

# An Analysis of Loan Portfolio Growth and Foreign Bank Ownership on Banking Profitability and Credit Risk; Evidence from the Indonesian Banking Industry

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**Abstract:** This study aims to examine the significance impact of loan portfolio growth and foreign bank ownership on profitability and credit risk. Using panel data analysis, we estimate this relationship of variables of 58 Indonesian commercial banks for the period of 2006-2014. Return on asset (ROA) and return on equity (ROE) are used as our measurement of profitability; meanwhile credit risk is proxied by non-performing loan (NPL) and loan loss provision (LLP). After controlling for bank specific factors and macroeconomic factors, as well as Herfindahl-Hirschmann Index (HHI) to capture the effect of market concentration on the model, we find a negative and significant impact of loan portfolio growth on credit risk, however growth of loan portfolios do not contribute to the bank profitability. Additionally foreign bank ownership is found to have a significant impact for the profitability and credit risk of the Indonesian banking industry.

**Keywords:** *Loan Portfolio Growth, Foreign Ownership, Profitability, Credit Risk, Banking*

## 1. Introduction

Credit risk has always been an important and highlighted risk for financial institutions since the 1990s due to its role as a major cause of bank failures. The Central Bank of Indonesia sees credit risk as one of the most influential risks for the whole banking system in Indonesia (Bank Indonesia, 2013). It has been crucial for performance for it has been the cause of most banking institution failures (Publications of the Office of the Comptroller of the Currency, 2001).

Banks play an important role in the economy of a country. Banks provide assistance to economic growth (Allen & Carletti, 2008) and development and the improvement of living standards through creating services for the economy which deals with risks and uncertainties for the banks themselves and, in return, banks take their reward in form of rates they offer to the borrowers and the credit spreads (Bollardet al, 2011). Credit risk acts as one of the internal determinant of banks' performance and is related to non-performing loans (Kolapoet al 2012). As a part of portfolio management, increasing loan portfolio might aim to increase their market share or expand to new geographic markets for instance (Foos et al, 2009). A poor portfolio management creates vulnerability for banks to experience a rise in the amount of non-performing loans; thus, this might jeopardize the liquidity of banks which, in the end, can affect its profitability (Velnampy & Pratheepkanth, 2012).

The impact of foreign bank entrance into domestic banks is believed to have resolved some issues faced by a domestic banks such as improvements in the efficiency, more innovative financial products, better capitalization and the ability to adapt to changes in changing market conditions (Parul & Mohd, 2010).

This research attempts to create two models in which portfolio growth might have a significant impact. The first model is to predict the significant impact of portfolio growth on profitability and the second model is to predict the significant impact of portfolio growth on credit risk in the Indonesian banking industry. Both models will involve testing the foreign bank ownership factor. Bank specific factors, macroeconomic factors, and market concentration are included as control variables.

Our findings shows that loan growth is negatively related to profitability and is consistent to the findings of Foos et al (2009). This research found a negative and significant relationship between loan growth and credit risk which is inconsistent to the finding of Foos, et al (2009) and Jimenez et al , (2007). Furthermore, the profitability results were insignificant while credit risk results were significant. We also find that foreign banks have higher profitability and lower credit risks compared to domestic banks.

A compiled previous researches on loan growth and foreign bank ownership on profitability and credit risk is structured in the following literature review (Section 2). Section 3 provides the hypotheses and model of this research. Section 4 contains the result analysis. As for section 5 contains conclusions on the findings.

## 2. Literature Review

### 2.1 Loan Portfolio Growth & Profitability

Loan portfolio is typically the largest portion of the asset of bank which contributes a large amount to the revenue (Comptroller of the Currency Administrator of National Banks, 1998). Loan portfolio growth reveals how the amount of loan portfolio changes over a period of time. Banks expand their loan portfolio when they identify a new good opportunity and to hide losses in the current loan portfolio or commonly known as *ever-greening loans*(Zemel (2011), Foos et al, 2011). In line with this reason Gunadi & Budiman (2012) described the optimization of portfolio as a mean to increase revenue; hence allocating portfolio is to maximize profits of banks. Additionally loan growth convey information on a new set of investment, banks with high loan growth will generate a significant excess of monthly return despite the long or short portfolio and that loan growth is able to predict future bank performance (Zemel, 2011). Supporting the evidence, Khan *et al.* (2011) found a significant and positive relationship between loan growth and profitability. They took into account the effect of bank size and the results showed that in large banks, the relationship of loan growth and profitability is positive and significant which is caused by the ability of large banks to have a higher capacity to lend to borrowers.

Foos et al (2009) found that loan growth results in a decrease in the relative interest income of banks. Hence, a loan growth can lead to a decrease in profitability. This might be related to the argument stated by Saurina & Salas (2002) that there is a chance of increasing loans to gain market shares and sacrificing their profitability. Stating a similar idea, Illueca et al (2011) explained banks enter new markets with low loan rates is to gain a market share, hence it would result to the increase in risky borrowers.

### 2.2 Loan Portfolio Growth & Credit Risk

Credit risk remains one of the most important risks to be managed by banks as it holds a major portion of the assets and takes a crucial role in the long-term failure or success of any banking corporation (Aaron et al, 2012; Kabir *et al.* 2010; Oyedijo & Adebisi, 2012). Credit risk arises as a result of lenders granting credits or loans to borrowers with no certainty on the repayments in the future (Oyedijo & Adebisi, 2012). Jesus & Gabriel (2006) found that rapid growth loans resulted in a higher problem in loans whereas the problem in loans is pictured as an *ex-post* credit risk. Their result differed by the speed of the loan growth. When credit growth is above average, or growing rapidly, the results were positive and significant. There is a positive and significant impact of growth towards future defaults, hence a rapid credit growth results in an increasing credit risk in loan portfolios. On the one hand, when credit growth is slow, or below average, no impact is found between credit growth and credit risk. They suggested that an increase in loan loss provision (LLP) is needed during economic booms so that it can be utilized to cover the defaults during recession, hence during recession, there will be no need to increase LLP again. This is due to the fact that defaults are likely to occur during recession.

Dell'Araccia & Marquez (2005) suggested that the failure to screen borrowers will result in a riskier portfolio. They also found that a reduction in lending standards will create a higher demand for credit which they picture as a lending boom. The reduction of collateral usage which is referred to as a reduction in lending standard causes lending booms which is utilized by banks to increase their market share of loans (Jesus & Gabriel, 2006; Illueca et al, 2011). Their results were as expected, they found a

negative relationship between portfolio quality and the amount of aggregate credit. As the quality of a portfolio drops, credit risk increases. Hence, deterioration in bank portfolio means a higher risk exposure (Dell'Ariccia & Marquez, 2005; Laeven & Majnoni, 2003).

### 2.3 Foreign Bank Ownership

The effect on the entrance of foreign banks into the domestic banking industry has been widely discussed since the 1990s. The existence of foreign banks is believed to trigger competition in the host country's and encourages domestic banks to increase its efficiency (Wu et al, 2010; Chung-Hua, et al, 2009). Foreign banks are also considered to be an additional source of capital funding for the economy of the host country (Wu, Jeon, & Luca, 2010), can reduce the probability of financial crisis, and that it is likely to promote better financial stability (Demirguc-Kunt et al,1998) and Jeon et al, 2003)

Chung-Hua, et al (2009) find no effect of foreign bank ownership on the profitability of Chinese banks. On the other hand, empirical evidence of Korean banks obtain by Demirguc-Kunt et al (1998) and Jeon et al (2003) see that foreign banks in this country have a better profitability compared to the domestic banks. They argue that the foreign banks have ability to attract more loans, hence they can achieve higher profits. As an addition, foreign banks also tend to have lower NPL as a share its total loans compared to domestic banks, this is in contrast to the findings of the Malaysian case where Detragiache & Gupta (2006) found no significant difference of NPL between domestic and foreign banks. Foreign banks tend to “cherry pick<sup>1</sup>” credits, therefore they have a higher level of creditworthy borrowers and hence a lower NPL level (Wu et al, 2010).

## 3. Research Method

### 3.1. Data

Our data consist of 58 Indonesian commercial banks for the period of 2006-2014 (522 bank-year). Data is downloaded from each of bank's web site. Outliers excluded are at a maximum of 1% from the total data gathered.

### 3.2. Research Model

Our model to measure the impact of loan growth and foreign bank ownership on profitability is as follows:

$$\begin{aligned}
 Prof_{it} &= \alpha + \beta_1LPG_{it} + \gamma_1FBO_{it} + \sum_{i=1}^N \theta BSp_{it} + \sum_{K=1}^K \phi ME_t + \Omega HHI \\
 &+ \varepsilon_{it} \quad (1)
 \end{aligned}$$

and the model to estimate the impact of loan growth and foreign bank ownership on credit risk is as follows:

$$CR_{it} = \alpha + \beta_1LPG_{it} + \gamma_1FBO_{it} + \sum_{i=1}^N \theta BSp_{it} + \sum_{K=1}^K \phi ME_t + \Omega HHI + \varepsilon_{it}$$

Variables	Description
LPG	Loan Portfolio Growth is calculated as $\frac{t_1-t_0}{t_0}$
Profit	Profitability is using Return on Asset and Return on Equity as proxies
FBO	Foreign Bank Ownership is represented by 0 for 0%-50% of foreign ownership and 1 for 51%-100% foreign ownership.
BSp	Bank Specific Factor represents the size of banks (Ln. of Assets), capital ratio (Equity to total

<sup>1</sup> Cherry picking is an act of selective observation. See Wu, Jeon, & Luca (2010) for complete reading on cherry pick.

- Assets), and liquidity ratio (cash and marketable securities to total assets)
- ME Macroeconomic Factor represents Gross Domestic Product and Inflation
- CR Credit Risk is proxied by Non-Performing Loan (Net & Gross) and Loan Loss Provision
- HHI Herfindahl-Hirschmann Index (Market Concentration) is calculated as  $\sum_{i=1}^n MS_i^2$ , with the amount of asset representing the market share.

The models are estimated using unbalanced panel data regression

### 3.3. Research Hypothesis

- $H_1$  : Portfolio growth has a significant impact on the profitability of a bank.
- $H_2$  : Portfolio growth has a significant impact on the credit risk of a bank.
- $H_3$  : Foreign bank ownership has an impact on the profitability of a bank.
- $H_4$  : Foreign bank ownership has an impact on the credit risk of a bank.

## 4. Result Analysis

### 4.1. Result Analysis

The result from Model 1 summarized in Table 1, exhibits the relationship between loan portfolio growth (LPG) and profitability (ROA & ROE) and foreign bank ownership (FBO\_dummy) and profitability (ROA & ROE). The result analysis for Model 1 defines the result of  $H_1$  and  $H_3$ .

This research consistently found a negative relationship of LPG and profitability using both proxies however non significant. The negative relationship supports the finding of Foos et al (2009), using ROA as a measurement of profitability, they found that loan growth results in a decrease in profitability which they picture through the decrease in the interest income of banks, hence they concluded that they found a negative relationship between loan growth and profitability. Jesus & Gabriel (2006) early in their research mentioned that an increase of loan portfolio would eroded the capital buffer which will trigger profit to be reduced, which is in line with the statistics result found in this research where there a negative relationship is found between LPG and ROA. FBO showed a positive coefficient on ROA. This means that foreign banks tend to have a more positive profitability (ROA) compared to domestic banks. The finding is statistically insignificant, which probably means that the ownership of banks does not influence the ROA of banks. However, ROE shows a different result.

**Table 1:** The result of regression of Model 1. ROA (Random Effect), ROE (fixed effect)

	ROA	ROE
CONSTANT ( $\alpha$ )	-0.0880 (0.3922)	-0.0098 (0.9769)
LOAN GROWTH (LPG)	-0.0001 (0.9598)	-0.0014 (0.5870)
FBO_DUMMY	0.0062 (0.1622)	0.1082 (0.0000) *
SIZE	0.0028 (0.0422)	0.0086 (0.2310)
CAPITAL RATIO	0.0007 (0.5281)	0.0071 (0.0093) *
LIQUIDITY	0.0266 (0.1304)	-0.0257 (0.5872)
GDP	0.1154 (0.6605)	1.4141 (0.0194)
INFLATION	-0.1326 (0.1036)	-0.4311 (0.0192)
HHI	0.2991 (0.7599)	-2.6725 (0.2339)
Hausmann Test (Prob.)	0.9771	0.0107
Durbin-Watson	2.1188	1.1939
R-Square	0.0363	0.6546

Numbers in parentheses are the probability.  
 Significance level \*(0.1) \*\* (0.05) \*\*\* (0.01)

Table 2 Source: Processed data by Eviews 8.1

FBO has a negative and statistically significant relationship with ROE. This denotes that foreign banks have a more negative ROE compared to domestic banks or domestic banks have a more positive ROE than foreign banks. Foreign banks tend to have a higher ROA and lower ROE compared to domestic banks. The result of ROA is in line with the previous findings of Demircug-Kuntet al (1998), Jeon et al (2003), Claessens et al (2001) and Micco et al (2004). They found a higher profitability of foreign banks compared to domestic banks in developing countries. This might be caused by the ability of foreign banks to be more efficient compared to domestic banks.

The first hypothesis ( $H_1$ : Portfolio growth has a significant impact on the profitability of a bank) is rejected. There is no significant impact of loan portfolio growth of profitability of a bank. The third hypothesis ( $H_3$ : Foreign bank ownership has an impact on the profitability of a bank) is accepted. There is a significant impact of foreign bank ownership on the profitability of a bank using the measurement of ROE.

The result from Model 2 exhibits the relationship between loan portfolio growth (LPG) and credit risk (NPL and LLP) and foreign bank ownership (FBO\_dummy) and credit risk (NPL and LLP). The result analysis for Model 2 defines the result of  $H_2$  and  $H_4$ .

According to the result, it shows that an increase in LPG will cause a reduction in both NPL and LLP. This result is the opposite from the results obtained by Jesus & Gabriel (2006), Foos et al (2009) and Turkmen & Yigit (2012). Looking into the statistics achieved, it might be the case that banks struggle to maintain a relatively low NPL by giving more efforts on the screening and monitoring of credit quality.

Table 2 summarizes the estimation regression of model 2

**Table 2:** Model 2- Fixed Effect (Gross NPL & Net NPL).

	NPLGROSS	NPLNETT	LLP
<b>CONSTANT(<math>\alpha</math>)</b>	0.5100 (0.0014)	0.1972 (0.0025)	0.3119 (0.0040)
<b>LOAN GROWTH</b>	-0.0074 (0.0754) *	-0.0012 (0.4698)	-0.0003 (0.7149)
<b>FBO_DUMMY</b>	-0.0078 (0.4275)	-0.0129 (0.0013) ***	0.0006 (0.9376)
<b>SIZE</b>	-0.0185 (0.0000) ***	-0.0072 (0.0000) ***	-0.0116 (0.0000) ***
<b>CAPITAL RATIO</b>	0.0003 (0.8029)	0.0001 (0.9055)	-0.0003 (0.7276)
<b>LIQUIDITY</b>	-0.0330 (0.1520)	-0.0103 (0.2713)	-0.0111 (0.4572)
<b>GDP</b>	-0.6727 (0.0161) **	-0.3040 (0.0068) ***	-0.3281 (0.0902) *
<b>INFLATION</b>	0.1251 (0.1378)	0.0606 (0.0726) *	0.0668 (0.2614)
<b>HHI</b>	1.5091 (0.1444)	0.7171 (0.0846) *	0.9461 (0.1973)
<b>Haussmann Test (Prob.)</b>	0.0003	0.0001	0.0000
<b>Durbin-Watson</b>	1.3629	1.6978	1.1690
<b>R-Square</b>	0.5353	0.5532	0.5437

Numbers in parentheses are the probability.  
 Significance level \*(0.1) \*\* (0.05) \*\*\* (0.01)  
 Table 2 Source: Processed data by Eviews 8.1

One other major probable reason from this result is that as an effort of banks to cover up a high ratio of NPL, banks might increase their loan portfolio. The results of LLP are consistent with the findings of

Deelchand & Padgett (2009), Laeven & Majnoni (2003), and Altunbas *et al.* (2007). Referring to the inconsistent result with Saurina, Jesus, & Gabriel (2006), on the case of the Indonesian banking industry, it might be the case that Indonesian banks tend to make insufficient provisions, hence a negative relationship is concluded. However, this result is statistically insignificant. Evidently, in the case of Indonesian banking industry, an increase in LPG does not necessarily result to an increase in NPL.

FBO shows a negative and significant relationship towards the net NPL but a negative and statistically insignificant relationship on gross NPL. These results means that foreign banks tend to have a lower gross and net NPL while domestic banks tend to have a higher gross and net NPL. This result is consistent with the earlier previous studies on the effect of foreign banks on domestic banks. Previous studies found that domestic banks tend to suffer from a higher NPL because borrowers tend to be attracted to foreign banks, hence the domestic banks are left with the non-creditworthy borrowers. Foreign banks also tend to “cherry pick” the creditworthy borrowers leaving the non-creditworthy borrowers for domestic banks (Wuet al 2010; Jeon et al, 2003; Unite & Sullivan, 2003; Gormley, 2010). This results to a higher NPL for domestic banks. Furthermore, Demirguc-Kuntet al (1998) argued that foreign banks tend to have a higher ROA and ROE which is caused by the lower portion of NPL they have as a share of total loans. As for FBO on LLP, the result shows that foreign banks tend to have a higher LLP and domestic banks tend to have a lower LLP. The insignificant result is in line with the findings of Micco, Panizza, & Yanez (2004). The found that foreign ownership is insignificantly related to loan provision. The logical reason behind the result is that referring to the explanation on the negative relationship between LPG and LLP earlier, it might be the case that domestic banks tend to make insufficient provisions. Another possibility is that it might be that foreign banks initially enters the Indonesian banking industry through acquiring problematic domestic banks, hence the high LLP might be resulted from the inherent LLP from before the acquisition.

The second hypothesis ( $H_2$ : *Portfolio growth has a significant impact on the credit risk of a bank*) is accepted. There is a significant impact of loan portfolio growth on the credit risk of a bank using the measurement of LPG. The fourth hypothesis ( $H_4$ : *Foreign bank ownership has an impact on the credit risk of a bank*) is accepted. There is a significant impact of foreign bank ownership of the credit risk of a bank using the measurement of net NPL.

## 5. Conclusion

### 5.1. Conclusion

This research investigates the relationship between loan portfolio growth and foreign bank ownership on profitability and credit risk of the Indonesian banking industry. Based on the empirical findings in this research, not as expected, there is no significant impact of growth in loan portfolio on the profitability of banks. Using ROA and ROE as the measurements of profitability, both measurements shows a negative and insignificant relationship. The negative relationship of LPG and ROA is probably caused by the disproportionate increase of net income and total asset. With total asset increasing at a higher velocity compared to net income, this creates a lower ROA which results to a negative relationship between LPG and ROA. Other possible factors supporting this result is the trend of interest, seasonal loans, and window dressing. With the market of decreasing interests, banks are obliged to adjust their interest rates. Hence, banks will gain less from its interest income as interest rate drops. The seasonal loan allows borrowers to pay interest based on what they utilize, this results in a fluctuating interest income for banks. When granted loans are partially utilized, the interest incomes earned by banks are also partial. As for ROE, the empirical findings is not in accordance to the logic of the ratio of ROE. As loans increase, interest income are supposed to increase creating a higher net income, hence a higher ROE. However, the results showed the contrary. This might be caused by the existence of non-interest income such as provision and commissions which increase at a high rate creating a higher net income.

The result of foreign bank ownership on profitability is as expected. There is an impact of foreign bank ownership on profitability in banks. This is showed by the positive and significant relationship between foreign bank ownership on profitability as measured by ROE. However, using the measurement of ROA, this research found a positive but insignificant result. Foreign banks have a higher ROA compared to domestic banks because foreign banks have a better efficiency. This is in line with the

previous studies that found a positive relationship on foreign bank entrance on ROA of banks. Although ROE has a statistically significant result, based on the observations on the previous studies, data, and statistics results, the use of ROA is better in estimating the impact of foreign bank ownership in the profitability of banks.

The empirical findings on this research found a negative relationship between loan portfolio growth and credit risk using all the proxies of credit risk. Gross NPL showed a statistically significant result. This means that credit risk decrease as a result of the increase of loan portfolio. Generally, it would be expected that credit risk will also increase as a result of a higher loan growth. However, the empirical findings showed a different result. In the case of the Indonesian banking industry, NPL is negatively affected by loan portfolio growth because in order to suppress the high percentage of NPL, then based on the logic of the ratio, the amount of total loans has to be increased. The amount of total loans has to increase at a higher velocity compared to the increase of number of NPL to create a lower percentage of NPL. Another possibility is that during a rapid loan growth, banks also increase its credit monitoring and screening. This enables banks to eliminate the non-creditworthy borrowers as an effort to suppress the number of NPL. As an addition, supported by the fact that GDP has a negative impact on credit risk, it might be the case that there is a positive economic growth when there is a growth of loans resulting to a lower credit risk when there is loan growth.

Foreign bank ownership exhibiting a negative relationship with NPL, it shows that foreign banks have a lower NPL compared to domestic banks. This finding supports the previous findings where foreign banks are more likely to attract the creditworthy borrowers leaving the non-creditworthy borrowers for domestic banks.

The negative relationship of loan portfolio growth on LLP and positive relationship of foreign bank ownership on LLP denotes a negative information. This might mean that domestic banks in Indonesia tend to create an insufficient amount of provision. It might be the case that during a rapid loan growth, it is not followed by a proportionate increase on the number of LLP. This is shown by the finding that an increase of loan portfolio will result in a decrease in LLP and foreign banks tend to have a higher LLP compared to domestic banks. With banks having an insufficient provision, it will create a higher risk for them. The NPL during economic growth are likely to appear during recession. Banks with a more sufficient provisions are less risky as they are prepared for the recession. Hence, during recession, banks with insufficient provision are likely to bear more risk of default as they become “shock” to the sudden increase of NPL.

Furthermore, this research found that big banks benefit from a higher profitability and lower credit risk. This might be caused by the ability of bigger banks to be more efficient and their possession of a more sophisticated risk management. Banks with high capital ratio will experience a higher profitability. This research found no impact of capital ratio on credit risk and liquidity on profitability and credit risk. During an economic growth, banks will experience a higher profitability and lower credit risk, but a lower profitability and higher credit risk during an increase in inflation rate. Additionally, the market concentration does not show any impact on the profitability of banks. However, the market concentration shows an insignificant and positive impact on credit risk. A higher level of concentration creates a higher credit risk for banks.

## 5.2. Recommendations

As banks compete in increasing their amount of loan portfolio, based on this research findings, it results to a decrease in profitability. The Indonesian banking industry might need to pay attention to the creditworthiness of its borrowers and credit applicants so that a loan portfolio growth will not result to a decrease in profitability.

As for regulators, domestic banks might need to be assisted through regulations establishment in order to encourage domestic banks to be able to compete with foreign banks. Domestic banks need to be aided so that they will be able to improve their efficiency. As foreign banks covers a large portion in the Indonesian banking industry, it is highly suggested for regulators to assist domestic banks so that their profitability will not be damaged from the existence of foreign banks.

For further research, it is recommended to identify credit risk based on ex-ante and ex-post credit risk. The use of LLP is appropriate to better identify the ex-ante credit risk and the use of NPL to identify the ex-post credit risk. This is to identify the habits of banks in dealing with their before and after credit

risks. As an addition for further research, it is suggested to use the amount of foreign banks in the industry to understand about the actual effect of foreign banks on the banking industry as a whole. Another option would be to use the foreign bank entrance in terms of the amount of asset it penetrates to the respective banks.

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