

Factors Affecting Loan Loss Provisions during the Covid-19 Pandemic – The Case of Commercial Banks in Vietnam

Dung Thi Thuy Nguyen

ABSTRACT

Credit is considered a crucial activity of commercial banks; it accounts for the most significant proportion of the bank's total assets and is also an activity that carries great risks. The study uses OLS, FEM, REM, and FGLS to assess the factors affecting loan loss provisions (LLPs) of 20 Vietnamese commercial banks during the Covid-19 pandemic from Q1/2020 to Q4/2021. The result of the model is based on FGLS to overcome the phenomenon of heteroscedasticity after using estimation by OLS, FEM, REM, showing that the factors affecting LLP of Vietnamese commercial banks during the Covid pandemic include: bank size (SIZE), non-performing loans ratio (NPL), a ratio of pre-tax profit and provision to total assets (CROA), loans to total assets ratio (LOAN), and credit growth (Δ CREDIT). Research results using the FGLS method show that bank size, bad debt ratio, pre-tax profit ratio and provision to total assets and credit growth positively impact the LLP of the Vietnamese commercial banks in the Covid pandemic. However, interestingly, the percentage of loans to total assets can decrease the provision for loan losses. Thereby, the study proposes some policy implications as follows: The SBV needs to have the policy to limit credit growth and bad debt ratio for commercial banks to control the competition for a market share of loans without ensuring the quality of loans, leading to an increase in credit risk and LLP. Furthermore, each Vietnamese commercial bank needs to develop and apply a practical and comprehensive credit process to ensure debt recovery to avoid a lot of bad debts. For new customers, banks need to fully assess all aspects to predict the level of risk before deciding to provide loans. Additionally, the long-term effects of Covid-19 cause difficulties for commercial banks' activities, SBV needs to consider supportive policies through interest rate reduction, grace period, and debt extension to increase financial performance and maintain market share and profits of commercial banks.

Keywords: FEM, FGLS, Loan Loss Provision, REM.

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I. INTRODUCTION

Originating in Wuhan-China from the end of 2019 until now, the COVID-19 pandemic has had a negative impact on economic instability (Altig *et al.*, 2020), unemployment, and consumption (Cox *et al.*, 2020), and the stock market (Ding *et al.*, 2021). According to Baker *et al.* (2020), the economic recession caused by the COVID-19 pandemic affects the income and expenditure of households rapidly. Theoretically, a weakening economic health of a country increases the credit risk ratio in commercial banks (Xiangchao *et al.*, 2022). A financial solution applied by banks is to make the provision for credit losses to prevent possible losses when credit risks occur. To ensure the safety of the banking operations, managers always want to set up the loan loss provision (LLP) at the highest level. In contrast, according to international accounting standards (IAS 39), the provision for credit losses must be determined based on objective evidence of signs of irrecoverable debt. Although many previous studies have been interested in preventing credit risk in times of

uncertainty, there have always been different goals on this topic.

Provisions for credit losses are the most critical accumulation in banks (Beatty and Liao, 2011); they mainly arise from loan risk, so the level of determination of provision rate estimates is also often based on lending risk (Bushman and Williams, 2015; Curcio and Hasan, 2015). Understanding the factors that change a bank's allowance for credit loss is vital because banks have an essential role in providing credit to the economy. Furthermore, any more provisions than necessary can reduce a bank's lending capacity, profitability, and growth (Ng *et al.*, 2020). LLP received more and more attention after the global financial crisis of 2008-2009 when banks tended to make higher provisions to compensate for problem loans during the economic downturn (Danisman *et al.*, 2020). However, an increase in provision for credit losses due to a recession could increase economic shocks, further threaten the financial system and misallocate lending resources. Therefore, such factors increasing a bank's provision for credit loss are seen as increasing risks to

economic and financial stability. Thus, a change in optimal provision attracts superior attention in times of crisis and becomes prudent consideration in commercial risk management (Soedarmono *et al.*, 2017).

The economic downturn caused by the pandemic raises concerns about changes in the LLP ratio. However, only a few studies have explored the effects of factors on credit risk estimates during the pandemic (Augustin *et al.*, 2021). Problems need to be clarified about this issue in Vietnam, such as: has there been a significant change in the provision of credit losses in Vietnam during the COVID-19 pandemic? If yes, what factors change this ratio? This study aims to solve the above questions by using data related to the LLP ratio of 20 Vietnamese commercial banks during the Covid-19 pandemic from Q1/2020 to Q4/2021 in 3 parts. For the first session, the study reviews related studies and theories on this issue to propose a research model. The second session of the study introduces data collection methods and provides an estimation method suitable to the proposed research model to assess the factors affecting LLP at Vietnamese commercial banks during the epidemic. In the last part, the results of the empirical study will discuss some limitations.

II. LITERATURE REVIEW

Many previous studies show that banks make higher provisions for credit losses during economic instability and policy uncertainty (Ng *et al.*, 2020; Jin *et al.*, 2019). Under conditions of asymmetric information causing increasing economic policy uncertainty, banks will anticipate increasing defaults and spend more on accumulated credit losses (Bushman and Williams, 2015). In addition, many documents show that provision level is primarily influenced by factors other than credit risk (Dou *et al.*, 2018; Olszak *et al.*, 2017; Kim *et al.*, 2019; Peterson & Arun, 2018). For example, Ashour (2011) and Bhattarai (2018) study shows that the loan-to-deposit ratio impacts LLP. Specifically, Ashour (2011) has studied the role of banks' loan provisions by regression analysis with data from a sample of Palestinian banks in the period 2006–2010. Research results show that banks use LLP when other legal reserves fall below the requirements and when the loan-to-deposit ratio increases; bank managers reduce their risk provisions to reduce their perceived risk.

Banks can also use the allowance for credit losses to adjust the earnings on the bank's financial statements for different purposes (Greenawalt & Sinkey, 1988). One of the main reasons for earnings management is to generate stable cash flows over time (Wahlen, 1994). When bank profits are high, bank managers can increase LLP to cover losses in bad years. In contrast, when banks are in conditions of economic instability or recession leading to low profitability, banks are more likely to use the accumulated LLP in previous years (Skała, 2015). In addition, decisions to change the LLP ratio are necessary after assessing the projected loan losses to stabilize the business situation from time to time (Bouvatier *et al.*, 2014). Several studies have shown a positive impact between LLP and the profitability of commercial banks (Bouvatier & Lepetit, 2008; Curcio & Hasan, 2015; El Sood, 2012).

Provisions for loan losses also have a relationship with the ratio of deposits and loans. According to Rahman *et al.* (2020), banks receive deposits from people with excess money and then lend those deposits through various approaches to borrowers (customers) in need of money. Occasionally, a customer's inability to repay a loan or failure to make scheduled payments is known as bad debt. Changing credit balance means changing the bad debt ratio, leading to changes in LLP of commercial banks. Many previous studies have also shown that LLP is dependent on loan amounts (Fonseca & Gonzalez, 2008; Hasan & wall, 2004; Bhat, 1996).

In general, more and more papers are related to the analysis of factors that change the provision for loan losses during the crisis period, primarily during the economic crisis period 2007-2008 (Ng *et al.*, 2020; Jin *et al.*, 2019; Dou *et al.*, 2018; Olszak *et al.*, 2017; Kim *et al.*, 2019; Peterson & Arun, 2018). In addition, studies examining the impact of factors on changes in LLP also confirmed the effects of many significant variables such as credit risk, commercial bank profitability, mobilized capital (Ashour, 2011; Bouvatier *et al.*, 2014; Rahman *et al.*, 2020). This study continues to deeply evaluate the factors affecting LLPs of Vietnamese commercial banks during the Covid epidemic.

III. RESEARCH METHODOLOGY

The study uses OLS, FEM, and REM under panel data to evaluate the factors affecting LLPs of Vietnamese commercial banks during the Covid pandemic. Subsequently, the author uses Hausman test to select the best-fit model between the model estimated by FEM and REM. The appropriate model will be further tested for autocorrelation and variance. If the model has autocorrelation or variable variance, the author will use FGLS to overcome the above phenomena. From the results of estimating the regression coefficients by the most appropriate method, the study makes conclusions and proposes relevant policy implications, solving the research objectives.

The study uses secondary data, which are collected and calculated from the consolidated quarterly financial statements of 20 Vietnamese commercial banks listed on the stock exchange from Q1/2020 to Q4/2021.

According to the researches of Zoubi & Al-Khazali (2007); Ashour (2011); Oros *et al.* (2015); Aristei & Gallo (2018), the author proposed a research model to assess the factors affecting LLPs of Vietnamese commercial banks during the Covid pandemic as follows:

$$LLP_{it} = \beta_0 + \beta_1 \times SIZE_{it} + \beta_2 \times NPL_{it} + \beta_3 \times CROA_{it} + \beta_4 \times LOAN_{it} + \beta_5 \times LD_{it} + \beta_6 \times \Delta CREDIT_{it} + \epsilon_{it}$$

where: LLP_{it} = rate of LLP of i th bank at time t . $SIZE_{it}$ = natural logarithm of total assets of i th bank at time t . $CROA_{it}$ = the ratio of earnings before tax and loss provision to total assets of i th bank at time t . $LOAN_{it}$ = the ratio of total loans to total assets of i th bank at time t . LD_{it} = the loan-to-deposit ratio of i th bank at time t . $\Delta CREDIT_{it}$ = the credit growth of i th bank at time t . Measurement of variables in the research model is described in Table I specifically as follows:

TABLE I: DESCRIPTION OF THE VARIABLES IN THE RESEARCH MODEL

Variable	Measures	Source
LLP	Loan loss provisions	Zoubi & Al-Khazali (2007); Ashour (2011); Oros <i>et al</i> (2015); Aristei & Gallo (2018)
SIZE	Total assets Ln (total assets)	Zoubi & Al-Khazali (2007); Ashour (2011); Bhattarai (2018); Hasan & Wall (2004); Mohd Isa <i>et al.</i> (2018)
NPL	Non – performing loans	Zoubi & Al-Khazali (2007); Hasan & wall, (2004); Ashour (2011); Bhattarai (2018); Aristei & Gallo (2018)
CROA	Earnings before tax and loss provision Total assets	Hasan & Wall (2004); Aristei & Gallo (2018)
LOAN	Total loans Total assets	Bhattarai (2018); Ashour (2011)
LD	Total loans	Hasan & Wall (2004); Aristei & Gallo (2018)
ΔCREDIT	Deposit from customers Total loans(t) – Total loans (t – 1) Total loans (t – 1)	Ashour (2011); Aristei & Gallo (2018)

IV. RESULT AND DISCUSSION

A. LLP Summary

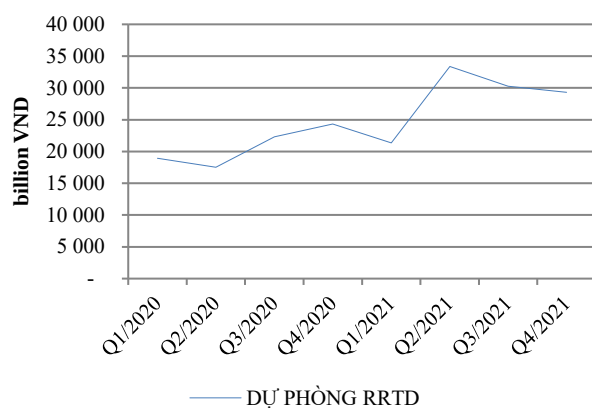


Fig. 1. LLP of Vietnamese commercial banks from Q1/2020 to Q4/2021
Source: Vietnamese commercial banks' Financial Statement.

Fig. 1 shows that the level of LLP of Vietnamese commercial banks increased during the period from Q1/2020 to Q4/2021, the highest level was in Q2/2021 with data of over 33 trillion VND. This can be explained by the growth in outstanding loans, specifically; the lending interest rates of Vietnamese commercial banks are always kept low to help businesses access capital for the growth and expansion of products after a period of stagnation and quarantine by COVID. In addition, the increase in provision level in Q2/2021 is due to the influence of borrowers' ability to repay loans. The impact of COVID-19 on the banking system is different from other institutions because of banks' unique function in economic development. Banks can go after the collaterals of a firm that cannot afford to pay off the debt (BBC News, 2020). Nevertheless, in the long term, if there will be a huge wave of bankruptcies, this could be a trouble for a bank in terms of their chief revenue coming from loan interest and bad debts. As stated in American Banker (2020), six months from 2020, there will be institutions where it becomes clear that some of their loans aren't performing, and that will receive a more critical look from the regulators. Therefore, until Q2/2021, the level of PPL dramatically increased to ensure the PPL amount according to regulations mentioned in Circular 02/2013/TT of the State Bank.

B. Data Description

Table II shows that PPLs in the sample has an average value of 0.0033, which means that the average cost of LLP accounts for 0.33% of the total outstanding loans. The standard deviation of the LLP variable is 0.0031, which illustrates that the ratio of LLP to total outstanding loans of Vietnamese commercial banks in the sample greatly fluctuates with the lowest proportion of -0.0004 and the largest of 0.0157. Similarly, the descriptive statistics of the remaining variables in the Vietnamese commercial banks model during the research period are presented in detail in Table II.

TABLE II: DATA DESCRIPTION

Variable	Obs	Mean	Std. Dev	Min	Max
LLP	160	0.0033	0.0031	-0.0004	0.0157
SIZE	160	33.3729	0.8268	31.870	35.1052
NPL	160	0.0108	0.0049	0.0022	0.0290
CROA	160	0.0069	0.0038	0.0001	0.0204
LOAN	160	0.6460	0.0845	0.4245	0.8005
LD	160	0.9697	0.1327	0.6647	1.4691
ΔCREDIT	160	0.0379	0.0375	-0.0491	0.2029

C. Correlation Matrix

Correlation coefficients between variables in Table III show that most of them have statistical significance at 1%, and most of the independent variables have a strong and positive relationship with the dependent variable, proving that the proposed model is appropriate. The CROA variable is strongly correlated with the dependent variable. LOAN variable alone has a low correlation with the remaining variables in the research model. In addition, the correlation coefficients between the independent variables are primarily low, showing that the model is less likely to have multicollinearity.

D. Main Results

The study performed model estimation by FGLS to overcome the phenomenon of variance after using OLS, FEM, and REM estimation. The results show that five variables impact the LLPs of Vietnamese commercial banks during the Covid epidemic at a 1% significance level, including SIZE, NPL, CROA, LOAN, and ΔCREDIT, for the variable LD only is not statistically significant.

TABLE III: CORRELATION MATRIX

	LLP	SIZE	NPL	CROA	CE	LD	CREDIT
LLP	1.000						
SIZE	0.295***	1.000					
NPL	0.520***	-0.060	1.000				
CROA	0.702***	0.276***	0.183**	1.000			
LOAN	0.029	0.552***	0.202	-0.059	1.000		
LD	0.532***	0.208*	0.272***	0.673***	0.202**	1.000	
ΔCREDIT	0.121***	0.196	0.258**	0.159*	0.108	0.244**	1.000

*, **, *** Statistical significance at 10, 5 and 1 % levels, respectively.

TABLE IV. FACTORS AFFECTING LLP

Variable	POOL OLS	FEM	REM	FGLS
SIZE	0.0009*** (3.90)	0.0009** (3.67)	0.0009*** (3.90)	0.0009*** (4.37)
NPL	0.282*** (8.98)	0.285*** (8.77)	0.282*** (8.98)	0.267*** (9.77)
CROA	0.471*** (8.73)	0.477*** (8.29)	0.471*** (8.73)	0.467*** (9.56)
LOAN	-0.0059*** (-2.68)	-0.0066*** (-2.68)	-0.0059*** (-2.68)	-0.0062*** (-3.19)
LD	-0.0017 (-1.14)	-0.002 (-1.22)	-0.0017 (-1.14)	-0.0013 (-0.99)
ΔCREDIT	0.0159*** (4.19)	0.0180*** (4.34)	0.0159*** (4.19)	0.0166*** (4.85)
_cons	-0.0274*** (-3.98)	-0.112*** (-3.68)	-0.0435*** (-3.98)	-0.0448*** (-4.49)
R-sq	0.728	0.739		

*, **, *** Statistical significance at 10, 5 and 1 % levels, respectively.

The regression coefficients of the variables SIZE, NPL, CROA, and ΔCREDIT have a positive sign, showing the positive impact of four variables on the LLPs of Vietnamese commercial banks during the Covid pandemic. In other words, the larger the size of the bank, the ratio of bad debt, the percentage of pre-tax profit, and the provision to total assets, the higher credit growth will increase the PPL in the Vietnamese banking context during the pandemic. This result is consistent with the practice and previous studies (Ashour, 2011; Oros *et al.*, 2015; Aristei & Gallo, 2018). However, LOAN, measuring the bank's assets financed by debt rather than equity, has a negative impact on LLP. It means that a higher amount in equity does not help to improve credit risk in the Vietnamese banking industry.

V. CONCLUSIONS

Although the research objective has been achieved, the authors find that this study still has some limitations. At the time of the study conducting, the paper has not considered the difference in the impact of factors on LLPs of Vietnamese commercial banks during and after Covid-19 to compare the effect. In addition, besides the variables analyzed in the models pointed out above; theoretically, the impact of factors on the provision for loan losses of commercial banks is also influenced by other variables depending on specific research objectives. Future studies may consider additional perceptions to improve these issues.

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CONFLICT OF INTEREST

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