Print ISSN: 2321-6379
Online ISSN: 2321-595X
DOI: 10.17354/ijssSept/2017/45

Original Article

Determinants of Liquidity of Commercial Banks in Vietnam in the Period 2009-2016

Nguyen Thi Ngoc Diep[1], Thanh-Lam Nguyen[2]

[1]Faculty of Finance – Accounting, Lac Hong University, Dong Nai, Vietnam, [2]Office of Scientific Research, Lac Hong University, Dong Nai, Vietnam

ABSTRACT

Commercial banks increasingly emphasize the importance of liquidity risk management in daily operations, in which several factors affect liquidity. This study identifies major determinants of the liquidity of commercial banks in Vietnam from 2009-2016 by using a regression model with the ordinary least square (OLS) method. According to data from the financial reports of 32 commercial banks in Vietnam during this period, three determinants, including (1) size of bank, (2) ratio of total loans to total deposits and (3) capital to asset proportion, significantly affect the liquidity of a bank. Based on the results of this study, managerial implications for commercial banks in Vietnam are made for their sustainable development and some recommendations are also made for the State Bank of Vietnam to improve their relevant policies in controlling the whole banking system.

Key words: Determinants of liquidity, Liquidity risk, Risk management, Commercial banks in Vietnam

INTRODUCTION

In the last few years, the banking industry in Vietnam has well attracted special interest of several economic sectors and developed so fast in terms of the capital volume of banks in the system. Hence, the banks have enough capability to provide large loans, which is also accompanied with possible implicit risks. It can be said that in the industry, risks, especially liquidity risk, significantly affect the performance of not only individual banks but also the whole banking system. In emerging countries, such as Vietnam, where the capital market is under development, the system of commercial banks is the key source supplying capital to the economies. Hence, risk management in banking industry in general and liquidity risk management in particular has become more and more important for commercial banks in the world.[1-5]

Moreover, in the operation of the industry, while some affecting factors such as credit risk, exchange rate, interest have certain lags, the liquidity has however immediacy characteristic. Vento & Ganga[6] found that it is so rare for a bank to have a good balance between the total demand for liquidity and the total supply of liquidity; i.e. facing with either surplus or deficit of liquidity becomes a permanent problem existing in any commercial bank. If the shortage of available funds in a bank exists so long and/or is slowly treated, it seriously affects its reputation and reduces not only its ability to raise capital but also its profitability because customers are not satisfied with its performance.[7] And more importantly, that all dissatisfied depositors who want to withdraw all of their money at the same time on the system of a bank but it fails to provide enough available funds may bring the bank to the verge of bankruptcy and be merged/acquired; or it may even lead to the collapse of the finance and banking system of a nation.[8]

The liquidity of commercial banks is always in a dynamic state[9-11] because it is affected by several factors which have attracted scholars worldwide in searching for its critical determinants. Our literature review shows that different researches in different countries, or even in different system in the same country, may find different affecting factors. For example, Akhtar et al.[3] found the relationship between liquidity with the size of bank and the ratio of the net working capital to the total asset of the bank while Ahmed et al.[2] discovered that the liquidity is also affected by the efficient use of asset and the ratio of the equity to asset.

Access this article online

www.ijss-sn.com

Month of Submission : 07-2017
Month of Peer Review : 08-2017
Month of Acceptance : 09-2017
Month of Publishing : 09-2017

Corresponding Author: Thanh-Lam Nguyen, Office of Scientific Research, Lac Hong University, Dong Nai, Vietnam 10 Huynh Van Nghe, Buu Long, Bien Hoa City, Dong Nai Prov., Viet Nam. Phone: +841695038389. E-mail: green4rest.vn@gmail.com

Moreover, Abdullah & Khan[1] found the effects of other two ratios namely as the ratio of total short-term liability to the equity and the ratio of total loan to total deposit. And Iqbal[4] pointed that the liquidity of a bank is also affected by the capital adequacy ratio, etc. Practically, the banking system in Vietnam has some distinct characteristics such as the government management policy of monetary and exchange rate as presented by Bingham[12]. Therefore, it is also very important to identify the determinants of the liquidity of commercial banks in Vietnam so that they can implement proper policies for their sustainable development. To do that, this paper investigates the business operation of 32 commercial banks in the period 2009-2016 and analyzes the collected data with ordinary least square (OLS) multiple linear regression.

The rest of this paper is organized as the following. The next section presents some primary literature of some key independent variables with some hypotheses to be tested in this paper. After that, we introduce our research methods and statistical models proposed in this study.

LITERATURE REVIEWS

Several researches have carefully conducted to figure out the determinants of the liquidity of commercial banks as reviewed by Lastuvkova.[5,13-17] This section reviews of the key determinants existing in the literature to provide the basis of the research model in this paper.

Size of Bank (SIZE)

Literally, the liquidity of a bank is normally determined by the ability of either settling all requested payment responsibility at a certain time and low cost or raising its short-term capital by borrowing on interest or selling their assets to fulfill its payment responsibility.[9-11] As a matter of fact, large commercial banks having abundant capital have several approaches to maximize their profitability and provide big loans to earn income though providing big loans is also risky in strengthening their liquidity.[18] It is because larger banks usually have better ability to resist and overcome difficulty in the liquidity problem. Thus, the size of a bank obviously affects its liquidity. This is already discussed by Akhtar et al.[3] and Ahmed et al.[2] who found a positive and strong relationship between the size of a bank and its liquidity; i.e. a bank with larger assets has better liquidity. Contradictory, Abdullah & Khan[1] discovered a negative relationship between the two; i.e. a bank with larger assets has worse liquidity. These opposite findings urge us to investigate how the size of a bank affects its liquidity. Currently, commercial banks in Vietnam usually raise their capital from short-term deposits and encourage loans to earn money. However, the increase in loans is on the other hand quite risky because it also increases the possibility of irrecoverable liabilities. Specifically, according to the recent statistics by the State Bank of Vietnam (SBV), until early July 2014, the state-owned commercial banks and joint-stock commercial banks respectively hold 130,634 billion VND and 190,314 billion VND of chartered capital, accounting for more than 75% capital of the whole banking system. Thus, our first hypothesis (H1) is "Larger bank has better liquidity".

Ratio of Total Short-Term Liability to Equity (L/E)

This indicator depicts the finance structure of a commercial bank. Thus, it provides investors an overview of its financial strength because it indicates the credit-worthiness to settle occurring liabilities. Basically, commercial banks raise their capital to make loans. Abdullah & Khan[1] and Ahmed et al.[2] found a negative relationship between the L/E and the liquidity of a commercial bank. Practically, if short-term liabilities are much more than the equity, it is said that the bank raises funds more than its equity. Once the ratio is higher than the average level of the industry, we conclude that the capital of the bank is majorly raised from short-term capital sources which are not stable. This leads to the need to increase its short-term liquidity and accordingly reduces its overall liquidity. Consequently, if the ratio of short-term liabilities to equity rises, its liquidity tends to be worsened. Thus, our second hypothesis (H2) is "Higher ratio of total short-term liability to equity of a bank lowers its liquidity".

Ratio of Total Loans to Total Deposits (L/D)

This ratio shows the ability of a bank in effectively using the raised capital to assure both loans for earning income and liquidity demanded from customers. Besides, this index manifests whether the bank is intensifying the use of raised capital to make loans and focuses on its profitability. Higher L/D indirectly reduces the available capital to satisfy requested payment from customers, making its liquidity easily affected by unexpected external factors. As a consequence, L/D has a negative relationship with the liquidity.[1] However, Vodová[5] found that the relationship is insignificant in the case of commercial banks in Czech Republic. In the case of commercial banks in Vietnam in this study, our third hypothesis (H3) is stated as "Higher ratio of total loans to total deposits of a bank lowers its liquidity".

Return on Assets (ROA)

This ratio indicates the efficiency in managing assets of a bank. Though Abdullah & Khan[1] found a negative relationship between ROA and the liquidity of commercial banks in Pakistan, Akhtar et al.[3], Ahmed et al.[2] and Iqbal[4] discovered a positive relationship between them; i.e. a bank with higher and more stable ROA tends to well manage its

business operations, assets as well as their risks, including liquidity risk. So, our fourth hypothesis is "Higher return on assets of a bank heightens its liquidity".

2.5. Capital to Asset Proportion (CAP)

CAP of a commercial bank indicates its actual financial capability.[19] A bank with a CAP that is higher than the average level of the industry obviously has better capability in raising capital, providing loans, and assuring requested payment. Commercial banks usually face with different risks in their business operation. The risks once occurring cause serious losses, and even bring a bank to the verge of bankruptcy. In such situation, a bank with strong CAP can easily compensate the occurring losses and help it overcome such threat. In some cases where a bank loses its payment capability, its equity is then used to fulfill the requested payment from its customers. The CAP has a positive and significant relationship with the liquidity of commercial banks[2,4,13-17]; i.e. a bank with higher CAP tends to have better liquidity. Thus, our fifth hypothesis (H5) is "Capital to asset proportion has positive impact on the liquidity".

Research Methods

Based on the above review of the existing researches, this paper investigates the impact of some key determinants including SIZE, ROA, L/E, L/D, and CAP on the liquidity (LIQ) of the banking system in Vietnam by collecting and analyzing the audited financial reports from 32 commercial banks in the period 2009-2016. The data are analyzed with multiple linear regression with the ordinary least square method.

Proposed Model

Literally, a multiple linear regression model comes in the following form:

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \ldots + \beta_n X_{ni} + \varepsilon_i$$

where: Y is a dependent variable; and X_{ji} denotes independent ones; β_0, β_1,…, β_n are called "regression coefficients" which are estimated based on practical data; ε_i denotes the i^{th} residual which is defined as the disparity between the actual observed value and the estimated one obtained from the model.

Specifically, our proposed regression model includes the following variables:

$$Y = \{LIQ\},\ X_{ji} = \{SIZE,\ ROA,\ L/E,\ L/D,\ CAP\}.$$

The measurement for these variables is presented in Table 1. Thus, our regression model is presented as:

$$LIQ = a + \beta_1 SIZE + \beta_2 ROA + \beta_3 L/E + \beta_4 L/D + \beta_5 CAP + \varepsilon.$$

Based on our hypotheses, the signs of the regression coefficients are expected as: $\beta_1, \beta_2, \beta_5 \geq 0; \beta_3, \beta_4 \leq 0$.

Research Data

Collected data from audited financial reports of the 32 commercial banks in the period 2009-2016 are then transformed into expected values based on the measurements presented in Table 1. Their descriptive analyses are shown in Table 2.

ANALYSIS RESULTS

Correlation Analysis

Table 3 presents the correlation coefficients of the investigated variables, showing that the probability for collinearity among them is really low.

Test for Collinearity

The results of the test for collinearity are shown in Table 4. The variance inflation factor (VIF) of each independent variable is less than 10, indicating that there is no collinearity in the research model.

Regression Analysis

Using regression analysis with OLS method for the proposed model, we find that among the five independent variables, ROA and L/E are statistically insignificant at the level of 5%. As a consequence, the final regression model is now obtained as:

$$LIQ = \underset{}{0.963} + \underset{(0.000)}{0.130}\,SIZE - \underset{(0.000)}{0.146}\,L/D - \underset{(0.000)}{0.336}\,CAP$$

(the small values in the brackets are the significance levels of the respective regression coefficients).

This model obviously shows that there are three significant factors affecting the liquidity of a commercial bank in Vietnam, including: (1) the size of bank; (2) the ratio of total loans to total deposits; and (3) the capital to asset proportion. Moreover, the first determinant (SIZE) has a positive impact on the liquidity whereas other two have negative impacts on it.

Test for Heteroskedasticity

The regression with OLS makes the assumption that the variance of the error term is constant. If this assumption is violated, OLS estimates are no longer BLUE; i.e. among all the unbiased estimators, OLS fails to provide the estimate with the smallest variance although it does not result in biased parameter estimates. Depending on the nature of the heteroskedasticity, significance tests can be too high or too low. In addition, the standard errors are biased when heteroskedasticity is present.

Table 1: Explanation and measurement of research variables

No.	Variable	Measurement	Reference
1	LIQ (Liquidity)	LIQ = [(Cash+Cash equivalent+Deposits at other financial institutions)/Total assets]	Iqbal (2012); Vodová (2011)
2	SIZE (Size of Bank)	SIZE=Ln (Total assets)	Akhtar et al. (2011); Abdullah & Khan (2010); Ahmed et al. (2011); Iqbal (2012); Vodová (2011)
3	ROA (Return on Assets)	ROA = [Net profits/Total assets]	Akhtar et al. (2011); Ahmed et al. (2011); Iqbal (2012);
4	L/E (Ratio of total short-term liability to equity)	L/E = [Total short-term liability/Equity]	Abdullah & Khan (2010); Ahmed et al. (2011);
5	L/D (Ratio of total loans to total deposits)	L/D = [Total loans/Total deposits]	Abdullah & Khan (2010); Vodová (2011)
6	CAP (Capital to asset proportion)	CAP = [Equity/Total assets]	Ahmed et al. (2011); Vodová (2011)

Table 2: Descriptive data analyses of investigated variables

Variables	Minimum	Maximum	Mean
LIQ	0.027	0.610	0.262
L/E	0.977	20.094	11.822
L/D	0.274	2.669	0.981
CAP	0.005	0.506	0.128
ROA	–0.004	0.060	0.013
SIZE	12.985	20.090	17.259

Table 3: Correlation matrix

	SIZE	ROA	L/E	L/D	CAP
SIZE	1.00				
ROA	–0.28	1.00			
L/E	0.41	–0.28	1.00		
L/D	–0.41	–0.02	–0.01	1.00	
CAP	–0.75	0.52	–0.39	0.30	1.00

Table 4: Test for collinearity

	Variables	VIF
1	SIZE	2.70
2	ROA	1.48
3	L/E	1.28
4	L/D	1.28
5	CAP	3.00

Thus, testing for heteroskedasticity is also important to affirm the validity of the regression model. This paper uses White's test to perform this task. And we found that the model is free from heteroskedasticity.

DISCUSSION AND CONCLUSION

The three determinants of liquidity of commercial banks in Vietnam as presented in the final regression model can be briefly interpreted as the following.

Size of Bank

This factor, measured by the natural logarithm of the total assets, is used to investigate its impact on the liquidity of commercial banks. Its regression coefficient is +0.130 statistically significant in the model, indicating that a bank with larger assets have better capability to raise capital and provide large loans to earn better incomes; thus, its liquidity become better and better. Our finding agrees with those of Akhtar et al.[3] and Ahmed et al.[2]. Thus, hypothesis H1 is well supported.

The above finding implies that commercial banks in Vietnam need to strengthen their assets in order to assure better liquidity. As large commercial banks in Vietnam usually share a significant portion to the state, they usually have advantages in approaching big sources of capital at a low cost; i.e. larger commercial banks in Vietnam can easily improve their liquidity. For small ones, they should properly measure and evaluate their current financial status, use appropriate financial leverages to avoid wasting their capital, adjust their business portfolios by focusing on higher efficient but less capital-consumed ones. In the current trend of globalization, small banks should consider merging and acquiring strategies to enhance their competitive ability on the marketplace.

Ratio of Total Loans to Total Deposits

This factor is used to evaluate the performance of a bank in combining its raising capital activities and providing loans for profitability on its liquidity. In this study, it is found as one the key determinants and negatively affects the liquidity (-0.146); i.e. a bank with higher ratio of total loans to total deposits tends to have worse liquidity. Our finding further affirms those of Abdullah & Khan[1] and Vodová[5]. Thus, hypothesis H3 is well supported.

Thus, the increase in the ratio tends to worsen the liquidity. It can be explained by the fact that when a bank set their profit as first priority, they tend to provide more loans; and if they fail to raise enough capitals, their available funds absolutely fail to fulfill their payment capacity; thus resulting in lower liquidity. Therefore, SBV should intensify its role in controlling the credit management of commercial banks by strictly auditing, monitoring their allowance for credit risk as stated in the Circular 36/2014/TT-NHNN issued

on November 20, 2014. Specifically, it is mandatory that reserve requirement of 10% is applied for all commercial banks; and Debt-Service Coverage Ratio (DSCR) in 30 days is set at 50%. From such regulations, SBV can gradually integrate international standards of Basel II and Basel III in managing liquidity risk into commercial banks of Vietnam to help them operate more and more efficiently and healthier.

Capital to asset proportion

Literally, a bank with higher CAP usually has better liquidity.[2,5,13-17] However, in our study, CAP has a negative relationship (-0.336) with the liquidity of commercial banks in Vietnam, rejecting hypothesis H5. It is because in the period 2009-2016, SBV obliged commercial banks to increase chartered capital so as to improve their Capital Adequacy Ratio (CAR); consequently, they had to increase their owned capital by all means. Such increase obviously indirectly reduced their business efficiency in term of return on equity (ROE). Therefore, in order to prevent the reduction of ROE while the CAR is increased, the leaders of commercial banks had to accordingly increase ROA by using financial leverage of expanding investments, credits, etc. In addition, due to the global economic crises in 2008, commercial banks run into difficulties and their liquidity was seriously impacted. In such a case, larger banks were more severely injured. That's why we have the negative coefficient of -0.336 for the CAP. However, we believe that this is only a contemporary phenomenon.

CONCLUSION

Nowadays, commercial banks in Vietnam are all under a high pressure of assuring both chartered capital set by the SBV and liquidity ratio. They are all in a race of raising capital, leading to a significant increase in the interest rates and making harm to the overall liquidity of several commercial banks. By investigating the period 2009-2016, we found that there are three key determinants of the liquidity of commercial banks in Vietnam, including the size of bank, the ratio of total loans to total deposits, and capital to asset proportion. Among them, the size of a bank has a positive impact whereas other two have negative impact on the liquidity.

REFERENCES

1. Abdullah A, Khan AQ. Liquidity risk management: A comparative study between domestic and foreign banks in Pakistan. J Manage Sci. 2010; 6(1): 61-72.
2. Ahmed N, Akhtar MF, Usman M. Risk management practices and Islamic Banks: An empirical investigation from Pakistan. Interdiscip J Res Bus. 2011; 1(6): 50-57.
3. Akhtar MF, Ali K, Sadaqat S. Liquidity risk management: A comparative study between conventional and Islamic Banks of Pakistan. Interdiscip J Res Bus 2011; 1(1): 35-44.
4. Iqbal A. Liquidity risk management: A comparative study between conventional and Islamic banks of Pakistan. Global J Manage Bus Res. 2012; 12(5): 55-64.
5. Vodová P. Liquidity of Czech commercial banks and its determinants. Int J Math Models Methods Appl Sci. 2011; 5(6): 1060-1067.
6. Vento GA, Ganga PL. Bank liquidity Risk Management and Supervision: Which lessons from recent market turmoil? J Money Investment Banking 2009; 10: 78-125.
7. Munari L, Ielasi F, Bajetta L. Customer Satisfaction Management in Italian Banks. Qualitative Research in Financial Markets, 2013; 5(2): 139-160.
8. Hakiri W. For an Efficient Complaints Management System for Banks: A Conceptual Framework and an Exploratory Study. J Marketing Res Case Studies. 2012; Article ID 624789, 11 pages; DOI: 10.5171/2012.624789.
9. Bianchi J, Bigio S. Banks, liquidity management and monetary policy. Federal Reserve Bank of Minneapolis - Research Department Staff Report 503; September 2014.
10. Gertler M, Kiyotaki N. Banking, liquidity and bank runs in an infinite horizon economy. Am Econ Rev. 2015; 105(7), 2011–43.
11. Robatto R. Flight to liquidity and systemic bank runs. Working paper series No. 38/2017. [Online] https://goo.gl/1gxSWQ
12. Bingham B. Monetary and Exchange Rate Policy in Vietnam: Some Challenges. In Presentation for the National Assembly HoChiMinh City, Vietnam, September 21, 2010. [Online] https://www.imf.org/external/country/VNM/rr/2010/092110.pdf.
13. Lastuvkova J. Determinants of the Slovak bank liquidity flows. In: MENDELU Working Papers in Business and Economics 51/2015. Brno: Mendel.
14. Trenca L, Petria N, Mutu S, Corovei E. Evaluating the liquidity determinants in the central and eastern European banking system. 2012. [Online] http://feaa.ucv.ro/FPV/014-11.pdf
15. Vodova, P. Determinants of commercial banks' liquidity in Slovakia. In: Lessons Learned from the Financial Crisis. Proceedings of 13th International Conference on Finance and Banking. Silesian University, 12-13 October 2011; 740–748.
16. Vodova, P. 2012. Determinants of commercial banks' liquidity in Poland. In: Ramik J., Stavarek, D. (eds.). Proceedings of 30th International Conference Mathematical Methods in Economics. Silesian University, 11-13 September 2012; 962–968.
17. Vodova, P. Determinants of commercial banks' liquidity in Hungary. 2013; [Online] http://www.slu.cz/opf/cz/informace/acta-academicakarviniensia/casopisy-aak/aak-rocnik-2013/docs1-2013/Vodova.pdf. [Accessed on Nov. 15, 2016].
18. Boyd J, Runkle D. Size and the performance of banking firms: Testing the predictions of theory. J Monetary Econ, 1993;.1: 47-67.
19. Horvath R, Seidle J, Weill L. Bank Capital and Liquidity Creation: Granger Causality Evidence. Institute for East and Southeast European Studies. Working paper series No. 1497/November 2012. [Online] https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1497.pdf

How to cite this article: Diep NTN, Nguyen T. Determinants of Liquidity of Commercial Banks in Vietnam in the Period 2009-2016. Int J Sci Stud 2017;5(6):237-241.

Source of Support: Nil, **Conflict of Interest:** None declared.