 - 2018