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Article

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Global Business & Finance Review (GBFR)

Provided in Cooperation with:

People & Global Business Association (P&GBA), Seoul

Suggested Citation: Nguyen Quoc Anh; Tang My Sang (2024) : Excess liquidity and bank stability: Empirical evidence in Vietnam, Global Business & Finance Review (GBFR), ISSN 2384-1648, People & Global Business Association (P&GBA), Seoul, Vol. 29, Iss. 6, pp. 74-85, <https://doi.org/10.17549/gbfr.2024.29.6.74>

This Version is available at:

<https://hdl.handle.net/10419/306014>

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Excess Liquidity and Bank Stability: Empirical Evidence in Vietnam

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ABSTRACT

Purpose: The article has developed a research model to measure the effect of liquidity and excess liquidity on bank stability.

Design/methodology/approach: Other variables such as bank size, loan growth, economic state, and inflation are also incorporated into the research model to ascertain the degree of impact on the stability of banks. To achieve the research goal, data was taken from 28 Vietnamese commercial banks in the period from 2010 to 2022, using quantitative research methods and linear regression models.

Findings: According to research findings, managers are more likely to engage in moral hazard-related behavior when there is excess liquidity available because they are more willing to take on greater risks when making credit or investment decisions.

Research limitations/implications: According to the research findings, excess liquidity has an adverse impact on Vietnam's banking system's stability. Since managers are more likely to take on greater risks when making credit or investment decisions when there is excess liquidity, this can lead to moral hazard-related behavior. However, the research is also limited because it is not possible to compare this relationship between different types of banks and compare it with other nations due to data limitations.

Originality/value: The research has important implications for policymakers and administrators in liquidity management to increase bank stability.

Keywords: Basel accord, Bank stability, Commercial bank, Excess liquidity

I. Introduction

The ability to pay short-term financial obligations as they become due is referred to as liquidity (Valla et al., 2006). But when banks hold more cash and other liquidity reserves than what's required by law, that situation is known as excess liquidity (Calcagnini et

al., 2022). Banks may hold excess liquidity involuntarily for other reasons, or voluntarily for precautionary reasons. Increasing liquidity is supposed to act as a cushion against shocks brought on by significant withdrawals from customers, especially when the interbank market is inefficient (Agénor & Aynaoui, 2010). Furthermore, banks maintain liquidity as a buffer against costs and reserves (Giolongo et al., 2019), liquidity risk (Kim et al., 2020), and risk vulnerability market (Viphindrartin et al., 2021; Chehayeb, 2024). As a risk management strategy, banks exchange their profitability for low-yielding

Received: Apr. 2, 2024; Revised: Apr. 28, 2024; Accepted: May. 13, 2024

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liquid assets (Ji, 2018). Government intervention and high foreign capital investment also play a part in creating large liquidity capital flows, which banks find difficult to allocate efficiently because of capacity constraints and a slowing economy (Konara et al., 2019).

Regulations governing international banks ensure that, following the global financial crisis, these banks can continue to manage risks and resume regular operations without requiring outside assistance in the form of government bailout packages, connections to other multinational banking systems, or forced mergers or acquisitions (Kim et al., 2020). This could be attributed to the effectiveness of keeping liquidity buffers in place, which shield banks from minor liquidity shocks. However, since excess liquidity serves as a credit buffer, it will result in numerous risk issues (Acharya & Naqvi, 2012). Bank owners are encouraged to lend more and even more readily accept higher-risk loans when there is excess liquidity because it indicates safety with low liquidity risk (Calcagnini et al., 2022). Moreover, when banks can accept high-risk borrowers with relaxed lending standards or lend against and invest in real estate mortgaged assets using riskier deposits, this frequently results in adverse selection. Bad debt increased as a result, and property bubbles threatened the stability of banks, growing a foundation for the next crisis (Acharya & Naqvi, 2012).

Banks in developing economies are often characterized by their vulnerability to shocks and shortcomings in the institutional and legal framework (Buallay et al., 2020). Since then, banks have been exposed to market risks, particularly when making loans and making investments in domestic financial assets (Bokhari & Oh, 2022). The economy's need for big loans means that banks must maintain high liquidity, which is a sign of weakness as financial intermediaries (Giologno et al., 2019).

Through a review of previous studies, it can be seen that excess liquidity has a certain impact on banking stability (Buallay et al., 2020; Acharya & Naqvi, 2012; Bokhari & Oh, 2022). However, research results vary across countries. Especially in a developing

country whose capital market depends mainly on banks but no research has been widely published. This is the research gap. Therefore, it's essential to research how excess liquidity affects bank stability. Therefore, it's essential to research how excess liquidity affects bank stability.

Finding out how excess liquidity affects bank stability is the goal of this study. The study's findings offer significant empirical support for the theories underlying the stability of banks in the context of excess liquidity. The study also explores the potential adverse effects of involuntary liquidity reserves on banking stability to evaluate liquidity supply solutions when a crisis occurs in Vietnam. Reduced demand and increased liquidity may result in higher levels of excess, which would increase bank instability. To achieve the research objective, the article is structured including an introduction, literature review, methodology, results and discussion, conclusions, and management implications.

II. Literature Review

A. Liquidity Preference Theory

Liquidity Preference theory was proposed by Modigliani (1944). The theory indicates that liquidity management is an urgent activity to ensure the survival of financial institutions. Because they can be converted into cash and carry a small risk of principal loss, investors favor short-term investment products (Calcagnini et al., 2022). On the other hand, borrowers prefer long-term debt because it removes the possibility of having to make payments under adverse circumstances and allows them to plan their finances appropriately to continue with business as usual, guaranteeing efficiency. This theory encourages banks to balance funding sources (short-term and long-term debt), keeping the bank with more short-term assets with higher credit to easily meet the bank's needs when due (Ahmad et al., 2022). Liquidity Preference Theory, when applied to this study,

clarifies how liquidity and excess liquidity affect bank stability. When banks pursue high risks, lending more than the allowed amount will push the bank into a serious liquidity shortage when problems occur (Giolongo et al., 2019). On the other hand, when banks have excessive reserves, the rate of return on capital is also affected, causing the bank's long-term financial situation to face instability (Gupta & Kashiramka, 2020).

B. Theory of Optimal Portfolio Selection

This theory was put forward by Markowitz (Markowitz (1991)). The theory holds that there is a trade-off between return and risk. Therefore, it is necessary to diversify investment portfolios to spread and minimize risks. The function of money as a risk-free asset in addition to a portfolio of riskier assets is to diversify investments or savings (D'Avino et al., 2022). Banks must therefore trade off the risks associated with risky investments to maintain high liquidity. To argue the trade-off between earning assets and a bank's highly liquid cash or cash equivalents, the theory is applied to the current study.

C. Basel on Liquidity Management in Banking

The Basel Committee on Banking Supervision (BCBS) has released several reforms since the global financial crisis to improve the standards for risk management, regulation, and supervision in the banking industry (Dei Ofosu-Hene & Amoh, 2016). The goals of these changes also referred to as the Basel III standards, were to strengthen the banking system's resilience to shocks brought on by financial and economic strain and to address the shortcomings that were uncovered during the most recent financial crisis.

The introduction of minimum liquidity standards to lower the risk of insolvency in the bankin industry is a first for the new Basel III liquidity rules (Rizvi et al., 2018). The liquidity framework consists of two ratios developed to achieve two separate but

complementary objectives. First, there is the liquidity coverage ratio, which indicates how many liquid assets a bank should have on hand to cover its needs in the event of a 30-day liquidity stress test. The second is the net stable funding ratio, which requires a minimum amount of stable funding at a bank to meet potential liquidity needs over one year.

D. Bank stability

Stability in the banking sector has grown in importance in recent years, playing a major role in the development of any nation's economic structure and foreign trade policies (Alshubiri, 2017). Two approaches are taken to the idea of bank stability. The first approach looks at it from the stability perspective, and the second looks at it from the instability perspective (Ozili, 2023).

A state of bank stability occurs when commercial banks can efficiently perform their primary economic duties, which include making payments, allocating resources, and spreading risk (Goetz, 2018). The most systemically significant banks can carry out their core duties. Bank stability must meet two conditions. First, key institutions in the banking system are less vulnerable, creating a high level of confidence and therefore able to meet their contractual obligations without disruption or external support. Second, market participants confidently transact with banks at market prices that do not change significantly in the short term when there are no fundamental changes (Lee et al., 2013). Highly stable banks can enhance their reputation and competitive position in the market, maximize market value, and increase investment returns (Thakor, 2000). The second point of view is about bank instability. Bank instability can arise when banks operate inefficiently, adversely affecting the solvency of individual banks or the system (Shie et al., 2012; Bokhari & Oh, 2022). This is brought on by macroeconomic shocks that put banks' operations under stress (Li et al., 2021).

E. Research Hypotheses

1. Independent variables

The capacity to pay debts as they become due is known as liquidity. Liquidity in bank operations will be assessed from two perspectives (Valla et al., 2006). The bank's ability to finance projects is the first aspect. Supporting partners' short-term capital withdrawals or bank operations both require this ability. Banks' capacity to turn an asset into cash is the second aspect. Banks that exhibit low liquidity may be having trouble turning their holdings into cash or may have trouble acquiring assets from the market. (Ahmad et al., 2022). This shows instability in banking operations. Previous research has shown that bank liquidity has a negative impact on bank stability (Ozili, 2018; Calcagnini et al., 2022). The following research hypothesis is proposed:

Hypothesis 1. Liquidity has a negative effect on bank stability

Commercial banks are considered to have excess liquidity when their liquidity reserves are higher than these minimum amounts (Ahmad et al., 2022). Research by Demiralp et al. (2021) finds a more stable source of capital can reduce the probability of bank failure. Furthermore, banks will have to pay higher interest rates for longer-term capital sources to maintain a higher stable capital ratio, according to D'Avino et al. (2022). This understanding suggests that bank liquidity may cause banks to become more unstable and negatively affect their earnings.

Furthermore, Wagner's (2007) theoretical model describes the relationship between liquidity and bank stability, arguing that an increase in a bank's liquid assets can decrease bank stability during the financial crisis, but have no impact during normal periods. On the other hand, an increase in liquidity can increase interest rates through changes in monetary policy, thereby pushing banks to invest in risky assets. Therefore, the first hypothesis in this study will be established similarly to the hypotheses posed in

previous studies including that of Acharya & Naqvi (2012) and Khan et al. (2016).

Hypothesis 2: The higher the excess liquidity, the more bank instability.

2. Control variables

Large-scale banks are often able to diversify products and lend better, thereby reducing potential risks (Dei Ofosu-Hene & Amoh, 2016; H. A. Lee, 2022). Large banks can also benefit from economies of scale to lower input costs and help businesses become profitable in a sustainable manner. Previous studies have shown that size has an impact on bank stability (Dei Ofosu-Hene & Amoh, 2016; M. R. Goetz, 2018; Ahmad et al., 2022). Nonetheless, there is another opinion that larger banks frequently diversify their types of business, which puts them at risk for agency issues and bad corporate governance, both of which increase systemic risks. The bank also experienced liquidity issues, which diminished the bank's stability (Dei Ofosu-Hene & Amoh, 2016). The authors evaluate the significance of the regressions of the variables in the model that represent the aforementioned factors in addition to assessing the effect of excess liquidity:

Hypothesis 3a: Bank size is positively correlated with bank stability.

Hypothesis 3b: Bank size is negatively correlated with bank stability.

Lending is the main profit-generating activity of banks, so for most banks, after mobilizing capital, they find a way to lend the entire amount after setting up reserves. However, banking operations are always subject to credit risk (Dei Ofosu-Hene & Amoh, 2016). Credit risk typically rises as credit expands. Credit risk provisions typically rise in line with credit growth. These provisions are at their height during economic downturns, which raises costs (Buallay et al., 2020; Le, 2020). Nevertheless, growing bad debt also causes a significant lack of liquidity, which fuels

instability in the banking system (Wagner, 2007). Prior studies have also verified that one of the factors contributing to bank instability is the expansion of loans (Ahmad et al., 2022; Le, 2020).

Hypothesis 4: Bank stability is negatively impacted by loan growth.

Instability in banking operations is often caused by unexpected fluctuations in economic cycles (Ozili, 2018; Musembi & Chun, 2020). However, the effects of economic booms and recessions vary across countries (Kim et al., 2020). GDP growth contributes to the stability of the banking system because it raises capital demand in the economy, which in turn leads to the development of the nation's economic growth cycle and helps the bank function more steadily (Viphindartin et al., 2021; Filipos Ruxhoa & Behab, 2024).

Hypothesis 5: Bank stability is positively impacted by economic growth.

An ongoing rise in the average price level over a certain period is referred to as inflation. Inflation is a macroeconomic factor that affects banking performance (Ahmad et al., 2022). Money loses value due to inflation, which lowers the overall rate of profit. Lower investment capital has an adverse effect on economic efficiency (Viphindartin et al., 2021). The inflation rate is an indicator commonly used to measure the stability of prices of goods and services. The stability of banks is inversely connected with inflation (Ahmad et al., 2022). This is an important factor affecting banking business activities and has been considered by many research articles (Ozili, 2018; Ahmad et al., 2022; Viphindartin et al., 2021). To effectively control operating costs and modify interest rates, banks use the rate of inflation as a base. This increases the bank's revenue and guarantees stability (Viphindartin et al., 2021).

Hypothesis 6: Inflation rate is negatively correlated with bank stability.

III. Research Methodology

A. Variables Measurement

The model's dependent variable is financial stability. There are many indicators proposed to estimate the likelihood of bank distress or stabilization. Z-Score is the most commonly used indicator to show the state of banking and financial stability among them (Gupta & Kashiramka, 2020; Ahmad et al., 2022; M. R. Goetz, 2018). Mercieca et al. (2005) proposed an equation to estimate Z-Score:

$$Z\text{-score} = \frac{ROA + E/TA}{\sigma ROA}$$

where the ratio of net profit to total assets is represented by ROA; The ratio of equity capital to total assets in a bank is known as E/TA (Equity/Total Asset); The standard deviation of net profit over total assets is indicated by σROA .

The measurement of independent variables and control variables such as bank size, credit growth, economic growth, and inflation was based on previous studies, presented in Table 1.

B. Research Model

Based on the research of Ashraf et al. (2016) and Hassan et al. (2019), the article uses quantitative methods and proposes a regression model as follows.

$$\begin{aligned} \text{LnZ-Score}_{it} = & \beta_0 + \beta_1 \text{LnZ-Score}_{i,t-1} \\ & + \beta_2 \text{LIQU}_{i,t-1} + \beta_3 \text{SIZE}_{i,t-1} \\ & + \beta_4 \text{CRGR}_{i,t-1} + \beta_5 \text{ECGR}_{i,t-1} \\ & + \beta_6 \text{INFL}_{i,t-1} + \varepsilon_{i,t} \end{aligned} \quad (1)$$

$$\begin{aligned} \text{LnZ-Score}_{it} = & Y_0 + Y_1 \text{LnZ-Score}_{i,t-1} \\ & + Y_2 \text{EXLD}_{i,t-1} + Y_3 \text{SIZE}_{i,t-1} \\ & + Y_4 \text{CRGR}_{i,t-1} + Y_5 \text{ECGR}_{i,t-1} \\ & + Y_6 \text{INFL}_{i,t-1} + \varepsilon_{i,t} \end{aligned} \quad (2)$$

Table 1. Variable Description

	Variable name	Variable symbol	Description	Expectation	Sources
Dependent variable					
	Bank stability	Z-score	Natural logarithm of Z-score		Mercieca et al. (2005)
Independent variables					
1	Liquidity	LIQU	Liquid assets/ Total Assets	-	Demiralp et al. (2021)
2	Excess liquidity ratio	EXLD	Cash and Balances with central-required reserves + Eligible Government Securities) / Total time and demand liabilities	+	Ahmad et al. (2022)
Control variables					
1	Size	SIZE	Total bank asset's natural logarithm	+/-	(Dei Ofosu-Hene & Amoh, 2016); (M. R. Goetz, 2018)
2	Loan growth	CRGR	Calculated as the logarithmic difference of the gross loan	-	Ahmad et al. (2022)
3	Economic state	ECGR	Calculated using the real GDP growth rate	+	Viphindartin et al. (2021)
4	Inflation	INFL	The consumer price index's growth rate	-	Viphindartin et al. (2021)

C. Research Data

Unbalanced panel data from 28 Vietnamese joint stock commercial banks covering the years 2010-2022 is used in this article. All information is gathered from publicly available annual reports of Vietnamese banks, audited financial statements, and the Bankscope database. Initially, data was collected from 37 Vietnamese commercial banks. However, bank restructuring occurred during the research period. Mergers, consolidations, and other bank actions reduced the size of the research sample and resulted in incomplete data for the years that followed. Consequently, only 28 Vietnamese banks met the required data when all criteria were applied. All 368 observations are included in the unbalanced structured panel data that has been gathered. The General Statistics Office of Vietnam's electronic information portal was the source of information about the macroeconomic data.

D. Research Method

This article studies the impact of excess liquidity on bank stability in Vietnam. To achieve the research

objective, the OLS estimation method was used. Because the research data is panel data, the appropriate estimation models are the fixed effects model (FEM) and random effects model (REM). The authors used the Hausman test to choose the best model. P-value < 0.1 is the result of the Hausman test. Thus, the appropriateness of the FEM model estimation can be determined. The FEM estimation model is thus used to carry out additional regressions.

IV. Research Results and Discussion

A. Descriptive Statistics

Table 2 shows the descriptive statistical results of the variables in models (1) and (2) for Vietnamese commercial banks in the period from 2010 to 2022 for 28 banks. Vietnamese commercial banks are shown to have an average Z-score of 0.986, with the lowest value being 0.82 and the highest value being 3.714, indicating significant variation within the system among the banks. The liquidity of banks is high and there are large differences between banks. The average values of size, inflation, economic

growth, and credit growth are 17,950 respectively; 9.262505; .0189796; 0.434.

B. Correlation Analysis

The correlation coefficient between variables in the regression model is shown in Table 3. Other correlation coefficients are all less than 0.6. This implies that the regression models do not have multicollinearity between explanatory variables.

C. Regression Results

Regression analysis results showed that, at the 1% significance level, $\text{Prob} > F = 0.0000$, rejecting H_0 and favoring the Fixed effects model. The Fixed effects model is preferred when comparing the Random effects model and the Fixed effects model at the 1% significance level because the $\text{Prob} > F = 0.0000$, which is less than 1%.

The VIF coefficient of each independent variable

is less than 10 according to the results of the multicollinearity test, which indicates that the phenomenon of multicollinearity in the model is not considered serious (O'Brien, 2007). The H_0 hypothesis, which has a variable variance, is rejected by the White test with a significance level of 1% because $\text{Prob} > \chi^2 = 0.0000$, which is less than 1%. $\text{Prob} > F = 0.0000$, which is less than 1%, is the result of the autocorrelation phenomenon test at a significance level of 1%, meaning that the hypothesis of H_0 is rejected.

Based on the partial test results, the multicollinearity model is deemed non-serious. Autocorrelation and variance change are two phenomena present in the model, though. The Generalized Method of Moments can be used to ensure a precise and useful estimate, according to Blundell & Bond (1998).

If all of the regression coefficients in the research model are zero, it is deemed inappropriate; if H_1 has at least one additional regression coefficient, the model is deemed appropriate. The study model's results demonstrate that the model is consistent and

Table 2. Descriptive statistics results

Variable	Obs	Mean	Std. dev.	Min	Max
Z_SCORE	384	0.09	0.08	0.82	0.37
LIQU	384	0.88	0.13	0.42	1.71
SIZE	384	17.95	1.55	11.88	20.99
ECGR	397	0.01	0.01	0.01	0.08
CRGR	380	0.43	1.02	-1.03	11.32
INFL	386	9.26	2.18	6.96	16.95
EXLD	386	6.36	0.69	5.24	7.54

Table 3. Correlation analysis results

	Z_SCORE	LIQU	SIZE	ECGR	CRGR	INFL	EXLD
Z_SCORE	1.000						
LIQU	-0.213	1.000					
SIZE	0.178	0.310	1.000				
ECGR	0.413	0.004	0.099	1.000			
CRGR	0.070	-0.202	-0.264	-0.123	1.000		
INFL	0.021	-0.140	-0.237	-0.178	-0.014	1.000	
EXLD	0.155	0.139	-0.042	-0.189	0.090	-0.493	1.000

widely accepted, and that it is significant at the 1% level (because $\text{Prob} > \chi^2 = 0.0000$, which is less than 1%).

Because the H_0 hypothesis—that the instrumental variable does not correlate with the model's error—is accepted, the Sargan test produces results greater than 10%, indicating that the instrumental variables can be regarded as valid. The H_0 hypothesis is accepted, there is no autocorrelation phenomenon, and the model is quite good, according to the Arellano and AR test (2) with results greater than 10%.

As a result, the outcomes of the model evaluation will be predicated on the GMM method results. The study's findings demonstrate that, at the 1% significance level, the regression coefficients for the excess liquidity and liquidity variables have a negative sign, indicating that liquidity has an adverse effect on the stability of banks. The aforementioned study findings also align with the theoretical frameworks of Acharya & Naqvi (2012), and Wagner (2007), and support experimental data according to Khan et al. (2016) and Smaoui et al. (2020), which contend that excess liquidity boosts risk-taking capacity and consequently impacts bank stability. Banks are not transparent in their calculation tools and liquidity management mechanisms to be able to comply with maintaining an appropriate and effective amount of liquidity. This is in addition to banks being required to meet reserve requirements and liquidity ratio regulations. This is not just the reality in Vietnam; it is also the case in numerous other nations (Abedifar et al., 2018). In particular, Basel III-compliant liquidity management plans are difficult to develop and implement because legal regulations impede banks' efforts to comply with global standards. Specifically, the liquidity coverage ratio is similar but significantly different from Basel III, which mandates that it be 100% or higher in the ensuing years. Vietnam also keeps lowering the rate for foreign currencies to 10% for commercial banks, 5% for foreign bank branches, and 5% for foreign banks. Because of the lower ratio regulations, Vietnam's liquidity assurance ratio does not meet the requirements.

Bank size positively affects bank stability while

credit growth rate has a negative influence in the excess liquidity model. Large banks frequently have diversified investment portfolios and less volatile income, which helps to explain this (Demirgüç-Kunt & Huizinga, 1999). In addition, with the advantage of economies of scale, the bank owns a more stringent monitoring and evaluation system, helping the bank's investment portfolio to be less risky (Ibrahim et al., 2019). The bank has a stricter monitoring and assessment system in place, which lowers the risk in its investment portfolio (Louhichi & Boujelbene, 2017). The negative regression coefficient for credit growth indicates that banks will be more inclined to lend money on riskier terms if liquidity is abundant, which will lower bank stability (Wagner, 2007).

Additionally, the research revealed a positive correlation with 10% and 1% statistical significance between the economic growth rate and bank stability. This result is consistent with research by Viphindartin et al. (2021) and Ahmad et al. (2022). Thus, it is evident that the stability of banks is directly impacted by the state of the economy. The banking industry is the one that absorbs growth in the economy the quickest and benefits most from it. This conclusion helps policymakers understand how important it is to regulate the economy to provide the framework and environment necessary for industries, particularly the financial sector, to develop sustainably. It is the banking sector, which is essential to the nation.

As opposed to the rate of economic growth, the inflation rate has an impact on bank stability at a statistically significant level of 1% in the excess liquidity model and the same direction in the liquidity model. The research results are consistent with research by Viphindartin et al. (2021) and Ahmad et al. (2022). It is explained that inflation has an impact on the banking industry. Inflation has a significant impact on bank stability as well, as it can lower earnings, reduce income, and affect banks' safety (Table 4).

Table 4. Regression analysis results

Variables	Liquidity model	Excess liquidity model
lnZ - Score _{t-1}	0.763*** (20.22)	0.108*** (5.23)
LIQU	-0.00000228*** (-1,32)	
EXLD		-0.0000094** (-2.73)
SIZE	0.356** (2.97)	0.404** (1.88)
CRGR	-0.00532* (-2.44)	-0.00471* (-2.19)
ECGR	0.0564* (2.21)	0.109*** (9.31)
INFL	0.0296*** (5.63)	-0.0146*** (-1.68)
Constant	-0.569* (-0.88)	-0.129* (-1.66)
R ²	0.71	0.68
VIF	1.82	1.95
F (p-value)	0.00	0.00
Hausman test	0.00	0.01
AR1 (p-value)	0.00	0.00
AR2 (p-value)	0.58	0.19
Hansen - J (p-value)	0.14	0.10

V. Conclusions and Management Implications

A. Conclusions

This article attempts to quantify the impact of excess and liquid capital on bank stability. Empirical evidence of the negative impact of excess liquidity on bank stability in Vietnam is provided by the research findings. Despite Basel III's recommendation to maintain high liquidity to ensure stability, research results show that when excess liquidity increases the risk of moral hazard-related behavior in managers because they easily accept higher risks in credit or investment decisions.

Besides, the research also has important implications for policymakers. Recognizing the extent of this impact, banking regulators need to improve financial supervision, focusing on excessive risk-taking behavior when there are high liquidity buffers.

B. Management Implications

Liquidity Coverage Ratio ratio in the Basel III Accord guarantees short-term liquidity safety and is regarded by contemporary banks as a crucial criterion with the most sophisticated and global meaning available. Accurately calculating and establishing standards for measuring excess liquidity also aids banks in accurately evaluating their financial status, leading to more successful strategies for managing liquidity risk.

The proposed Basel III liquidity regulations may not be as ideal or comparable to those in developed nations for emerging economies like Vietnam, so each bank's size and characteristics must be taken into consideration. Furthermore, in light of the potential financial instability associated with liquidity, management agencies should instead concentrate on developing policies to mitigate the systemic risks posed by the banking sector in the wake of the

COVID-19 pandemic. Responding to the challenges posed by COVID-19 by giving the economy liquidity support may work in the short run, but it can also quickly result in improper credit allocation and a rise in bad debt. The government should use low-cost bond mobilization channels to set appropriate market expectations when there is excess liquidity, low credit demand, and declining interest rates.

Furthermore, reserve regulations are required. The amount of liquidity reserves at banks improves operational efficiency and serves as a tool for monetary policy. Reserve rules must be established for a variety of assets, not just cash, over the medium and long term. These reserves should primarily serve as a buffer to protect banks from shocks and intricate, frequently ongoing changes in the economy.

VI. Limitations of the study

Despite examining the effect of excess liquidity on the stability of commercial banks in Vietnam, the article still has the following shortcomings:

- The effects of excess liquidity and liquidity on stability have not been found to differ between the two types of state-owned joint stock commercial banks and private joint stock commercial banks. Future research can compare between types of banks to provide more specific solutions.
- The research was unable to compare and contrast Vietnamese commercial banks with commercial banks in other developing nations due to constraints in the data collection process. Further research endeavors may gather additional data to ascertain the variations in the degree of influence and adaptability of banking systems across various nations when subjected to macroeconomic conditions.

Conflicts of Interest

The authors report there are no competing interests to declare

Author Contributions

The authors would like to thank all of the informants who took part in this study; without their invaluable assistance, the study could not have been finished

Funding

This research is partly funded by University of Economics Ho Chi Minh City (UEH), Vietnam. This research is also partly funded by Ho Chi Minh City University of Economics and Finance, Vietnam.

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