

Bank Characteristics, Financial Crises and Nonperforming Loans: A Panel Analysis on Malaysia's Commercial Banks

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Abstract

The previous crises witnessed the system of Malaysian banks has been facing a large number of nonperforming loans. The arising of nonperforming loans problem however becomes worse when the bank fails to manage its management properly and efficiently. Therefore, this study tries to investigate the impact of bank characteristics and financial crises on nonperforming loans in Malaysia's commercial banks. Panel data analysis is employed with the data of six (6) commercial banks spanning from the period of 1998 to 2019. The result depicted that return on asset, loan to asset and non-interest income also significantly influence nonperforming loan. While total loan found to have insignificant relationships with the variation of nonperforming loans. The financial crisis revealed a positive and significant impact on the nonperforming loans. The result obtained suggests that banks and the government need to prepare for the high variation of nonperforming loans if there are weaknesses in bank characteristics and during the economic downturn.

Keywords: nonperforming loan, financial crisis, bank characteristics, panel data

INTRODUCTION

The banking system normally associates with the number of risks while managing their operations. Nonperforming loans are found as major risks that normally harm the entire performance of the banks (Arunkumar & Kotreshwar, 2005 and Ameni, Hasna & Mohamed, 2017). The failure of banks in managing their performance and operations is clearly related to the changes in the nonperforming loans. The inability of banks in monitoring the loan properly and efficiently might cause a tendency of nonperforming loans to keep rising in the banking system (Zhang, 2011; Warue, 2013 and Olusegun, 2019). The problem arises when the banks start to lend their money aggressively without following the proper credit assessment and negotiated credit terms. The situation however gives an opportunity for the number of nonperforming loans accumulated in the banking system.

The growing problem on that particular increment of nonperforming loans becomes a great pressure when the economy has been exposed to the conflict of economic events (Ariff & Abubakar, 1999; Olusegun, 2019 and Ozili, 2019). Since all of the sectors have been affected, the possibility of the

businesses, individuals, and institutions might be trapped in the problem of nonperforming loans is getting higher from time to time. The sudden attack of the crisis witnessed the banks had been repeatedly suffered from the severity of the nonperforming loans and cause these banks to face the problem of liquidity. During the financial crisis, banks faced a lot of problems in maintaining their profitability and efficiency (Rajha, 2016 and Basit & Sulaiman, 2017). For example, in Malaysia, the percentages of nonperforming loans in Malaysia were sharply increased during the financial crisis in 1997 and the global financial crisis in 2008. Most of the borrowers at that time no longer able to serve their loan as before due to difficulties that faced by them in generating income and some of the businesses became insolvent thus leave the loans unpaid. The situation left a big mark on Malaysian banks when there are a number of banks had been forced to merge in order to protect the banks from insolvency due to the severity of nonperforming loans (Zaini, Chan & Salahuddin, 2010). The failure of the banks therefore erodes confidence in banking publicly and gives a bad impact on the banking industry through the massive accumulation of nonperforming loans. Concerning to this issue, the study tries to investigate the impact of bank characteristics and financial crises on nonperforming loans in Malaysia's commercial banks.

The rest of the paper is organized as follows. Section 2 will be discussed about the review of the literature. The methodology is highlighted in the next section. The discussion is in Section 3. Section 4 presents the result and data analysis of the study while Section 5 concludes the study.

METHOD

Following the study by Washeka and Asif (2016) and Isik and Bolat (2016) with an adaption, the model equation is developed. The equation includes the bank characteristics chosen and the financial crisis to see the impact on the nonperforming loans. Therefore, the equation modelled is as follows;

$$NPL_{it} = \alpha + \beta_1 ROA_{it} + \beta_2 LTA_{it} + \beta_3 NII_{it} + \beta_4 TL_{it} + \beta_5 FC_{it} + \varepsilon$$

Where;

- NPL = Nonperforming loans
- A = Constant term
- β = Coefficient
- ROA = Return on asset
- LTA = Loan to asset
- NII = Non-interest income
- TL = Total loan
- FC = Financial crisis
- i = Number of banks
- t = Number of years
- ε = Normal error term

Table 1: Variables Description

Variables	Definition	Sources
Nonperforming Loan	Loan due 90 days of payment.	Eikon Thomson Reuters
Return on Asset	Profit that the banks earned in relation of its total asset	Eikon Thomson Reuters
Loan to Asset	Leverage ratio that defines the total amount of debt relative to assets	Eikon Thomson Reuters
Total Loan	The total amount of loan which expressed in the Ringgit Malaysia (RM). This amount can indicate whether the bank is performing well or worse	Eikon Thomson Reuters
Non-Interest Income	any income that banks earn from the activities other than their main intermediation.	Eikon Thomson Reuters
Financial Crisis	Crisis occurred when the supply of money is outrun by the demand for money.	Dummy

A panel static data analysis is conducted to run the tests on the model. Three analyse is performed namely Pool Ordinary Least Square (POLS), Random Effect Model (REM) an Fixed Effect Model (FEM). This is to gain the robustness of parameter coefficient the relationship between bank characteristics, financial crises and nonperforming loans. Series o diagnostic tests have been used to obtain the robustness of the result. This study is conducte using Malaysia's commercial banks. Due to the availability of data, six out of 27 commercia banks are used with the utilization of 144 observations (1996-2019). Data is obtained from Eikon Thompson Reuters.

RESULTS AND DISCUSSION

Descriptive statistics and correlation have been done prior to other testing (the result will be shown upon request). The diagnostic tests have been done to ensure all the models are robust. In order to ensure the problem of robustness in the model chosen. A heteroscedasticity test is used. This is done by applying Breusch-Pagan or Cook-Weisberg test. Heteroscedasticity is caused by the violation of homoscedasticity where the sizes of error terms distinct across values of an independent variable. The problem exists when the p-value is significant at a 95% confidence interval. The result below shows 1.35 of Chi2 and where the probability of Chi² is 0.2445.

$$\begin{aligned}\text{Chi}^2 (1) &= 1.35 \\ \text{Probability} > \text{Chi}^2 &= 0.2445\end{aligned}$$

The probability of Chi2 shows as higher than 0.05 which means the problem of heteroscedasticity does not exist in this study. Therefore, the result can be concluded to accept H0 has been accepted.

- H0 = There is no a heteroscedasticity problem
H1 = There is heteroscedasticity problem

Another test to gain the robustness of the result is using the Variance Inflation Factor (VIF) to detect multicollinearity problems, is utilized. The use of multicollinearity is to examine how much independent variables influence the dependent variables. The test indicates when the mean for VIF shows higher than 5, it states that the problem of multicollinearity has existed.

Table 2: Multicollinearity Test

VARIABLE	VIF	1/VIF
ROA	1.05	0.952214
LTA	1.10	0.908886
IgNII	2.10	0.476512
TL	2.12	0.470897
FC	1.16	0.861774
Mean VIF	1.51	

Table 2 above confirms that there is multicollinearity problem does not exist in this study. This is due to the mean of VIF shows 1.51 which below 5. Therefore, there is no multicollinearity problem.

The test of Breusch and Pagan Lagrangian multiplier must be tested in order to choose which regression that will be applied by this study. The random effect can be done if the probability of Chi2 less than 0.05. However, if the probability of Chi2 is higher than 0.05, the study will proceed with the method of pooled ordinary least square.

H0: Choose pooled ordinary least square

H1: Choose Random Effect model

$$\text{Chi}^2 (1) = 1.21$$

$$\text{Probability} > \text{chi}^2 = 0.2722$$

From the result obtained from this test, it is found that the probability of Chi2 is 0.2722 which higher than 0.05 level of significance. This test confirms the pooled ordinary least square method will be chosen. Since we cannot proceed for the Fixed effect model (FEM) the final model that had been chosen is Pooled ordinary square (POLS). Therefore, Table 3 is presented the result of the study.

Table 3: Summary of Regression Analysis

IgNPL	Coefficient	t	P > t
ROA	-0.8053755	-5.21	0.000***
LTA	-0.0387229	-2.68	0.008***
IgNII	0.9691323	23.22	0.000***
TL	0.000000714	-0.54	0.592
FC	0.6519847	2.76	0.007***
_cons	2.214506	1.91	0.059
R-squared	0.9064	Probability > (F-statistic)	0.0000

Notes : ***significant at 1% level, **significant at 5% level, *significant at 10% level

The result indicates the value of R-squared is equal to 0.9064 which implies that 90.64% of total variation nonperforming can be explained by return on asset, loan to asset, non-interest income, total loan and financial crisis whereas the remaining value which is 9.36% cannot be explained by the independent variables due to the variables that are not included in the model. The model shows a strong explanation between the independent variables chosen and nonperforming loans.

The coefficient of return on asset (ROA) indicates that a 1% increase in return on asset will decrease 0.8053% of nonperforming loans. The magnitude coefficient for return on asset (ROA) is consistent with Ekanayake and Azeez (2015), Radivojevic and Jovovic (2017), Fendi et al. (2017) and Laxmi et al. (2018) where it shows as negative and significantly related to the number of nonperforming loans. The higher return of the banks have will reduce the problem of nonperforming in the commercial banks. Profitable banks normally are involved in offering the best practices in dealing and monitoring the loans compare to the less profitable banks. It is due to the high profit of the banks have the ability to hire more professional employees or systems to ensure their operations and management will be functioned well and become more efficient when dealing with the problem of default.

Loan to asset (LTA) depicts a negative and significantly related to the number of changes in nonperforming loans. By increasing RM1 million in the loan to asset (LTA), the bank will be facing a significant decline in the nonperforming loans by RM0.03872 million. It indicates that the higher loan to asset tends to reduce the problem of the nonperforming loans where it thus implies the higher bank's loan will generate more profit or income to the banks. Even the result was found to be inconsistent with the expectation of the study, however the result shares a similar finding from Noraini et al. (2015), Awour (2015), Ozili (2015) and Dhusku (2016). It indicates that the more loan offered by the banks will reduce the number of nonperforming loans due to the higher profit generated from that loan. A loan is known as the main source of income earned by the banks through the interest-based. The banks justify that more loans provided to the customers will lead to the higher income generated. Although there are few arguments for this finding, the result however found that higher loans contribute to the higher profit generated by the banks. Throughout this, it shows the higher loans provided by the banks are unnecessarily lead to the higher default but inversely contribute to the higher return bank's loan. It hence states that the higher bank's return indicates the banks have sufficient incomes in protecting its' operations from losses especially in the case of arising nonperforming loans.

Meanwhile, the coefficient for non-interest income (NII) explains that the higher amount of nonperforming loans arises due to the higher amount of non-interest income. It indicates that an increase in RM1 million in non-interest income will increase RM0.9691 million in nonperforming loans. The findings seem to suggest that a positive relationship between non-interest income and nonperforming loans which implying the Malaysian banks have generated a

higher proportion of their incomes through non-interest income. The result is similar to Noraini et al. (2017) where the finding shows as positive and significantly related to the number of nonperforming loans. The higher amount of bank's income generated the higher tendency for nonperforming loans to arise. Banks will provide more loans to the borrowers since they have enough money and will not worry about the problem of default risk. This situation thus leads to the banks start paying less attention to this risk of default and issued more loans in order to gain more profit. The higher loan issues therefore witness the high problem of nonperforming loans accumulated when loans leave unpaid.

There is negative and insignificant relationship between the total loan and nonperforming loans. It is found to inconsistently follow the expectation of the study. Nevertheless, the finding shares a similar result from Ozili (2015), Gabeshi (2016) and Fendi et al. (2017). While other studies agree that higher loans will rise the problem of nonperforming loans, however the problem can be minimized when the banks strictly focus on monitoring and evaluating the loans. The finding reveals that the banks that aggressively providing loans to borrowers with a high concentrating on that particular credit quality and activities found to lead to a fewer number of the nonperforming loans. Nonetheless, the study shows the total loans did not give significant impact toward any changes in the number of the nonperforming loans.

Focusing on financial crises (FC), it is found that the relationship of financial crises is positive and significant towards the nonperforming loans. This implies a 1% increase in financial crisis will increase 0.6519% in nonperforming loans. This indicates the economic events like financial crises significantly affect the performance of bank loans which can raise the problem of default debts. The past crises witness there are many banks that have been facing a huge amount of problems when the crisis burst. It thus left a big mark on the system of banks when the majority of the banks during that time were found to face a significant deterioration especially in the case of asset quality and liquidity problems (Zaini, Chan and Sallahuddin, 2010). It however becomes worse when the banks start to close down their businesses due to the higher accumulation in the nonperforming loans and lead to insolvency. Previous studies such as Yang (2003), Isik and Bolat (2016), Rajha (2016), Us (2017), Ozili (2017) and Ozili (2019) also highlighted that the effect of financial crisis gives a big impact to the problem of bank's nonperforming loans. It is undeniable that the problem not only harms the system of banks but also the economic growth of the country.

CONCLUSION

The banking sector in Malaysia is facing a lot of problems in maintaining its sustainability and profitability. It has been stated the characteristics of the bank and financial crisis found as closely related to the problem of nonperforming loans. The study therefore tries to investigate the impact of the bank characteristics and financial crisis on the nonperforming loans in the case of Malaysia's commercial banks. The findings reveal a number of nonperforming

loans had been affected by return on asset, loan to asset, noninterest income and financial crisis. The problem becomes worse when the economy faces the phase of a downturn and is accompanied by the significant deterioration of banks in managing their management and operations. The study concludes as long as the economy is stable and the banks able to manage their operations and management in efficient and effective ways, the problem of NPLs can be minimized. The result obtained suggests that banks and the government need to prepare for the high variation of nonperforming loans if there are weaknesses in bank characteristics and during the economic downturn.

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