Analysis of the Determinants of Non-Performing Loans in Thailand: Empirical Study of the SMEs Non-Performing Loans

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Abstract:

Non-Performing Loans or NPLs is an essential banking performance indicator and it reflected credit risk and bank's asset quality. An increasing in NPLs level leads to unstable of banking system. Therefore, several literatures examine the various aspects of NPLs.

This paper aims to investigate the determinants of the NPLs in Thailand banking system, focusing on the NPLs from SMEs. The paper was conducted by using the secondary data in the period from 2008Q1 to 2018Q4. The results found that debt ratio (DEB), loan to deposit ratio (DEP), Gross Domestic Product (GDP), domestic interest rate (INT), inflation rate (INF) and unemployment rate (UNEMP) had significant impact on total non-performing loan (NPL_T), corporate non-performing loan (NPL_CO), and customers non-performing loan (NPL_CU). In addition, the research indicated that Gross Domestic Product (GDP) seems to be the most important factor that affects the total non-performing loan (NPL_T) and corporate non-performing loan (NPL_CO), while it is a second greatest factor influencing Customer non-performing loan (NPL_CU).

Keywords: non-performing loan; SMEs; risk credit; commercial bank.

JEL Classification: E02; B22; B26; B41; C01; C32; C58; E00.

Introduction

Small and medium-sized enterprises (SMEs) are one of the most important sectors in Thai economic systems. As statistic shows that, there were 2.7 million SMEs in Thailand, comprising 98.5% of total enterprises. In addition, the SMEs contribute 42.4% of the overall gross domestic product (GDP) and 80.4% of the workforce in Thailand. Likewise, Thai SMEs also contributed 28.8% of total exports and 31.9% of total imports by value in 2017 (Asian Development Bank 2018). Since the SMEs play a significant role in the Thai economy, it is important to increase their resilience. To increase their resilience, it is necessary to provide them with stable and adequate finance. Therefore, the SMEs credits, which account for 32.8% of total commercial bank loans in Thailand, is still small in scale, however the ratio of non-performing loans (NPLs) in SME lending remains high. The ratio of gross non-performing loans (NPLs) to total loan was at 2.92%, while the ratio of non-performing loans in SMEs is about 3.4% (Bank of Thailand 2018). For this reason, the issue of "Non-performing Loans" (NPLs) has become common issues in Thailand banking system, since the bank with high level of NPLs is considered as less capable in managing its credit properly (Fajar 2017).

Non-performing Loans (NPLs) refer to the loans, which are 90 days or more past dues or no longer accruing interest (International Monetary Fund 2011). The NPLs is one of banking performance indicator and it reflected credit risk and bank's asset quality. An increasing level of NPLs can lead to very serious implications. Therefore, several literatures investigate the various aspects of NPLs. For example, Wondimagegnehu (2012) focus on the

determinants of NPLs of banking industry in Ethiopia. In addition, De Bock and Demyanets (2012) employed the panel 1996-2010 in 25 emerging market countries to discover the important factors of the NPL ratios. Beck, Jakubík and Piloiu (2013) examine the NPL ratio determinant by using the fixed-effect panel data regression. Vatansever and Demir (2017) detect NPLsa and homogeneous credit risk groups by geographical locations Turkish Credit Market.

According to the danger of the high NPLs ratio in the economic system, it is necessary to examine the factors affecting NPLs level in financial system. However, a recent research on the problems of NPLs in Thailand was not easy to find out. Therefore, this paper aims to analyze the determinants of the NPLs in Thailand financial system, focusing on the NPLs from the SMEs. The paper was conducted by using the secondary data in the period from 2008Q1 to 2018Q4. This paper is constructed as follows: Section 2 presents the literature reviews that related to the paper. Section 3 provides research methodology. Section 4 discusses an empirical result and discussion and the conclusion are presents in section five.

1. Literature review

There are numerous literatures aiming to examine the determinants of the non-performing Loan (NPLs), most of these literatures focused on predicting the NPLs ratio and estimating the level of the NPLs in economic system. For example, Berge and Boye (2007) indicated the risk loans in Nordic banking system over the period 1993–2005 of 54 countries. The research found that the risk loans are determined by the real interest rates and unemployment. Similarly, Buncic and Melecky (2013) claimed that GDP growth rate, inflation and real interest rates are significant affecting NPLs ratio while Nkusu (2011) point that real GDP, unemployment rate, interest rates and housing and equity prices are important factors determining the NPL ratios of 26 advanced economies.

There had been some studies that looking at causes, consequences and the solutions to manage unexpectedly NPLs ratios. Sanjeev (2007) created a model to examine factors affecting the changes in the NPLs level in the Indian financial system by using questionnaires to the managers of the 37 Indian commercial banks. The result indicates that internal factors, such as manager's motivation, lack of workers, and lack of focus on top managers had no significant effect the NPLs, while external factors including political intervention and soft budget constraints have a highly significant influence on the NPLs level. Similarly, Louzis *et al.* (2010) worked on NPLs ratios in the banking system of Greece. The results found that the macroeconomic factors such as unemployment, GDP, and national debt had strong effects NPLs level.

Many researchers examine the resolution of the NPLs all over the world. Initially, they tried to test the relationship between macroeconomic variables such as GDP growth rate, price level and real estate prices, the bank size, and the NPLs level. For example, Hu *et al.* (2004) construct a model in order to examine factors influencing NPLs level. Moreover, Xu (2005) examine the NPLs in Thailand, Malaysia, Korea and China. Dimitrios (2016) identify the main determinants of non-performing loans in the euro-area banking system for the period 1990Q1-2015Q2 using GMM estimations. Vu and Turnell (2012) analyzed and compared causes of NPLs in four groups: banks, customers, collateral and other objective causes. He stated that if banks loosen their screening and monitoring of the loans they give to customers, the opportunities for NPLs would be increased. Nguyen (2015) worked on the specific data of Vietnam commercial banks by using ten commercial banks in Vietnam during 2005 to 2011. This research aims to identify the factors of non-performing loans in Vietnam. The result shows that both macroeconomic and bank-specific factors significant affect the rate of non-performing loans. Baholli *et al.* (2015) used econometric model to analyses analysis of factors influencing non-performing loans in banking system the Albanian economy. This paper indicated that liquidity and business performance related to risk on NPL rate for Albania financial stability. Hue (2015) investigated the determinants of Non-performing Loans (NPLs) in the Vietnam. The research found that there are four factors determinate NPLs in the Vietnam, including the lag of NPLs, Loan growth rate, Bank asset, and state-owned or not. Asfaw, Bogale, and Teame (2016). Cheng *et al.* (2016) examine the factors affecting the NPLs in Taiwan banking system. In Thailand case, some literature in NPLs in banking system such as Yoshino *et al.* (2005) using data on lending by banks to SME investigate the credit risk in Thailand.

Base on literature above, there had been little research on the factor influencing the NPL in Thailand, especially loan to SMEs. This research aims to analyze non-performing loan in Thailand financial system, and examine the determinant of analyze non-performing loan in Thailand, focusing on the SME's NPLs.

2. Methodology

2.1. Research model

This paper analyses factors affecting non-performing loan in Thailand through econometric modelling. Many researchers have used different econometric model for explaining the NPL level. For example, Kalirai and Scheicher (2002) used the simple linear regression model to explain the change in NPLs level in Austria for during 1990 to 2001. Virolainen (2004), Hue (2015), and Cheng *et al.* (2016) indicated that economic growth is very important factors for the NPLs level. Another factor that explains NPL rate is considered inflation. In addition, loans interest rate is also significant impact to NPLs. Taking literature above, this research will test the factor affecting SMEs NPLs from following model:

$$NPL\_T = \alpha_1 + \beta_1 DEP + \beta_2 DEB + \beta_3 GDP + \beta_4 INT + \beta_5 INF + \beta_6 UNEM \tag{1}$$

$$NPL\_CO = \alpha_1 + \beta_1 DEP + \beta_2 DEB + \beta_3 GDP + \beta_4 INT + \beta_5 INF + \beta_6 UNEM \tag{2}$$

$$NPL\_CU = \alpha_1 + \beta_1 DEP + \beta_2 DEB + \beta_3 GDP + \beta_4 INT + \beta_5 INF + \beta_6 UNEM \tag{3}$$

NPL is Non-Performing Loans Ratio (NPL). The NPL in this research is defined as the ratio of the principal and interest of loans not paid in a certain period to the total loans. There are three Non-Performing Loans Ratio that including in this paper: NPL_T is total non-performing loans ratio in the commercial banking system:

$$NPL\_T = \frac{Total\ Non-Performing\ Loan\ by\ the\ SMEs}{Total\ Loan\ to\ the\ SMEs} \tag{4}$$

NPL_CO is non-performing loans ratio in the commercial banking system by corporates:

$$NPL\_CO = \frac{Non-Performing\ Loan\ by\ Corperate}{Total\ Loan\ to\ the\ SMEs} \tag{5}$$

NPL_CU is non-performing loans ratio in the commercial banking system by customers:

$$NPL\_CU = \frac{Non-Performing\ Loan\ by\ customers}{Total\ Loan\ to\ the\ SMEs} \tag{6}$$

DEP refers to loan to deposit ratio. The DEP use for measuring the usage efficiency deposit funds. The higher loan to deposits ratio, the greater the total loans and the higher the NPLs ratio in banking system. Based on "The Moral hypothesis," Lee and Ho (2007) considered that if loans were too readily available in the financial system, financial institutions would absorb these excess funds as quickly as possible. When the banks examined loans, the credit information system was not often correct, and this caused the deterioration of loan quality and the banks credit risk. The DEP in this research measuring by total loan to total deposit in commercial banking system:

$$DEP = \frac{Total\ Loan}{Total\ Deposit} \tag{7}$$

DEB is a debt ratio. The DEB is defined as a relationship between total debts and total assets of the commercial banking system, which is an important indicator to measure a company's capital structure. When debt is too high, the advantage will enable increased risk. For that reason, this indicator is considered a measure of long-term solvency in banks. Lu *et al.* (2005) found that debt ratio and the NPL ratio had a significantly positive correlation and proved that the higher the debt ratio, the higher in the non-performing loans ratio. This paper uses the following equation for debt ratio:

$$DEB = \frac{Total\ Debt}{Total\ Asset} \tag{8}$$

GDP is Gross Domestic Product. The Growth GDP growth rate (the annual percentage growth of GDP at constant) prices are used in this model. INF is an inflation rate. The INF in this paper is measured by Consumer Price Index for all goods and services. INT is domestic interest rate. This research will adopt the Minimum Loan Rate as a proxy of the domestic interest rate. UNEM is unemployment rate in Thailand.

This paper analyzes the non-performing loan in banking system and examines the determinant of non-performing loan in Thailand, focusing on the SME's NPLs. The paper is conducted by using secondary quarterly data sets, data from 1980Q1 to 2018Q4. To achieve the results of factors influencing the NPLs by SMEs in Thailand banking system, this research is first applying the Augmented Dickey-Fuller test (ADF) to test the stationary of each variable and establish the order of integration of variables used in model. Many economists claim that there might be cointegration in a set of two or more variables. After that, cointegration testing was applied. The pair-wise

cointegration is applied as a pre-test in this section in order to test whether there is pair-wise cointegrating between the variables. After that, the multivariate cointegration approach and the Vector Error Correction Model are applied to examine the long run and the short-run relationship of the determinant in NPLs in Thailand.

3. Empirical results and discussion

3.1. The result of Unit Root Testing

Since using stationary data is an important condition for analyzing time series data, therefore, the first step of this paper is detecting for stationary data of variables that included in the models. The Augmented Dickey-Fuller (ADF) (1979) was applied to detected unit root. The results of ADF unit root are presents in table, where the numbers in table presents the ADF statistic, both at level and 1st difference. The results of unit root were conducted by comparing the ADF statistic with a MacKinnon critical value, If the ADF statistic is greater than the MacKinnon critical value, the null hypothesis of unit root is rejected, and it can be said that the variable is stationary.

Table 1 presents the results of ADF unit root. At level, the results states that null hypothesis of unit root are not reject for most of variable included in the model, except loan to deposit ratio (DEP), debt ratio (DEB) and unemployment rate (UMEMP). These can be said that most variables are non-stationary at level. However, at the first difference of time series, the ADF statistics shows that the null hypotheses of unit roots are rejected at 1% significant for every variable (NPL_T, NPL_CO, NPL_CU, DEP, DEB, GDP, INT, INF, and UNEMP) since the ADF statistic are greater than the critical values. These means every variable that included in the model are stationary or integrated at order 1 (I (1)). Therefore, all variables are stationary first difference and can be used in time series analysis.

Table 1. Results of Unit root test in NPLs model

Variables	At level		At first difference	
	ADF Statistic	Prob	ADF Statistic	Prob
NPL_T	-2.429 (0)	0.140	-9.310 (0)*	0.000
NPL_CO	-2.697 (0)	0.083	-9.905 (0)*	0.000
NPL_CU	-2.080 (0)	0.253	-10.548 (0)*	0.000
DEP	-5.226 (0)*	0.007	-9.670 (0)*	0.000
DEB	-4.770 (0)*	0.000	-7.209 (0)*	0.000
GDP	-0.037 (0)	0.948	-8.841 (0)*	0.000
INT	-1.763 (0)	0.393	-8.921 (0)*	0.000
INF	-1.560 (0)	0.493	-6.009 (0)*	0.000
UNEMP	-6.434 (0)*	0.000	-7.380 (0)*	0.000

Note: * indicate the significance level at 1%; The number in ( ) indicates the optimum lag-length of ADF

3.2. Empirical Result of Long – Run NPLs function

This paper applied Johanson cointegration for analyses the cointegration among variables that included in Long – Run NPLs Function. The results of Johansen cointegration present in Table 2- 4. Table 2 indicates the estimation of Johansen cointegration for total non-performing loans function (NPL_T). The result presents that the trace statistic of at most 4 equal 38.268, which is greater than the 5% critical value (35.192). This can be concluded that there is the five integrating vector in total non-performing loans function.

Table 2. Johansen Cointegration for total non-performing loans function

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical value	Prob.**
None *	0.897	272.943	134.678	0.000
At most 1 *	0.790	179.634	103.847	0.000
At most 2 *	0.693	115.564	76.972	0.000
At most 3 *	0.504	67.071	54.079	0.002
At most 4 *	0.370	38.268	35.192	0.022
At most 5	0.273	19.310	20.261	0.067
At most 6	0.140	6.227	9.164	0.173

Note: Trace test indicates 5 cointegrating eqn(s) at the 0.05 level; * denotes rejection of the hypothesis at the 0.05 level; **MacKinnon-Haug-Michelis (1999) p-values.

The results achieved from the cointergration test of customer non-performing loans function (NPL_CU) presents in table 3. The results states that the trace statistic test of null hypothesis of there is at least r cointegrating vector against the alternative of cointegrating vector. The result found that the statistic of at most three equal 48.056,

which greater than 95% critical value (47.856). This can be said that there is the existence of four cointegrating vector in long run customer non-performing loans function

Table 3. Johansen Cointegration for customer non-performing loans function\

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.794	199.126	125.615	0.000
At most 1 *	0.748	134.259	95.753	0.000
At most 2 *	0.514	77.660	69.818	0.010
At most 3 *	0.433	48.056	47.856	0.047
At most 4	0.293	24.776	29.797	0.169
At most 5	0.213	10.541	15.494	0.241
At most 6	0.017	0.7130	3.841	0.398

Note: Trace test indicates 4 cointegrating eqn(s) at the 0.05 level; * denotes rejection of the hypothesis at the 0.05 level; **MacKinnon-Haug-Michelis (1999) p-values

Table 4 provides the result of Johansen cointegration for long run corporate non-performing loans function. The null hypothesis of there is at most five cointegrating vector against the alternative of more than *r* combination in corporate non-performing loans. The statistic presents that the null hypothesis of at most 5 can be rejected at 5% significant level because the trace statistic is greater than critical value at 95%. This means that there exists 6 cointegrating vector in corporate non-performing loans.

Table 4 Johansen Cointegration for cooperate non-performing loans function

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.786	200.569	134.678	0.000
At most 1 *	0.707	137.252	103.847	0.000
At most 2 *	0.495	86.817	76.972	0.007
At most 3 *	0.423	58.797	54.079	0.017
At most 4 *	0.313	36.211	35.192	0.038
At most 5 *	0.295	20.786	20.261	0.042
At most 6	0.144	6.416	9.164	0.160

Note: Trace test indicates 6 cointegrating eqn(s) at the 0.05 level; * denotes rejection of the hypothesis at the 0.05 level; **MacKinnon-Haug-Michelis (1999) p-values

The result of normalize cointegration vector of the non-performing loans function presents in Table 5. The number in the table shows coefficient and t-statistic of the long run relationship among the variables. The results is performed by setting the estimated coefficient on non-performing loans function equal -1 and dividing each cointegrating vectors by the negative of relevant coefficient, then the vectors can represent the long run non-performing loans function.

As can be seen in the table, all variables, including that debt ratio (DEB), loan to deposit ratio (DEP), Gross Domestic Product (GDP), domestic interest rate (INT), inflation rate (INF) and unemployment rate (UNEMP) has significant impact on total non-performing loan (NPL_T), corporate non-performing loan (NPL_CO), and customers non-performing loan (NPL_CU).

Total non-performing loan (NPL_T), the results states that debt ratio (DEB), inflation rate (INF), and unemployment rate (UNEMP) has positive effect total non-performing loan (NPL_T), while loan to deposit ratio (DEP), Gross Domestic Product (GDP) and domestic interest rate (INT) influencing total non-performing loan (NPL_T) negatively. The GDP has strongest effect on the NPL_T since the coefficient it the greatest. The coefficient of GDP is -10.326, means that 1% dropped in GDP leads to 10.321 percent increase in NPL_T. DEP and INT have similarly impact the NPL_T. The coefficient of DEP and INT are -4.965 and -4.447. This can be said that 1 percent decrease in DEP leads to -4.965% rise in NPL_T. The unemployment rate seems to have smallest effect on the NPL_T. If the unemployment rate increases by 1%, the NPL_T will be increased by 0.222 %.

Corporate non-performing loan (NPL_CO), the results in Table 5 indicate that loan to deposit ratio (DEP), and unemployment rate (UNEMP) has positive impact on Corporate non-performing loan (NPL_CO). However, debt ratio (DEB), Gross Domestic Product (GDP) and inflation rate (INF) have negative influencing Corporate non-performing loan (NPL_CO). The coefficient of DEP is -18.327, interpreting that 1% reduced in loan to deposit ratio cause Corporate non-performing loan (NPL_CO) reduce by 18.327%. While the loan to deposit ratio is the greatest impact on corporate non-performing loan, the unemployment rate is the weakest impact on corporate non-

performing loan (NPL_CO). The coefficient of unemployment rate is 0.218. this can be said that 1% increase in unemployment rate lead to 0.218 percent decrease in corporate non-performing loan.

Customer non-performing loan (NPL_CU), the results in Table 5 found that deposit ratio (DEP), Gross Domestic Product (GDP), Domestic Interest Rate(INT) have negative influencing Customer non-performing loan (NPL_CU). However, debt ratio (DEB), inflation rate (INF) and unemployment rate (UNEMP) affecting Customer non-performing loan (NPL_CU) positively. The INF is greatest impacts on customer non-performing loan, with coefficient are 19.479. If the inflation rate increases 1%, the customer non-performing loan will be increase by 19.479%.

Overall of long run non-performing loans function, Gross Domestic Product (GDP) seems to be the most important factor that effect the Total non-performing loan (NPL_T) and Corporate non-performing loan (NPL_CO), while it is a second greatest factor influencing Customer non-performing loan (NPL_CU). Since the GDP represent the economics, growth and it also affect business performance. Higher GDP growth rate, more likely increase business profitability, and ability to pay back to debt will be improved. This can reduce the non-performing loan (NPL_T) in the banking system. This result similarly to Baholli (2015), that claims that business performance is depend on economic growth and it finally affect the NPLs.

Table 5. Normalize cointegration vector of the non-performing loans function

Variables	NPL_T		NPL_CO		NPL_CU	
	coefficient	t-statistic	coefficient	t-statistic	coefficient	t-statistic
DEP	-4.965*	-5.315	2.403*	2.567	-7.066*	-6.891
DEB	3.505*	2.505	-18.327*	-12.77	7.110*	10.528
GDP	-10.326*	10.133	-14.531*	-16.396	-6.814*	-10.436
INT	-4.447*	-3.368	-0.982*	-9.391	-5.560*	-7.500
INF	4.122*	2.121	-0.982*	-9.391	19.479*	17.892
UNEMP	0.222*	4.188	0.218*	3.516	0.327*	11.198

Note: * indicate the significance level at 5%

The short run of real effective non-performing loans function determinant

While the previous section presents the long of non-performing loans function determinant in using the co integration approach, this section shows a short run dynamic relationship of the set of variables in non-performing loans function by using the Vector Error Correction Model.

The results of short run non-performing loans function determinant by eliminating an insignificant lagged variable from the system based on t-statistic. The equation for non-performing loans function estimated by ECM present as following:

Taking Δ(NPL_T) as dependent variables, the coefficient of ECT (-1) is -0.088. Since the error, correction terms represent speed adjustment to the long-run equilibrium of Total Non-performing loans function. It can be said that the disequilibrium of Total Non-performing loans function in Thailand will be corrected approximately 8.8 percent in a quarter. In addition, the results also indicate that the change in the NPL_T in second last quarter, gross domestic product in second last quarter, interest rate in the lase and second last quarter has positive effect total Non-performing loans function in the short run. However, inflation rate in the second last quarter affect total Non-performing loans negatively in the short run.

The coefficient of ΔNPL_{t-2} is 0.718 suggesting that if the non-performing loans in last two quarter increased by 1%, total non-performing loans. The equation of total non-performing loans can be written as following:

Total Non-performing loans function

$$\Delta NPL\_T = -0.088 ECT_{t-1} + 0.718\Delta NPL\_T_{t-2} + 1.116\Delta GDP_{t-2} + 0.317\Delta INT_{t-1} + 0.356\Delta INT_{t-2} - 1.198\Delta INF_{t-2} \quad (9)$$
$$(-2.188) \qquad (4.137) \qquad\quad (1.99) \qquad\qquad (4.254) \quad (-2.48)$$

R-square = 0.798   Adjust R -square = 0.671

SEE = 0.126   Sum sq resides = 0.382

Log likelihood = 36.237   F-statistic = 6.326

Corporate non-performing loan (NPL_CO)

The coefficient of ECT (-1) equal -0.183, meaning that disequilibrium of corporate non-performing loan (NPL_CO) will be corrected by 18.3% within a quarter. The coefficient of ΔDEB (-2) is 14.06, which are significant

at 1%. This implies that 1% increase in a debt ratio past two quarters led to an increase in current corporate non-performing loan (NPL_CO) 14.06%. The equation of corporate non-performing loans can be written as following:

$$\Delta NPL\_CO = -0.183 ECT_{t-1} + 14.06 \Delta DEB\_T_{t-2} - 3.047 \Delta GDP_{t-1}$$
$$\quad\quad\quad\quad (-2.80) \quad\quad\quad\quad (2.049) \quad\quad\quad\quad (-2.042)$$

(10)

R-square = 0.965   Adjust R -square = 0.944

SEE = 0.221   Sum sq resides = 1.177

Log likelihood = 13.744   F-statistic = 45.073

Consumer non-performing loans function

Setting Consumer non-performing loans (NPL_CU) as a dependent variable, the results found that the error correction term is 1% significant, suggested by the t-statistic being -3.443, greater than 1% critical value for the t-statistic (2.57). The coefficient of ECT (-1) for Consumer non-performing loans (NPL_CU) is -0.541, meaning that the disequilibrium of the Consumer non-performing loans (NPL_CU in Thailand will be corrected approximately 54.1% within a quarter. It interesting that changes of lag for Consumer non-performing loans (NPL_CU) are insignificant at 5%. The equation of Consumer non-performing loans can be written as following:

$$\Delta NPL\_CU = -0.541 ECT_{t-1} - 0.616 \Delta NPL\_T_{t-1} + 0.885 \Delta INT_{t-1}$$
$$\quad\quad\quad\quad (-3.443) \quad\quad\quad\quad (-2.074) \quad\quad\quad\quad (3.692)$$

(11)

R-square = 801   Adjust R -square = 0.677

SEE = 0.255   Sum sq resides = 1.571

Log likelihood = 7.984   F-statistic = 6.46

Conclusion

Non-performing Loans (NPLs) is the loans that are 90 days or more past dues or no longer accruing interest The NPLs usually considered as one of banking performance indicator and it reflected credit risk and bank's asset quality. An increasing level of NPLs can lead to very serious implications. Therefore, several literatures investigate the various aspects of Non-Performing Loans. Therefore, several literatures examine the various aspects of NPLs. The purpose on this paper was to investigate the determinants of the NPLs in Thailand banking system. This paper was identified macro variables that can affect the credit risk and the small and medium enterprise's NPLs. Three types of NPL were applied in this paper: total non-performing loan (NPL_T), corporate non-performing loan (NPL_CO), and customers non-performing loan (NPL_CU). The paper was conducted by using the secondary data in the period from 2008Q1 to 2018Q4. The results found that debt ratio (DEB), loan to deposit ratio (DEP), Gross Domestic Product (GDP), domestic interest rate (INT), inflation rate (INF) and unemployment rate (UNEMP) has significant impact on total non-performing loan (NPL_T), In addition, the research indicated that Gross Domestic Product (GDP) seems to be the most important factor that affects the total non-performing loan (NPL_T) and corporate non-performing loan (NPL_CO), while it is a second greatest factor influencing Customer non-performing loan (NPL_CU).

According to the results, banks should pay more attention to many variables when offering customers loans in order to reduce the level of non-performing loans. Principally, banks or other financial institutions should consider the economics condition such as economic growth and unemployment level because if better economics condition leads to grater business performance and lower credit risk, then the customer will be able to repay debt.

For future research, we could use other macroeconomic variables such as real exchange rate and monetary policy, and other specific bank variables (such as bank size or liquidity). In addition, other econometric methods such as dynamic panel incorporating the lagged non-performing loans among the explanatory variables should be considered.

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