Non-Performing Loans: Affecting Factor for the Sustainability of Vietnam Commercial Banks

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Abstract

Non-performing loans are becoming the main factor influencing the sustainability of Vietnam's financial system. In order to enforce the financial system in general and the banking system in particular, this study aims to examine the determinants of Non-performing Loans (NPLs) in the Vietnamese banking system. Particularly, four factors, including the lag of NPLs in the last year, Loans-to-Asset ratio, Total asset and the Dummy (state-owned or not) were observed and estimated by quantitative method Ordinary Least Square in order to declare the relationship between them and the rate of changes in NPLs. The results showed that the four factors (Growth rate of Loans, Total Assets of Banks, NPLs in the last year and the Dummy variable) actually helped the growth of NPLs in recent years. Further, some implications to the bank management are withdrawn.

Keywords: Bank-level factors; macro factors; Non-performing loans (NPLs); Vietnamese commercial banks,

1. Introduction

In recent years, the term "Non-performing Loans" (NPLs) has became more common in Vietnam's banking system. Unexpectedly, in the year 2012, the ratio of NPLs in Vietnam sharply increased, appearing in most of the commercial banks' announcements. Moreover, this situation turned out to be more complex when different institutions publicized discrepant numbers of the ratio of NPLs. The annual NPLs growth rate had sharply increase from 2007 to 2012, with an average growth rate of approximately 43.11% per year.

Acknowledging the danger of this high ratio to the economy and the shortage of quantitative research on this topic, it is necessary to detect and discuss the factors that determine the rise or fall of the rate of NPLs in commercial banks. Obviously, recent research on the problems of NPLs in Vietnam was not easy to find out, particularly quantitative research. There was a little quantitative research which used an econometric model to find out the main factors (particularly the endogenous factors) that influence the rate of changes in NPLs in Vietnamese commercial banks. Therefore, the purpose of this study was to find out and analyze the determinants of the NPLs in Vietnam's commercial banks by using the data from banks in the period from 2010 to 2012. In doing this, this study preferred to use both descriptive and quantitative analysis to find out the result and some implications in NPLs management activities.

2. Literature review

There had been lots of researchers working on the topic around NPLs, looking at aspects such as its causes, consequences and solutions to manage unexpectedly high NPLs ratios.

To start with, Sanjeev (2007) constructed a model in order to derive which factors affect the changes in the number of NPLs in the Indian banking system. In order to clarify the relationship between the independent determinants and NPLs, he used primary data collected from structured questionnaires to the managers of the 37 Indian commercial banks. Hence, Sanjeev used Hypothesis testing – the Z test with a 99% significant level of one tail to test the effects of endogenous and exogenous factors on the changes in the number of NPLs. The result showed that the exogenous factors made more of a contribution to the changes in NPLs than the endogenous factors. Particularly, in listed internal factors, lack of motivation of managers, managers not being fully competent in appraising the value of collateral, lack of effort to reduce costs, lack of effort on the part of managers, lack of manpower, and lack of focus on top managers, are the accepted independent variables among many internal factors. Otherwise, almost all external factors including Central and Local government control, political intervention and soft budget constraints have a high influence on the adjustment of NPLs. Only economic downturns and willful default by borrowers are the two insignificant variables, which means that they do not greatly affect the number of NPLs..

In a similar study, Louzis et al. (2010) were also working on a model testing the effect of macroeconomic and bank specifics factors on the changes in NPLs in the banking system of Greece. The outcome was that the macroeconomic factors (such as unemployment, GDP, national debt) and the role of banks in managing their organizations had strong effects on

NPLs. The specialty of this research is that the author created different models for different panels, including: time lag, long-run or short-run coefficients. Due to their results, the lagged dependent variable is significant and negatively related to the fact that when NPLs in the previous quarter decrease, they would increase in the following quarter. Furthermore, for the mortgage loans, macro-factors were the key influence on NPLs. Additionally, for the long-run model, all of the variables are significant. The size of GDP growth negatively implies that the number of NPLs would increase when there was an economic crisis. Besides, unemployment is the most sensitive factor and it positively affects the NPLs. When the unemployment rate increases, creditors lose their ability to pay back their loans because of their wages being cut. In addition, mentioned in this research are some other variables such as lending rate, sovereign debt and so on. Other researches on the same topic can be listed as Xu (2005), Zeng (2012).

After deriving the root causes of the NPLs, many authors gave comments on the resolution of the NPLs all over the world. Initially, in order to test the relationship between macroeconomic variables like GDP growth or real estate prices, the number of loans sold to the AMCs, the bank size, performance and the decline of NPLs, Inoguchi (2012), followed the studies of Ueda K. (2000), Hu et al. (2004), and Hosono K. (2010) and built a model to test how much these factors above could decrease the number of NPLs. Particularly, the macroeconomic variables she mentioned are the GDP growth or the real estate price index, while the bank size and performance here could be seen as the bank's ratio such as Return on Asset (ROA), Return on Capital Employed (ROCE) and so on. Based on the regression result, the operation of AMCs in Thailand and the enhancement in macroeconomic variables were successful in reducing the number of NPLs in Thai and Malaysian banks. Furthermore, the banks that had larger assets and better ratios would generate smaller bad loans. As a result, the reform of the banking system in Thailand and Malaysia after the 1997 financial crisis contributed a big improvement to the economy. Moreover, Jarmo (2001) and Gerlach and W. Peng (2005) also gave a contribution on an analysis of the correlation between macroeconomics, property prices and banking crises substantially.

Nevertheless, we can see that one of the most popular solutions that is commonly used is the establishment of AMCs. As Xu (2005) stated in her research, according to the lessons from Thailand, Malaysia and Korea, China also established Asset Management Corporations (AMC) to resolve the NPLs. In addition, Wang and Perser (2011) also examined the resolution of NPLs in some Asian countries like Japan and South Korea to declare the lessons and solutions for China's banking system which used the AMCs to decrease the amount of NPLs and its consequence on the economy. While the NPLs in Japan was substantially released by the government, particularly by restructuring the loans, both China and Korea left NPLs to the AMCs to resolve, based on the RTC of US. They organized auctions in which they only sell NPLs that makes the NPLs' price fluctuate, attracted more foreign investors to buy NPLs and made a large contribution when investors injected money into the economy. Other related

documents are Klingebiel (2000), Fung et al. (2002), Pornavalai and Cynthia (2002).

In addition, Klingebiel (2000) made a more detailed study of the AMCs by using two approaches: a centralized and a decentralized approach. The first approach can be known as the only AMC which was set up by the government in order to buy the NPLs from the credit institutions. Otherwise, the second approach refers to small AMCs, launched and operated by a parent bank for the main purpose of handling its bad loans. The paper then also was followed by the deep analysis and further comparison of some other countries' AMCs operation such as Swedish, Spain, Philippines, and Mexico.

Besides, Vietnamese researchers also gave contribution to the topic of NPLs. Minh (2012) said that the NPLs in Vietnam increasingly go up, comprising 10% of total loans (calculated to June 2012) and these belong mostly to the state-own companies. He also mentioned the case of South Korea – the KAMCO (Korean Asset Management Corporations) operation and then suggested some solutions for the Vietnamese banking system in NPLs reduction. Additionally, Vietnamese researchers' also wrote about the factors which were involved in the changes in the NPLs rate of Vietnam commercial banks. An illustration is given by (Vu T. D., 2013) who divided the causes of NPLs increases into four groups: from banks, customers, collateral (depreciation of the asset) and other objective causes (mainly dependent on economic status). Further, he also stated that if banks loosen their screening and monitoring of the loans they give to customers, the opportunities for NPLs increases. In addition, in customers' groups, it is said that many firms and businesses relied too much on the loans (80% - 90%), hence, when the economy went down, the interest rate charged on loans shot up. Their profit could not pay back the interest payments, hence, they were vulnerable to go bankrupt.

One study that works on the specific data of Vietnam commercial banks is that of Do and Nguyen (2014). Using data of ten commercial banks in Vietnam between 2005 and 2011, this research aims to identify the determinants of non-performing loans in Vietnam. The result shows that both macroeconomic and bank-specific factors exert considerable influences on the rate of non-performing loans. Specifically, a lower GDP growth rate results in a higher NPLs ratio while a higher inflation rate leads to a greater level of NPLs. Besides, the empirical result shows a significant positive relationship between the previous NPLs/bank size/loans to assets ratio and the current NPLs, and a negative one between banks' inefficiency/worst performance and the level of NPLs. This study uses operating expenses to calculate the inefficiency of banks, however, there is a lack of transparency of the operating expense figures in the Vietnamese banking system. However, this research does not test for the best-fit model but uses the Pooled OLS. Besides, the number of banks included in the data set is quite small. All of these weaknesses reduce the reliability of this result.

To summarize, all studies mentioned the NPLs definition, their determinants and the experiences of other countries in resolving them. However, the majority of Vietnamese studies analyzed theoretically and objectively. It is difficult to find research using a quantitative method. Consequently, the purpose of

this study, following lots of models above, is to construct a regression model which has customized ideas from (Klein, 2013) and uses the best method out of three methods: the Fixed Effects Method, the Random Effects Method and the Ordinary Least Square method to estimate. Besides, to enhance the reliability of the result, this study mainly focuses on testing the effects of the four bank-level determinants that are publicly announced (i.e. total assets, the growth rate of Loans to Assets ratio, and the lag variable of NPLs in one previous year), on the level of changes in the case of NPLs in Vietnam.

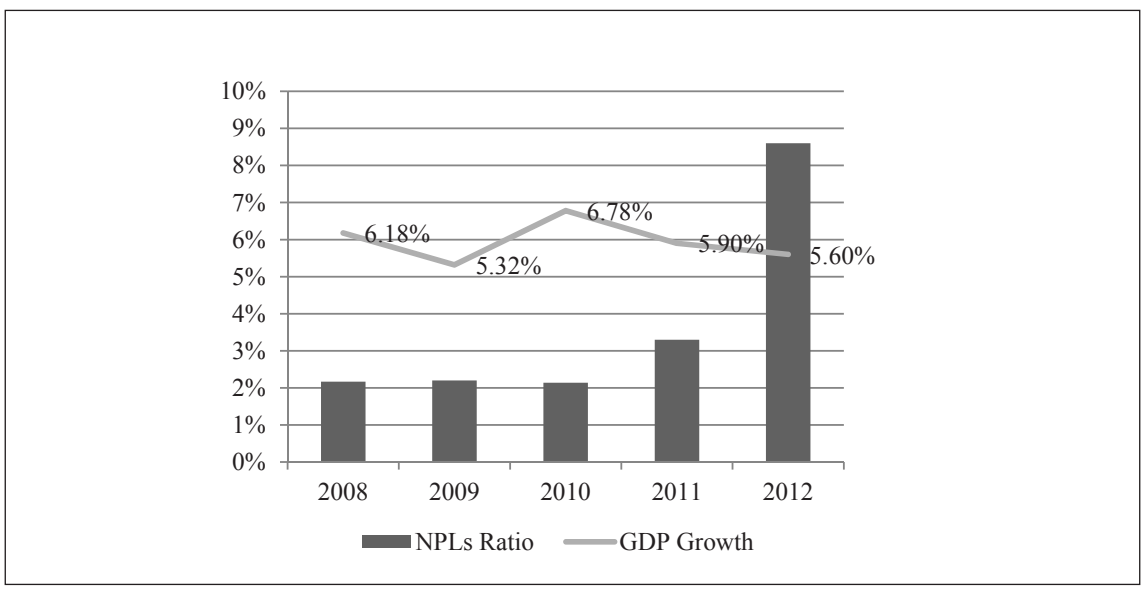
3. Circumstance of non - performing loans in Vietnam's commercial banks

The high rate of NPLs in 2012 led to lots of negative effects on the economy, predominantly the adverse selection problem. Consequently, fears of uncertainty in the financial markets suddenly increased which delayed the operations of banking when they limited their lending activities in order to avoid NPLs. Since firms could not find exposure to the funds they needed, their activities became stagnant and then resulted in a big negative influence on the real economy. As we can see from the Figure 1, the NPLs ratio increased in the opposite direction with the recovery rate of the economy which implied that the higher NPLs rate, the lower the GDP growth. More precisely, the growth rate of NPLs ratio delayed all the activities of the financial system.

Beside some endogenous factors belonging to the commercial banks themselves, the changes in NPLs can also be affected by some macro factors such as economic cyclicality and government management.

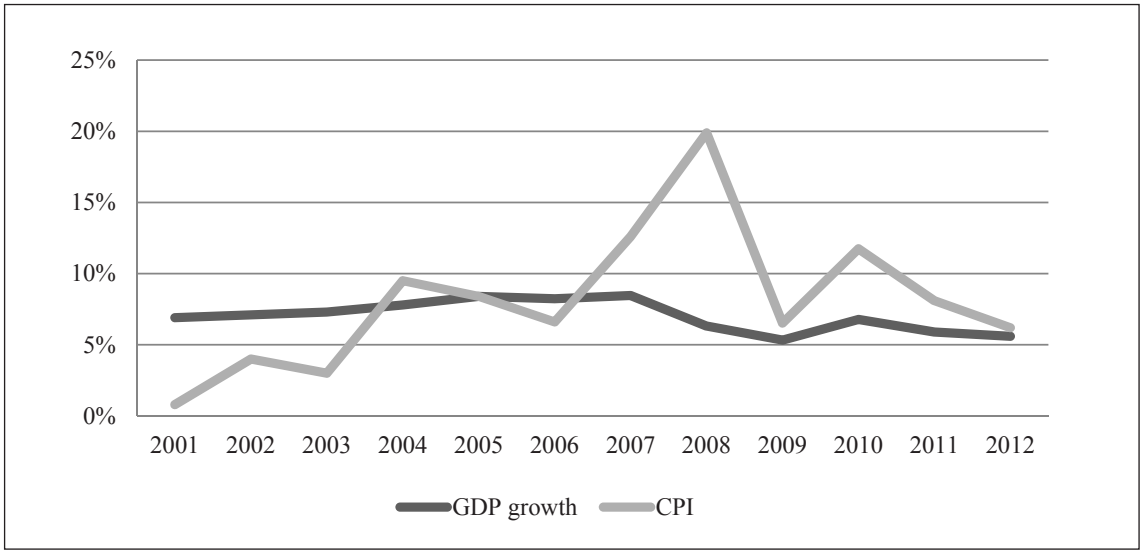
The very first reason that led to NPLs was that the business environment had to face lots of difficulties since the financial crisis in

Figure 1: NPLs ratio and GDP growth in Vietnam 2008-2012



Source: SBV's annual report 2008-2012

Figure 2: GDP/CPI growth in Vietnam 2001-2012



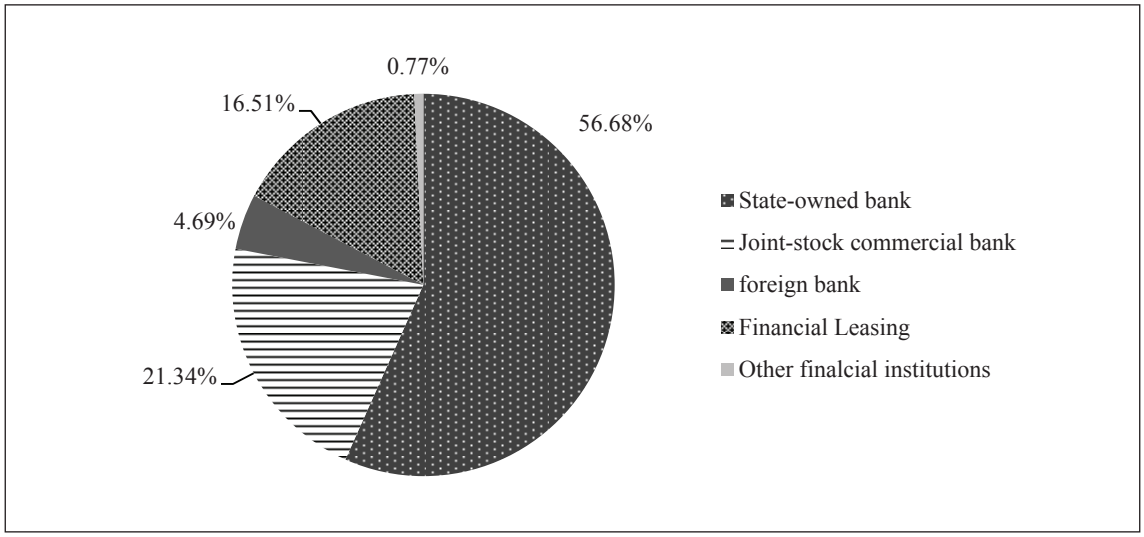
Source: General Statistic Office of Vietnam (GSO)

2008. Consequently, this situation resulted in the decline in the financial condition and business activities of a large number of firms in Vietnam. Particularly, the GDP growth could not be as high as before the year 2008 when the growth rate was above 8%. The rate then fell unexpectedly to 6.31% in 2008 and further decreased to 5.31% in 2009. It can be seen from the Figure 2, the trend has been sharply downward since 2008. As the economy went down, the prices in the market went up, which resulted in the ability of businesses to sell their goods or services which then led to lower revenue. Further, the inflation rate (which is denoted by the Consumer Price Index (CPI)) had surged up, particularly in 2008 (19.89%) and this led to a higher input cost of business. Therefore, the profit they earned was lessened when the inflation rate was high. As the profit fell down, the ability to pay back loans of firms had been weakened. Further, almost Vietnamese enterprises had weak financial capacity and low leverage. Hence, when the economy fell down, the ability to exist in the market as well as the ability to pay loans back was diminished.

Besides, Government policy also contributed a big part in non-performing loans creation. There were several causes from the government decisions that could lead to a higher rate of NPLs.

Firstly, there was no independence in the relations between these bank and government when they declared the lending policy. More precisely, government just encouraged these banks to provide loans for risky projects or policy projects which aimed at helping the state-owned enterprises (SoE) and achieved the credit growth target. As a result, this increased the credit risks of banks because the SoE usually had a lower performance and a higher rate of NPLs in the private sectors. As shown in the Figure 3, state-owned banks always had the

Figure 3: Allocation rate of NPLs ratio in Vietnam in 2009



Source: SBV's annual report 2008-2012

highest number of NPLs. In 2009, they covered the dominant percentage of NPLs in the system. However, the allocation became a bit different in 2012 when both the state-owned and joint-stock banks had similar allocations. An example of a state-owned bank was Agribank (an SoE bank). This bank's NPLs rate was the highest in the banking system, standing at 5.8% and its Loans-to-Asset ratio was also higher than the medium level in the system (80% of assets used for lending). Further, the establishment of the VAMC (Vietnam Asset Management Company) in 2012 actually did not resolve the issue of the high NPLs ratio in Vietnam. Particularly, they just restructured the NPLs which lowered this rate; however, the real situation was not enhanced.

Secondly, the supervisory role of the State Bank of Vietnam (SBV) was not efficiently applied in the past periods. Indeed, the ability of the SBV to monitor and supervise was limited and many risky projects (but high return) were provided loans to implement. Moreover, there were no public standard of classifying NPLs for all commercial banks. Each bank had its own regulations and the managers of those banks sometimes just raised their credit growth to achieve the target, but did not pay attention to the quality of customers. Hence, due to the inability in managing the bad loans given out, the rate of NPLs therefore unexpectedly went up.

Thirdly, the legal system of Vietnam had not operated efficiently in rating and diminishing NPLs while there were a lot of forms in identifying NPLs. Further, the SBV also announced regulations about the risk provision ratio, trading activities provision or how to solve the debt collateral when the maturity date had come. However, in reality, these regulations above seemed not to be suitable and effective in solving the problem of NPLs.

Understanding the macro context of Vietnamese NPLs during the period of 2009 - 2012, the paper aimed to apply an empirical test on the bank-level factors only when the macro factors seemed to have an obvious relationship to the NPLs ratio and the governance of the State Bank of Vietnam was still weak in the NPLs' resolution.

4. Research methodology

The data used in this study is primary data collected from the balance sheets of 20 commercial banks in Vietnam, as well as data collected from the Annual Report of the State Bank of Vietnam from 2009 to 2012. Particularly, the econometric model will be used to analyze the relationship between the NPLs and some bank-specific factors such as the lag of NPLs in the last year, the Loans-to-Asset ratio, Total assets and the Dummy, which clarify whether a bank is state or not by using the Ordinary Least Square method for the panel data.

$NPLs_{it} = \beta_0 + \beta_1 DLoans_{it} + \beta_2 totalA_{it} + \beta_3 NPL_{it-1} + \beta_4 D$

In which, NPLs, Dloans and the Dummy was calculated as below:

NPLs = (Value of NPLs) / (Total Loans) ;

Dloans = Δ Loans ratio = Loans ratio$_t$ – Loans ratio$_{t-1}$

Dummy = 0 if banks are commercial banks

Dummy = 1 if banks are state-owned banks

Theoretically, according to Keeton and Morris (1987), the rate of banks' loans losses tended to be higher if they expanded their lending rate too high just for the purpose of achieving their targeting rate. In these circumstances they could not manage all the loans they gave out and more easily moved to a higher NPLs rate. This variable represented the bad management of banks in controlling the given out loans to the public. Hence, if this ratio increased, it might lead to a higher NPLs ratio; therefore, the coefficient of the variable DLoans was expected to be positive.

Furthermore, Keeton and Morris (1987) argued that the size of the bank can affect the incentive of borrowers to take more risks on their loans (the moral hazard problem). Consequently, the higher the risk the loans got, the higher the rate of the NPLs ratio that bank had to face. Keeton and Morris also mentioned that small-sized banks tend to have more excess lending than the big-sized ones. Therefore, this study uses the Total Asset of the bank to symbolize the size of the bank. Additionally, due to the opposite correlation between bank size and the NPLs rate, it is expected a negative coefficient for the variable Total Asset.

In addition, in order to estimate one more variable, which examines the management role of banks in NPLs changes, the lag of the NPLs in the previous year should be included in the model. For instance, when the NPLs rate in this year is expanded too much, the managers of banks had to screen the loans that they gave out and increase the monitoring process before giving loans to the customers. Therefore, we could see the negative relationship between NPL in a given year and NPL in a previous year, resulting in a negative coefficient of NPL_{it-1}.

Eventually, state-owned banks were inclined to take more risk than the non-state-owned banks. The result was if they fell down, a bail-out effect would take place. Therefore, they were more encouraged to be excessive in their lending, and to not cautiously screen and

monitor their quality of customers, and hence, to raise their rate of NPLs. Furthermore, in the context of Vietnam, the state-owned banks still have to make loans to the state-owned enterprises following the government's economic development strategies (the case of Vinashin, Vinalines). Political influences may lead to the trend of the higher NPLs of the state-owned banks compared to the other banks. In this study, we added the dummy variable in the model with a value equal to 1 if the bank is state-owned, and to 0 if the bank is not state-owned

By scrutinizing the panel data from 20 commercial banks in Vietnam from 2009 to 2012, the result was tested for the following hypothesis that was set up to answer the research question:

- 1st Hypothesis (H1): There is a positive relationship between the growth rate of Loans (Dloans) and the rate of changes in the NPLs ratio.

- 2nd Hypothesis (H2): The size of bank (denoted by Total Assets - TotalA) is negatively correlated with the growth rate of NPLs.

- 3rd Hypothesis (H3): The NPLs in this year are negatively associated with the growth rate of NPLs.

- 4th Hypothesis (H4): The state-owned banks tend to have higher rate of NPLs than commercial banks.

In order to judge the relationship between the NPLs ratio and bank-level by an econometric model, we considered using several regression models which can be used for the panel data set. Hence, to decide which is the most suitable model in these circumstances, the F-test (to test the Pooled OLS against the FEM) and the Breusch - Pagan Lagrangian Multiplier test (to test the Pooled OLS against the REM) are employed.

5. Empirical results

Test for multicollinearity

In order to detect the multicollinearity, the variance inflation factors (VIF)/Tolerance coefficient test for the independent variables are computed, shown in Table 1.

As seen from Table 1, all the estimated VIF values are relatively small (much less than 10) and the 1/VIF values are higher than 0.1. This indicates an absence of multicollinearity between the independent variables.

Test for best- fit model

According to the F-test's result, the p-value from the F-test turns out to be more than 0.7. As a result, the null hypothesis cannot be rejected. In other words, there is no firm- specific effects in the data and the Pooled OLS is more appropriate than the FEM.

Besides, the Breusch – Pagan test shows a

Table 1: Variance Inflation Factors (VIF) and Tolerance (1/VIF) tests' result

Variable	VIF	1/VIF
Dummy	2.89	0.345
Totalasset	2.76	0.362
Npl1	1.43	0.699
Dloans	1.16	0.859

Table 2: Results of tests for best- fit model

F-test:	F (19,37) = 0.74	Prob > F = 0.7599
BPLM test:	Chibar2 (01) = 0.00	Prob > chibar2 = 1.00

high p-value of 1.00. Hence, the null hypothesis cannot be rejected and the Pooled OLS is preferable to the REM.

Based on these two tests, it can be confirmed that there is no firm- specific effects in the data set and the Pooled OLS is suitable in this case.

Result of the Pooled OLS

Using the OLS method to estimate the coefficients for the mentioned model, the regression result was shown in Table 3. The model was overall statistically significant at the 1% level when the p-value is equal to 0.0015. Then, all of dependent variables were significant when using the hypothesis testing with a level of significance of 5%. However, the sign of the NPLs ratio lagged 1 period (NPL_{it-1}) was positive, which was opposite to the theoretical estimation above. Furthermore, the R-bar-squared of this model was 26.95%, which meant that there was only 26.95% of NPLs ratio explained by independent variables. It was quite a weak relationship. Further discussions of this results were continuously discussed in the following section.

Result explanations

Due to the results from the F-test and BPLM test, the Pooled OLS is appropriate to test for the influences of bank-level factors on the changes in NPLs ratio.

NPL_{t-1}: It was seen that when the NPLs ratio

Table 3: OLS regression for NPLs in Vietnam in 2010-2012

Independent variables	Coefficients
npl1	0.755* (1.91)
dloans	0.053* (1.88)
totalasset	0.000** (-3.42)
dummy	0.046** (3.70)
Intercept	0.019 (2.41)
No. of observations = 60	
R^2 = 0.2696 Adj R^2 = 0.2165	
F (4,55) = 5.08 Prob > F = 0.0015	

*Notes: t-statistics are in parentheses. * and ** denotes the variable is significant at the 10% and 5% level, respectively.*

in the last year increased, the ratio in this year might increase – a high level of correlation. As a result, there was an inverted relationship between NPL_{it-1} and NPLs to the hypothesis. The result implied the specific context of Vietnam. When the expected relationship between this year NPLs and last year NPL_{it-1} is negative due to the tightening of bad debt management (Louzis et al., 2010), the effects of lag NPL_{it-1} in Vietnam was suspicious. The result here from the model showed an opposite effect in that it showed a positive one. In fact, in the case of ABB, KienLongBank and Saigonbank followed this theory. However, the rate of NPLs of other banks went into a reversed way and that is why the sign of the lag of NPLs was not precise. This positive relationship is also observed in the study of Do and Nguyen (2014), i.e. the coefficient of the previous NPLs ratio is around 0.62.

Growth rate of Loans: When the growth rate of loans increased, it would lead to an increase in the value of NPLs ratio and the sign of this variable also satisfied the prospect. All of the banks pronounced a positive relationship between their Loans growth rate and NPLs ratio.

Total Asset: Nonetheless, it is not worth saying the effect of Total Asset on the changes in the NPLs ratio of commercial banks when the coefficient of it was just a very small number: 0.000000000115, even the sign of this independent variable was right. Hence, we can conclude that the size of banks (which are represented by Total Assets) contributed a very small part to the rate of changes in NPLs. In contrast, the study of Do and Nguyen (2014) shows a positive relationship between Size and NPLs ratio, which is statistically significant at the 5% level. The difference between the two studies may be due to the different sizes of the data sets, i.e. this study employed data from 20 banks, which is double the number of banks in study by Do and Nguyen (2014).

Dummy: Further, the significance of a dummy variable also proved the existence of the higher level of NPLs in several state-owned banks. Particularly, we can see the case of Agribank which had a high rate of NPLs (5.8% in 2012) and a high rate of growth in NPLs in 3 years with the average growth rate standing approximately at 49%.

To add in, the R-sq of this model was 26.96% which indicated that 26.96% of NPLs ratio was explained by some endogenous factors such as the NPLs ratio in the previous period, the growth rate of loans ratio and the total assets of the bank. Indeed, the NPLs ratio in Vietnam commercial banks was actually affected by the bank-level factors, although the effects were not really big.

Robustness check

A robust regression is performed using iteratively reweighted least squares. Specifically, a weight is assigned to each observation, with higher weight given to better observations. The result is shown in Table 4.

It can be seen that the number of observations decreases from 60 to 58, since two deviant observations have their weight set to missing so they are not included in the analysis. The coefficients and standard errors in this analysis differ from the original OLS regression, though the relationships between independent variables and the dependent variable remain unchanged. In fact, only the previous NPL ratio has a statistically significant influence on this

Table 4: Robustness check for the regression model

Independent variables	Coefficients.
npl1	0.590*** (6.64)
dloans	0.013* (1.96)
totalasset	0.000 (-1.22)
dummy	.0050883 (1.40)
Intercept	.098511 (5.30)
No. of observations = 58 F (4,53) = 12.69 Prob > F = 0.0000	

*Notes: t-statistics are in parentheses. * and *** denotes the variable is significant at the 10% and 1% level, respectively.*

year's NPL ratio (i.e. p- value is equal to 0.00). The other three determinants have no remarkable effect on the NPL ratio. In the original OLS, there are two variables, i.e. Totalasset and dummy, which significantly affect this year NPL ratio. This difference may be due to the drop of some outliers in the data set when the robustness test is implemented.

6. Conclusion

Although the issue of NPLs in Vietnam was quite sensitive due to some political problems, the research has got some significant empirical results implying the impact of bank management on its NPLs. To get the targeted NPLs ratio, the Vietnamese commercial banks should consider adjusting their Loan-to-asset ratios, their types of ownerships, their previous-year-NPLs even with suspicious relationships, and the weak effect of the bank's total asset.

The difficulties facing the process of the empirical model have implied several problems with regard to the data availability and consistency. Although it is easy to collect the data from the annual report of commercial banks in Vietnam, the number of NPLs given to the public might not be precise. Comparing the NPLs ratio of Vietnam published by international institutions and the SBV, the result showed an extremely different situation. In addition, the public annual report of commercial banks might also contain inaccurate numbers such as the numbers in the balance sheet, the cash flow and so on. Although the model result gave us quite a good number of all variables, however, the R-sq of it was relatively small. As a result, the study was able to conclude that even though bank-level factors had real influences on the changes in NPLs, the relationship was quite weak. This requires the regulation of data transparency and consistency from the State Bank of Vietnam.

Furthermore, the study found out some key problems of the Vietnam banking system in announcing accurate information and data. It proved that the number of NPLs in Vietnam

published by the SBV or other credit institutions might not reflect the situation of NPLs in Vietnam because they are always estimated at an extremely lower level of NPLs compared to the estimations of other estimators or international credit ratings such as Moody's or Fitch. In addition, the unavailability of data made the model forgo some other key factors such as operating expenses, collateral values, manager powers, etc. If there were more information and accurate data from this industry, the research could further construct a good model which defines the factors that have real influences on the NPLs changes.

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