The Impact of Liquidity Management on the Profitability of Banks in Nigeria

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Abstract

This work investigated the impact of liquidity management on the profitability of banks in Nigeria. The work is necessitated by the need to find solution to liquidity management problem in Nigerian banking industry. Three banks were randomly selected to represent the entire banking industry in Nigeria. The proxies for liquidity management include cash and short term fund, bank balances and treasury bills and certificates, while profit after tax was the proxy for profitability. Elliot Rothenberg Stock (ERS) stationary test model was used to test the run association of the variables under study while regression analysis was used to test the hypothesis. The result of this study has shown that liquidity management is indeed a crucial problem in the Nigerian banking industry. The study therefore recommends that banks should engage competent and qualified personnel in order to ensure that right decisions are adopted especially with the optimal level of liquidity and still maximize profit.

Keywords: Bank, Liquidity, loan, Interest, Management, Profitability

Introduction

Liquidity management is a concept that is receiving serious attention all over the world especially with the current financial situations and the state of the world economy. Some of the striking corporate goals include the need to maximize profit, maintain high level of liquidity in order to guarantee safety, attain the highest level of owner's networth coupled with the attainment of other corporate objectives. The importance of liquidity management as it affects corporate profitability in today's business cannot be over emphasised. The crucial part in managing working capital is required maintenance of its liquidity in day-to-day operation to ensure its smooth running and meets its obligation (Eljelly, 2004). Liquidity plays a significant role in the successful functioning of a business firm.

A firm should ensure that it does not suffer from lack-of or excess liquidity to meet its short-term compulsions. A study of liquidity is of major importance to both the internal and the external analysts because of its close relationship with day-to-day operations of a business (Bhunia, 2012). Dilemma in liquidity management is to achieve desired trade-off between liquidity and profitability (Nahum et all, 2007).This study seeks among other things, to investigate the problems of bank liquidity management in order to determine its effect on bank profitability.

Purpose of study

The objective of this study is to determine the effect of liquidity management on the performance of commercial banks in the face of the need to attain both corporate goals of maintaining high level of liquidity and profitability. In the light of this, the study will ascertain the influence of treasury bills and certificates of deposit on bank performance. It will determine if a relationship exists between bank profitability and bank liquidity management. Also, it will ascertain the influence of cash balances on bank performance and, recommend policy options aimed at resolving the profitability problem of banks.

Research questions

The following research questions were raised following the objectives. What is the nature of the relationship between bank liquidity management and bank profitability? To what extent has the volume of bank cash influenced bank profitability? What is the nature of the relationship between the level of treasury bills and certificates of deposits maintained by the bank and bank profitability? What are the constraints to the efficient resolution of the profit and liquidity dilemma of banks and how can they be resolved?

Research Hypothesis

The following hypotheses are considered relevant for the study.
H_{01}: There is no significant relationship between the bank liquidity and profitability.
H_{02}: Bank treasury bills and certificates do not have any significant impact on bank profitability.
H_{03}: Bank balances exert no reasonable pressure on profitability.
H_{04}: Bank cash has no influence on its performance.

Literature review and theoretical framework

The literature review will cover theoretical and conceptual framework on which the study leans, and a brief assessment of what other authorities have documented on the subject of research. Below we discuss the theoretical underpinning for the work in hand.

The Concept of Liquidity

Liquidity is a financial term that means the amount of capital that is available for investment. Today, most of this capital is credit, not cash. Bank Liquidity simply means the ability of the bank to maintain sufficient funds to pay for its maturing obligations. It is the bank's ability to immediately meet cash, cheques, other withdrawals obligations and legitimate new loan demand while abiding by existing reserve requirements. Nwaezeaku (2008) defined liquidity as the degree of convertibility to cash or the ease with which any asset can be converted to cash (sold at a fair market price).

Liquidity management therefore involves the strategic supply or withdrawal from the market or circulation the amount of liquidity consistent with a desired level of short-term reserve money without distorting the profit making ability and operations of the bank. It relies on the daily assessment of the liquidity conditions in the banking system, so as to determine its liquidity needs and thus the volume of liquidity to allot or withdraw from the market. The liquidity needs of the banking system are usually defined by the sum of reserve requirements imposed on banks by a monetary authority (CBN 2012).

Theories of Liquidity and Liquidity Management

The theories and liquidity management are outlined and explained in this section.

Anticipated Income Theory

This theory holds that a bank's liquidity can be managed through the proper phasing and structuring of the loan commitments made by a bank to the customers. Here the liquidity can be planned if the scheduled loan payments by a customer are based on the future of the borrower. According to Nzotta (1997) the theory emphasizes the earning potential and the credit worthiness of a borrower as the ultimate guarantee for ensuring adequate liquidity. Nwankwo (1991) posits that the theory points to the movement towards self-liquidating commitments by banks.

This theory has encouraged many commercial banks to adopt a ladder effects in investment portfolio.

Shiftability Theory

This theory posits that a bank's liquidity is maintained if it holds assets that could be shifted or sold to other lenders or investors for cash. This point of view contends that a bank's liquidity could be enhanced if it always has assets to sell and provided the Central Bank and the discount Market stands ready to purchase the asset offered for discount. Thus this theory recognizes and contends that shiftability, marketability or transferability of a bank's assets is a basis for ensuring liquidity.

This theory further contends that highly marketable security held by a bank is an excellent source of liquidity. Dodds (1982) contends that to ensure convertibility without delay and appreciable loss, such assets must meet three requisites. Liability Management Theory Liquidity management theory according to Dodds (1982) consists of the activities involved in obtaining funds from depositors and other creditors (from the market especially) and determining the appropriate mix of funds for a particularly bank. This point of view contends that liability management must seek t answer the following questions:

- How do we obtain funds from depositors?
- How do we obtain funds from other creditors?
- What is the appropriate mix of the funds for any bank?

Management examines the activities involved in supplementing the liquidity needs of the bank through the use of borrowed funds.

The liquidity management theory focuses on the liability side of bank balance sheet. This theory contends that supplementary liquidity could be derived from the liabilities of a bank. According to Nwankwo (1991) the theory argues that since banks can buy all the funds they need, there is no need to store liquidity on the asset side (liquidity asset) of the balance sheet.

Liquidity theory has been subjected to critical review by various authors. The general consensus is that during the period of distress, a bank may find it difficult to obtain the desired liquidity since the confidence of the market may have seriously affected and credit worthiness would invariably be lacking. However, for a healthy bank, the liabilities (deposits, market funds and other creditors) constitute an important source of liquidity.

Commercial Loan Theory

This theory has been subjected to various criticisms by Dodds (1982) and Nwankwo (1992). From the various points of view, the major limitation is that the theory is inconsistent with the demands of economic development especially for developing countries since it excludes long term loans which are the engine of growth. The theory also emphasizes the maturity structure of bank assets (loan and investments) and not necessarily the marketability or the shiftability of the assets.

Also, the theory assumes that repayment from the self-liquidating assets of the bank would be sufficient to provide for liquidity. This ignores the fact that seasonal deposit withdrawals and meeting credit request could affect the liquidity position adversely. Moreover, the theory fails to reflect in the normal stability of demand deposits in the liquidity consideration.

This obvious view may eventually impact on the liquidity position of the bank. Also the theory assumes that repayment from the self-liquidating assets of a bank would be sufficient to provide for liquidity. This ignores the fact that seasonal deposit withdrawals and meeting credit request could affect the liquidity position adversely.

The Need for Liquidity

According to Anyanwu (1993) liquidity simply means the ability to convert an asset to cash with minimum delay and minimum loss/cost. In the portfolio of commercial banks, liquidity assets play a very crucial role because banks operate largely with the funds borrowed from depositors in form of demand and time deposits. These liquidity assets are the essential balance sheet items which have the capacity to maintain the confidence of depositors which is the most valuable intangible asset of the commercial banking business (Spindt, 1980).

According to Nwankwo (1991), adequate liquidity enables a bank to meet three risks. First is the funding risk – the ability to replace net outflows either through withdrawals of retail deposits or non-renewal of wholesale funds. Secondly, adequate liquidity is needed to enable the bank to compensate for the non-receipt of inflow of funds if the borrower or borrowers fail to meet their commitments. The third risk arises from calls to honour maturity obligations or from request for funds from important customers. Adequate enables the bank to find new funds to honour the maturity obligations such as a sudden upsurge in borrowing under atomic or agreed lines of credit or to be able to undertake new lending when desirable. For instance a request from a highly valued customer.

Adequate liquidity is also needed to avoid forced sale of asset at unfavourable market conditions and at heavy loss. Adequate liquidity serves as vehicle for profitable operations especially to sustain confidence of depositors in meeting short run obligations. Finally, adequate liquidity guides against involuntary or non-voluntary borrowing from the regulatory authorities where there is a serious liquidity crises, the bank is placed at the mercy of the Central Bank, and hence the control of its destiny may be handed over.

Having adequate or sufficient liquidity to meet all commitments at all times at normal market rates of interest is indispensable for both large and small banks (Nwankwo, 1991). Liquidity is the life blood of a banking setup.

The Concept of Profitability in Banks

According to Aburime (2008:1) profit means the difference between the revenue generated from the sale of output and the full opportunity cost of factor used in the production of that output. Included within costs are the premium charged for risk taking and the costs of using the owners capital.

These are not included as cost in the accountant's measure of project which therefore does not correspond to this economic definition of profit. However, profit could either be normal or supernormal. Normal profit is that minimum amount of profit which a firm must acquire in order to induce the firm to remain in operation.

Corporate profit planning remains one of the most difficult and time consuming aspects of financial management because of the many variables involved in the decision which are often outside the control of the company. It is even more difficult if the company is operating in a highly competitive economic environment.

A business unit can only grow focusing on its inner strengths to exploit the opportunities in the market. Consequently, the best definition as opined by Tsomocos (2003) should be adopted from a survival growth perspective as business unit should think of surviving before making profit. Again, optimizing profit involves two variables; revenue and cost. The issue of profitability is a continuous issue that a company has to consistently make. Essentially profitability is concerned with the level of turnover that must be achieved in order to cover the level of turnover that must be achieved in order to cover costs and make surplus.

Corporate profitability may be improved through ratio analysis, breakeven analysis, marginal analysis, cost control or through financial control. It is therefore necessary to mention at this juncture that whether a bank is planning for profit or taking steps to improve its profitability, it must ensure that it has adequate liquidity to transact business and finance operations. If the plan is to improve or increase profitability by increasing the income level, the bank must be able to determine the financing needs for the new income level.

Measurement of Liquidity in Commercial Banking

The ability of banks to meet their financial obligation is usually measured by examining their balance sheet and relating same to its current assets to some or all of their current liabilities. Fundamentally, a firm's liquidity rests not so much on its balance sheet as on whether or not it is doing well and earning money. A strong balance sheet with a large current ratio simply postpones liquidity problems for a short while if the firm is losing money. Therefore, the complexity of devising an appropriate measure arises from the uncertainties surrounding both size of the prospective needs for liquidity at any given time, and the availability of sources of liquidity sufficient to meet them. There is also the impact of active asset and liability management on liquidity management.

An accurate measurement of liquidity therefore requires going beyond the technical liquidity indicated by the stock flow approach to an assessment of the stock of circumstances under which a bank could come under pressure likely to affect worthiness in the market place. Liquidity can be measured either as a stock at a point in time or as a flow over time. The most widely used is the stock approach. One of these is the loan/deposit ratio which is the most popular and commonly used measure in commercial banking.

According to Nwankwo (1991), under this measure, all bank loans are lumped together on the basis that they are the most liquid of all bank assets. These are then compared with the total deposit as a proxy for the liquidities that banks could be called upon honour. An increase in the ratio indicates a less liquid position and vice versa.

Table 2.1 Measurement of Liquidity In Commercial Banking 1995 – 2010

Years	Liquidity Ratio	Loan/Deposit Ratio	Cash Reserve Ratio
1995	33.1	73.3	5.8
1996	43.1	72.9	7.5
1997	40.2	76.6	7.8
1998	46.8	74.4	8.3
1999	61.0	54.6	11.7
2000	64.1	51.0	9.8
2001	52.9	65.6	10.8
2002	52.5	62.8	10.6
2003	50.9	61.9	10.0
2004	50.5	68.6	8.6
2005	50.2	70.8	9.7
2006	55.7	63.6	2.6
2007	48.8	70.8	2.8
2008	44.3	80.9	2.3
2009	40.9	79.8	3.5
2010	30.5	80.1	4.8

Source: CBN Statistical Bulletin 2009: 42 -43, NDIC Annual Report and Statement of Account 2010 – 2011

From the table, Nigerian banks have generally not experienced liquidity pressure as reflected in the liquidity ratio. Throughout the period under review there was no time liquidity ratio fell under 30% required by the regulatory authorities. The distress syndrome notwithstanding, hence, one can say that Nigerian have been under pressure to undertake liability management.

The loan/deposit ratio has been fluctuating. It fell sharply in 1993 from 55.2 to 42.9 and rose again in 1994 to 60.9. This could be attributed to the political situation in the country that year. The year was bedevilled with political instability as a result of the annulment of June 12 election. Since the loan/deposit ratio does not say anything about the maturity structure of the loan [portfolio, it implies that the loan/deposit ratio does not give an accurate indication of the liquidity needs (Nwankwo, 1991). It also does not give indication of the nature of the nature of the assets and liability outside the loan portfolio. It measures only the asset liquidity and excludes any measure of the liability of a bank to raise funds other than through the sale of the assets.

Another measure of bank liquidity is the loan to liabilities ratio. The approach recognises that liabilities other than deposits ratio represent potential drain on bank funds. It is slightly better than loan to deposits ratio but suffers from the same shortcomings as the loan/deposit ratio. A third measure of liquidity is the liquid asset ratio which allows assets to be selected on the basis of their liquidity, whether they are loans or investments. Liquidity ratios are computed as a proportion of bank's current liabilities such as deposit liabilities, short term interbank loans, net balances with foreign branches and free balances with CBN. It is also used to complement open market operation (OMO) and is a potentially strong tool for restarting credit expansion (FBN, 1997).

According to Nwankwo (1991), the liquidity ratio is defective in measuring only assets liquidity while ignoring the liquidity available through a bank's ability to borrow. Moreover, it does not take account of the composition problem. Minimum ratio specified by the regulatory authority is 30%.In the year 1992, commercial banks liquidity ratio fell to 29.2% which is slightly below the statutory limit of 30%. It however picked up the following year to 42.2 and went to 48.5 in 1994. It fell to 22.1% as at the last quarter of 1995.

Another measure of liquidity is the cash ratio i.e. the ratio of cash to total deposit or assets. Cash ratio is particularly effective for sterilizing excess liquidity in the banking system and can be easily monitored on a day to day basis because they are held by CBN. Under this ratio, liquid assets are related directly to deposits, rather than to loans and advances that constitute the most liquid or "hard" of banks assets.
The cash ratio has a drawback in that substantial part of the liquidity assets is not readily available to meet liquidity needs

Methodology

This section stresses the methodology employed for this work. The process of research usually entails problem identification, making hypothetical statements, collecting relevant data, analysing the data using the relevant and appropriate statistical tools of analysis.

Sources of Data

This study made use of secondary data from the Nigerian Stock exchange, bulletin of the Central Bank of Nigeria (CBN), Annual reports of Commercial banks i.e. Afribank Plc., United Bank for Africa (UBA), Diamond Bank Plc., Publications of the Nigerian Development Insurance Corporation, Quarterly reports of the CBN and CBN's Economic and Financial Review.

Method of Analysis

The method of analysis used is the regression analysis. The stationarity of the individual variables were determined with the unit root test.

Model Specification

The function for this study is given as:

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + e.$$

Where:

Y = Profitability representing the dependent variable;
b_0, b_1, b_2, b_3; are regression coefficients or parameters;
X_1, X_2, X_3; are independent variables;
X_1 = Bank cash asset (CA);
X_2 = Bank balances, and
X_3 = Treasury bill and certificate (TBC).

Test of Significance and the Decision Rule

This is usually tested using the following statistics:

$$F^* = \frac{MSR}{MSE}$$

To test the significance of the relationship between the dependent and independent variables, the critical value of F and the test statistic are compared taking cognisance of the degree of freedom k and n-k-1. Thus, if the absolute value of the F statistic is less than the absolute value of the critical value of F, the null hypothesis H_0 is accepted otherwise H_0 is rejected.

Data Presentation and Analysis

This section places emphasis on the need to estimate, analyse and interpret models already formulated. In addition, the hypothesis will be tested. Only secondary sources of data are employed. Three banks were selected namely, United Bank for Africa (UBA), Afribank and Diamond Bank Plc. The proxies for liquidity management are cash and short term fund (CA), bank balances (BB), treasury bills (TBC) and Certificates (TBC). These are the independent variables. Bank performances were being represented by profit after tax (PAT) which is the dependent variable.

Table 4.1 liquid Assets and Profit of United Bank for Africa Plc for the period 1995 – 2010

Year	PAT(₦'m)	CA(₦'m)	BB(₦'m)	TBC(₦'m)
1995	52	267	624	364
1996	58	127	507	326
1997	91	150	351	362
1998	70	241	963	468
1999	85	237	1583	543
2000	154	345	1268	1748
2001	305	939	6139	1871
2002	262	811	8998	4124
2003	639	783	9218	4936
2004	63	968	9218	4365
2005	313	1638	9745	7280
2006	328	2031	10232	7644
2007	345	2133	10743	8026
2008	262	2240	11281	8427
2009	380	2351	11845	8848
2010	399	2469	12437	9291
Total	**3806**	**17730**	**105152**	**68623**

Source: United Bank for Africa Plc Annual reports (1996, 2000, 2006, 20111)

Where: PAT = Level of profitability in year t;
CA = Level of cash and short term fund in year t;
BB = Level of bank balance in year t;
TBC = Level of bank treasury bills and certificate in year t.

Table 4.2 Liquid Assets and Profit of Afribank Plc for the Period 1995 – 2010

Year	PAT(₦'m)	CA(₦'m)	BB(₦'m)	TBC(₦'m)
1995	74	559	1306	765
1996	55	456	1824	1163
1997	65	353	3177	2542
1998	74	256	4861	1996
1999	10	618	4325	2323
2000	13	546	4911	4086
2001	265	584	4283	1460
2002	134	582	5881	4136
2003	355	3113	11712	7309
2004	1015	1618	10826	8300
2005	919	1736	15629	10975
2006	965	1823	16410	11524
2007	1013	1914	17231	12100
2008	1064	2009	18093	12795
2009	1117	2110	18997	13340
2010	1173	2215	19941	14007
TOTAL	**8311**	**20492**	**159407**	**108731**

Source: Afribank Plc. Annual Reports (1996, 2000, 2006, 2011)

Table 4.3 Liquid Assets and Profit of Diamond Bank Plc for the period 1997 – 2010

Year	PAT(₦'m)	CA(₦'m)	BB(₦'m)	TBC(₦'m)
1995	20	200	200	200
1996	30	220	300	220
1997	40	231	540	230
1998	116	330	1318	565
1999	231	759	1771	2703
2000	478	270	4369	2906
2001	422	342	6021	1001
2002	569	497	6855	3101
2003	919	826	9182	8346
2004	965	867	9641	8763
2005	1013	911	10123	9201
2006	1064	965	10629	9661
2007	1117	1054	11718	10651
2008	1451	1201	11881	10651
2009	1451	1201	11881	11232
2010	1478	1295	12144	12123
TOTAL	**11086**	**10992**	**107853**	**90848**

Source: Diamond Bank Plc. Annual Reports (1997, 2002, 2007 and 2011)

Table 4.4. The summary of unit root

Bank	Variable	Test Statistic (ADF) Level	Critical Value (5%)	Probability
UBA	CA	-3.123989	-3.1222	0.0108
	BB	-3.886356	-3.1222	0.0030
	TBC*	0.155295	-3.1003	0.0734
AFRIBANK	CA	-21.29421	-3.1003	0.0002
	BB	-0.071985	-3.1003	0.1005
	TBC	-0.142858	-3.1003	0.1433
DIAMOND BANK	CA	-2.821647	-3.8730	0.0224
	BB	-0.460624	-3.8730	0.0328
	TBC	-2.779466	-3.8730	0.0239

Source: Printout from Eviews.

Interpretation of the Unit Root test for UBA

The variable CA was found to be stationary at the level using the augmented Dickey-fuller (ADF) test atv5% confidence interval. The probability is 0.0108. Bank Balance (BB) was also stationary at level under 5% confidence interval with probability as 0.0030. However, treasury bills and certificates were found to be stationary at level using the Eliot Rothenberg stock test (ERS) at 5% confidence interval with probability as 0.0734.

For AFRIBANK

All the variables were found to be stationary at level with 5% confidence interval.

For DIAMOND Bank

All the variables were also found to stationary using 55 confidence interval under level

Table 4.5 Summary of Regression Analysis

Bank	Variable	Coefficient	Std Error	T-Statistics	Probability
Afribank	CA	-7.89	2.42	-0.326470	0.7493
	BB	-0.022605	0.047397	-0.476934	0.06413
	TBC	0.114275	0.067862	1.683918	0.1160
Diamond Bank	CA	0.081134	0.132536	0.612164	0.5529
	BB	0.056222	0.013969	4.024729	0.0020
	TBC	0.046019	0.017142	2.684643	0.0212
UBA	CA	-0.118153	0.170490	-0.693023	0.5005
	BB	0.000104	0.001727	0.060310	0.9528
	TBC	0.07843	0.043109	1.819896	0.0919

Source: Compiled from Eviews output.

Table 4.6 Summary of Global Statistics

Bank	R^2	Adjusted R^2	S.E of Regression	Log likely Hood	Akaike	Schwarz
Diamond	0.968193	84.91068	-80.91068	-80.35940	11.90849	12.04543
Afribank	0.887979	0.870745	173.7524	-103.5640	13.31050	13.46536
UBA	0.412970	0.322658	139.3162	-100.0298	12.87873	13.02359

Source: Compiled from Eviews.

Empirical Results

Hypothesis 1 The low probability values of CA from the above for Diamond Bank and UBA (which is lower than the test statistics) signifies the rejection of the null hypothesis. Thus, we conclude that that there is a significant relationship between liquidity and bank profitability.

Hypothesis 2 The low probability values in for the three banks show the insignificance of the null hypothesis. We then conclude that treasury bills and certificates have a significant impact on bank profitability.

Hypothesis 3 For diamond bank and Afribank, the low probability values indicate the non-significance of the null hypothesis, thus the alternative hypothesis is accepted which means that bank balance has no influence on bank profitability. The bank balance did not perform well in UBA. This can also be seen from its coefficient as 0.000104.

Hypothesis 4 From the model stated earlier, the coefficient cash and short term fund is 0.81134 while the t-statistics is 0.612164, thus we reject the null hypothesis and conclude that there is a significance positive relationship between cash (and short term fund) and profit after tax.

The coefficient for that of UBA is negative, which shows a negative relationship. In other words, as cash and short term fund is growing, the profit after tax is declining. This is however, in line with practical realities since cash is sterile and does not yield anything. However, for Afribank, the model is not significant. In conclusion, we reject the null hypothesis and accept the alternative by saying that there is a significant relationship between cash (and short term fund) and profitability.

Discussion

The results of this study have shown that liquidity management is indeed a crucial problem in the Nigerian banking industry. The variables selected have not performed well in terms of their contribution towards the performance of the selected banks as represented by profit after tax. Mentioned is the fact that the management of cash and short term fund (CA) in the three selected banks contributed negatively in Afribank and United Bank for Africa and minimally in Diamond Bank. The rest of the independent variables did not contribute much to the performance of the banks. The results are in line with the current global trend where liquidity has become a constant source of anxiety to the financial sector.

Cash and short term fund (CA) have not been properly managed in UBA which means that the amount held may have been in excess of the requirement for greater performance since cash is sterile.
The results also have shown that banks should hold more treasury bills and certificates (TBC) as their impact on bank performance has been consistently commendable in the three selected banks.

Conclusion

From the analysis, we conclude that for banks to resolve the liquidity/profitability trade-off, there is need for each bank to determine its optimal liquidity position.

Recommendation

There is need for banks to engage competent and qualified personnel. The right personnel will ensure that the right decisions are made especially with the optimal level of cash and treasury bills and certificates to keep. The banks need to be more aggressive in the area of profit enhancement. While we emphasise the need for more aggressive approach to investing idle cash, of more importance is the need for proper investment analysis, which has the benefit of sieving out unprofitable investments and even avoiding unnecessary taking of risk.

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