Bank Competition, Credit Risk, and Foreign Bank Penetration: Empirical Evidence from Indonesia

Olivia Nuralyza[1], Niluh Putu Dian Rosalina Handayani Narsa[2], Dewi Sriani[3]

[1,2,3]*Department of Accounting, Faculty of Economics and Business, Universitas Airlangga, Surabaya, Indonesia*

*Corresponding author. Email: niluh.narsa@feb.unair.ac.id

This study examines the relationship between bank competition and credit risk with foreign bank penetration as a moderating variable. The research sample used was 79 commercial banks listed in the Indonesian Banking Directory published by the Financial Services Authority (OJK) during the 2014-2019 period with a total of 474 observations. The results of this study indicate that the higher the bank's competition, the higher the bank's credit risk, which is in accordance with the competition-fragility theory. Furthermore, from the results of the Moderated Regression Analysis, the results show that foreign bank penetration has not been able to moderate the relationship between bank competition and bank credit risk, however, if it stands as an independent variable on its own, foreign bank penetration will reduce bank credit risk. The results of this study contribute to providing useful information for parties in the banking industry that increasing foreign bank penetration can reduce bank credit risk.

Keywords: *bank competition, credit risk, foreign bank penetration, competition-fragility, lerner index*

INTRODUCTION

The role of the bank as an intermediary institution is very important in facilitating economic growth, especially in lending activities whose profits are taken from interest on credit loans. Concerns over the economic outlook have increased credit risk faced by the banking sector. Credit risk is not only an important risk faced by banks, but is also directly related to the causes of the failure of a bank's performance (Ghenimi et al., 2017). With credit risk experienced by banks, of course, there are many factors that affect credit risk, one of which is bank competition.

The relationship between bank competition and credit risk itself can be explained by competition-fragility theory and competition-stability theory. (Boyd & De Nicolo, 2005; Keeley, 1990; Martinez-Miera & Repullo, 2010). In short, the competition-fragility theory holds that the level of competition is directly proportional to the bank's risk taking, pushing the bank to become more fragile. On the other hand, the competition-stability theory assumes that the tighter the degree of competition in the banking sector, the more stable the banking system and tends to reduce systemic risk. (Wibowo & Siantoro, 2018).

The increasing of bank competition in Indonesia is not limited to local banks. The relationship of competition to credit risk can change when influenced by foreign bank variables (Natsir et al., 2019). Some previous research (Kabir Hassan et al., 2013; Luo et al., 2017; Usman et al., 2018) generates the view that the penetration of foreign banks can have a positive impact on the competition of a country's banks, in the sense of encouraging domestic banks to improve operating efficiency and improve the quality of their services.. Usman et al., (2018) also found that the penetration of foreign banks can increase the competition and efficiency of domestic banks in Indonesia, especially in middle to lower sized banks. Usman et al., (2018) also added that a positive relationship between foreign bank penetration and banking competition was found mainly in medium and small banks, through the spillover effect on the domestic banking system.

Research by Lee et al. (2016) which is about the relationship between foreign bank penetration and bank competition in Asian countries with the foreign bank ownership approach shows different results, and finds that higher ownership does not increase bank competition. However, this can be influenced by regulations and supervision in several countries which reduce the positive effect of foreign bank penetration on bank competition. Pham dan Nguyen (2020) which examines the relationship between foreign bank penetration and bank performance in Vietnam, supports the opinion that the presence of foreign banks does not improve the performance of domestic banks. Yin (2020), in his research, showed the result that in developed countries, foreign bank penetration increases competition, but reduces competition in developing countries. In addition, the economic cycle also increases the impact of the presence of foreign banks during a crisis. Natsir et al., (2019) also found that increasing the number of foreign banks can reduce the credit risk of developing markets. The relationship between foreign bank penetration and competition to credit risk depends on the degree of competition and the condition of the country's income.

This purpose of this study is to examine the relationship between bank competition and credit risk, using foreign bank penetration as a moderating variable. Research that examines the relationship between bank competition and bank credit risk in Indonesia is still limited. In addition, this study also uses the penetration variable of foreign banks to moderate the relationship between bank competition and credit risk. The research is based on 79 banking companies listed in the Indonesian Banking Directory published by the Financial Services Authority (OJK) for the 2014-2019 period, in addition to showing relatively recent data in the study, during that period bank mergers and acquisitions became more active in 2019, which has increased from 2013 (Richard, 2020) which could trigger increased bank competition.

The remaining of this article will be continued with a theoretical framework and hypotheses development, research methods, data analysis and discussion, then conclusions will close the this article.

LITERATURE REVIEW

Competition-Fragility Theory

Based on this theory, a competitive market will make market conditions unstable. According to the theory, the mechanism of competition can easily cause fluctuations in the banking system. Previous literature shows the negative impact of competition on banks, leading to greater instability and bank failure (Clark et al., 2018). The competition-fragility theory states that an increase in banking competition leads to an increase in bank fragility (Chen et al., 2019; Diallo, 2015; Dushku, 2016). The essence of competition-fragility theory describes the relationship between the market system and bank risk taking. This view argues that high bank competition reduces market power and profit margins. The competitive environment forces banks to increase their profits, so that banks have the incentive to take more risks and result in bank fragility.

Dushku (2016) dan Turk Ariss (2010) in his research found evidence for the view of competition-fragility in developing countries, which shows that greater market power increases bank stability and profit efficiency despite a decrease in cost efficiency. Banks gain greater stability and can reduce risk when gaining market power. This statement supports the previous literature on competition-fragility that increased competition can damage bank stability.

Research by Martinez-Miera & Repullo (2010) showed that there is a non-linear U-shaped relationship in banking competition and bank stability caused by the risk-shifting effect and margin effect. Initially, increased competition will lower the risk of default as lower lending rates put banks in a safe position. However, along with lower interest rates, income from these loan interest rates also decreases. Income from loan interest acts as a buffer against defaulting debtors' losses, which in turn places the bank in a risky position. After that, the competition has increased the fragility of the bank

(Berger et al., 2009; Martinez-Miera & Repullo, 2010; Sinha & Sharma, 2016).

In connection with the conditions of the Indonesian banking industry as described previously, in this study, the competition-fragility theory becomes a reference to explain the relationship between competition and credit risk in the banking industry in Indonesia. This theory states that the level of bank competition is measured by measuring bank concentration, where when bank concentration is low, it can be assumed that the level of bank competition is high (González et al., 2017). As a result of competition, banks are encouraged to take more risks, which means bank risks may increase, including bank credit risk. The reason for using the competition-fragility theory is that the number of banks in Indonesia is considered quite large and can threaten the stability of the banking industry in Indonesia (Wibowo & Wibowo, 2016).

Bank Competition

Competition is competition and is always associated with conditions where several parties compete for something (Indonesia Dictionary, 2007). Previous research by Brei et al. (2020) found a non-linear U-shaped relationship in banking competition as measured by the lerner index and credit risk, in other words, bank competition has the potential to reduce credit risk through efficient income. Research by Soedarmono dan Tarazi (2016) found that low market competition banks tend to exhibit higher credit risk. Measurement of bank competition can be done using various methods, including the Boone Indicator, Lerner Index and H-Panzar-Rosse statistics. This study will measure banking competition using the Lerner Index. The Lerner Index is a measure of a bank's market power and is defined as the ratio between mark-up and price, and it should be zero in perfect competition but will increase in less competitive banking markets. The Lerner Index measures the market power of each bank to set prices in the market, assuming fixed prices or static market forces (Wibowo, 2016).

Credit Risk

Refers to POJK Nomor 18/POJK.03/2016, Credit risk is the risk due to the failure of other parties to fulfill their obligations to the bank. Credit risk is defined as the possibility of breach of payment obligations according to agreed conditions or default by the borrower or bank partner (Frederick, 2012). In other words, this risk arises when the debtor of the bank concerned is unable to repay the loan. Credit risk is the most critical and expensive risk associated with financial institutions, if a financial institution is exposed to more high risk loans, there will be an accumulation of unpaid loans resulting in less profit (Ahmed dan Malik, 2015).

The magnitude and extent of losses caused by credit risk compared to other types of severe risks lead to high rates of loan losses and even bank failure. Loans are the biggest source of credit risk in commercial banks. Credit risk management is carried out to overcome this by maximizing profitability by considering bank risk and maintaining credit risk in an acceptable size.

Regulation by Financial Services Authority in Indonesia (POJK) Number 15/POJK.03/2017 regarding Status Determination and Follow-up Supervision of Commercial Banks states that the lending activities of a bank can be said to be problematic if the ratio of non-performing loans (Non-Performing Loan) on a net basis more than 5% of total loans. The distribution of capital for credit risk can be optimized and losses can be minimized with effective credit management. Based on research by Rahman et al. (2019), Bank competition is associated with higher credit costs and will increase the constraints on lending to banks. In this study, credit risk as the dependent variable uses Non-Performing Loan which is defined as the level of non-performing loans.

Foreign Bank Penetration

Foreign bank penetration means foreign banks entering a country in the form of opening correspondent banks, representative offices, agents, subsidiaries, and branches in order to facilitate international transactions. (Deak, 1984). The definition of a foreign bank in Indonesia refers to the Financial Services Authority (OJK in Indonesia) is a branch office originating from a foreign bank with a head office abroad. Foreign banks are required to comply with the provisions of Capital Equivalency Maintained Assets (CEMA) a minimum of 8 percent of the total liabilities of foreign banks each month and at least 1 Trillion Rupiah as determined by a Circular Letter from OJK Number 26/SEOJK.03/2016.

Foreign banks enter the host country in two ways, namely traditional and innovative. Traditionally, an international bank could enter a country by opening a wholly owned branch or subsidiary of the head office. These banks process trade finance, foreign exchange transactions, and loans to companies. The second way that innovators enter the host country is in three ways, namely bettors, prospectors, and restructuring.

Foreign bank penetration can have a positive or negative impact on bank competition and bank efficiency in the country experiencing it. The impact of foreign bank penetration on the level of banking competition is still controversial where most of the findings indicate that the level of competition will increase along with the increase in foreign bank penetration (Jeon et al., 2011; Usman et al., 2018; Wu et al., 2017). The foreign bank penetration variable is proposed as a moderating variable in this study, with the hypothesis that foreign bank penetration will increase competition in a country, which in turn will change the behavior and performance of local banks.

The Relationship between Bank Competition and Credit Risk

Competition fragility theory believes that increasingly fierce competition will reduce the ability of banks to generate profits and encourage banks to take greater risks in order to achieve higher profits. The research that forms the basis for this theoretical argument is research by Keeley (1990) and Wibowo & Wibowo (2016), which stated that a less concentrated banking market was the main cause of the financial crisis. In his research, it is stated that franchise

value banks control banking activities by reducing the number of risky banking activities, and banks with a high level of risk taking are considered to be associated with bankruptcy. Therefore, the competition fragility theory states that as a result of excessive competition, the franchise value of banks begins to erode so that these banks carry out more risk-taking activities. Cao et al., (2020) also argues that based on competition fragility theory, banking deregulation increases the overall level of competition in the financial sector, which then encourages banks and other types of financial institutions (especially investment banks) to take excessive risks when they compete for profits.

Furthermore, the opinion from Brei et al., (2020) – which is in line with the theory of competition-fragility – states that competition is negatively related to credit risk and has a non-linear U-shaped relationship. The bank competition indicator is negative for linear equations, but positive for quadratic equations and both coefficients are statistically significant. This means that bank competition is more closely related to bank stability, but only up to a certain point. Based on research by Rahman et al. (2019), bank competition is associated with higher cost of credit and will increase lending constraints to banks.

Competitive pressures and regulatory failures ultimately urge the banking industry in developing countries to push for an integration process in order to maintain market power. Increased banking competition will reduce loan interest rates. Banks with greater market power can provide lower interest rates, so this condition will reduce the competitiveness of small banks and force them to provide loans in unsatisfactory conditions (low interest rates), or accept customers with higher credit risk who do not accept loans. accepted by major banks. Further more by Lowering loan interest rates will reduce bank profit margins. Then to increase profit margins, banks provide more loans to risky customers, thereby increasing the level of bad loans. In other words, increased banking competition will increase risk-taking behavior by banks, so that the total risk of bad loans will also increase. Based on this explanation, the first hypothesis that can be formulated is:

H1 "There is a positive relationship between bank competition and bank credit risk."

The Relationship between Bank Competition and Credit Risk with Foreign Bank Penetration as Moderating Variable

Competition and penetration of foreign banks can have a positive or negative relationship to credit risk. The research carried out in the process refers to previous research that discusses the relationship of competition to credit risk with foreign bank penetration as a moderating variable with various methods. Previous research stated that the entry of foreign banks will increase the level of competition in the banking industry, so that it will also increase the distribution and production capacity of the banking industry in the host country (Claessens et al., 2001; Vives, 2011). Foreign bank penetration is associated with increasingly fierce competition in the banking sector, where higher competition from banks ultimately contributes to a decrease in margins and operating costs for domestic commercial banks.

Foreign banks have the capacity to obtain information about debtors and businesses, so they can screen out profitable and low-risk debtors, while charging the remaining credit to small domestic banks. According to Detragiache et al. (2008) foreign banks can increase competition by achieving economies of scale and better risk diversification than domestic banks. In addition, because foreign banks are backed by their parent banks, foreign affiliates of international banks can also be considered safer than private domestic banks, especially in times of economic hardship.

Based on research by Chen & Zhu, (2019) which examined 3,354 banks in 31 emerging market economies in Asia, Latin America, and Eastern and Central Europe between 2000 and 2014, the penetration of foreign banks increased competition. The study also states that the arrival of foreign banks, although it has the potential to increase bank risk, is an advantage in emerging markets through the spillover effect of competition. Other research by Jeon et al., (2011) and Yin (2020) found that in developing countries, the presence of foreign banks is positively related to bank competition. The regulatory and institutional environment, such as stricter capital requirements, higher barriers to market entry, and more effective information dissemination, also increase the impact of foreign bank entry on competition.

The entry of foreign banks in developing countries appears to lower interest margins and profitability, indicating increased competition (Claessens et al., 2001; Micco et al., 2004; Mody & Peria, 2004). According to Chen et al., (2019), the combined effect of bank competition and the entry of foreign banks brings financial vulnerability to domestic banks. The results of his research support the competition-fragility hypothesis when the entry of foreign banks exceeds a certain limit. These findings are also in line with research by Dwumfour, (2017) which states that the existence of foreign banks is detrimental to the domestic banking sector because it reduces stability and increases banking competition.

At a certain stage, the presence of foreign banks can accelerate competition and increase efficiency and operational levels (Syofyan & Usman, 2014). This can also affect the banking industry in terms of competition and efficiency. Foreign bank penetration can indirectly achieve better resource allocation by increasing competition in the banking market and encouraging domestic banks to improve their operational efficiency in the financial services industry. In relation to credit risk, the penetration of foreign banks can increase the risk of domestic banks by comparing the vulnerability of credit quality in domestic banks and the stability of the quantity of credit from foreign banks (Chen et al., 2019)

This research is motivated by the lack of sufficient data to fill the gap in the empirical literature by studying the important role of banking competition and foreign bank penetration in bank credit risk taking in Indonesia. Thus, the second hypothesis that can be formulated in this study is:

Hypothesis 2: Foreign bank penetration strengthens the relationship between bank competition and bank credit risk.

[Figure 1 about here.]

METHOD (FOR RESEARCH ARTICLE)

Operational Definition and Measurement of Variables

The independent variable used in this study is bank competition. In measuring bank competition, a high Lerner Index indicates a strong level of monopoly in the banking market, while in a highly competitive market the Lerner Index is low. Therefore, the interpretation of the results of Lerner index will be inversely related to the competition of the bank itself. It means that the higher the Lerner index, the lower the bank competition, and in the contrary the lower the Lerner index, the higher the bank competition. Based on Hawtrey & Liang (2008) and Taşkın (2019) Lerner Index calculation is described in the following formula, where TR is total revenue and TC is total cost.

$$Lerner\ Index_{i,t} = \frac{(TR - TC)}{TR}$$

The lerner index has a number range from 0 to 1. In a perfectly competitive market, the Lerner index value is equal to 0, while in a monopolistic market, companies can set prices above marginal cost so that the Lerner index number will be closer to 1 (Fernandez de Guevara et al., 2005).

Furthermore, the moderating variable in this study is foreign bank penetration. Foreign bank penetration is defined as the foreign banks entry into a country (Wu et al., 2017). Foreign bank penetration can be measured by calculating the total assets or the number of banks. The penetration ratio of foreign banks can be described as follows:

$$Penetration = \frac{Total\ Assets/\ Number\ of\ Foreign\ Banks}{Total\ Assets/Number\ of\ Domestic\ Banks}$$

According to Wu et al., (2017), if more than 50% of a bank's capital is owned by foreign individuals, foreign companies except banks, and international organizations, then the bank can be classified as a foreign bank.

The dependent variable used in this study is credit risk. Credit risk arises when the debtor of the bank concerned is unable to repay the loan. This variable is calculated by the ratio of Non-Performing Loans (NPL), to measure the ability of banks to manage Non-Performing Loans distributed by banks (Ramadhanti et al., 2019). Based on Chen et al., (2019), the NPL ratio can be calculated as follows:

$$NPL = \frac{Non - Performing\ Loan}{Total\ Credit} \times 100\%$$

The control variables used in this study are capital adequacy ratio (CAR), Loan to Deposit Ratio (LDR), Ratio of Operational Expense on Operating Income (BOPO), and Growth Rate of Gross Domestic Product (GDPG). The selection of these control variables has been based on the historical findings of the previous literature, the results of which can be said to be robust that they have a relationship with the dependent variable studied. (Valipour, 2014; Natsir et al., 2019; Yulianti et al., 2018).

Data and Sample

The population used in this study were all commercial banks registered in the Indonesian Banking Directory issued by the Financial Services Authority (OJK) during 2014-2019. The observation period was determined to reflect relatively recent data in the study. In addition, during this period bank mergers and acquisitions became more active in 2019, which increased from 2013 (Richard, 2020) which can trigger an increase in bank competition. Details about the amount of observation data can be seen in Table 1.

[Table 1 about here.]

Data Analysis Technique

This study uses multiple linear regression analysis techniques, and moderated regression analysis (MRA) using SPSS 23 software. The two regression equations in this study are:

Multiple linear regression:

NPLit = α + β1LERNERit + β2CARit + β3LDRit + β4BOPOit + β3GDPGit + e

Moderating Regression:

NPLit = α + β1LERNERit + β2PENEit + β3LERNER*PENEit + e

Note= α: regression equation constant; β1: LERNER coefficient, β2: CAR coefficient, β3 : GDPG coefficient, β4 : BOPO coefficient, e: Error Term

RESULTS AND DISCUSSION

Descriptive Statistics

Table 2 represents the results of descriptive statistical analysis for each variable using IBM SPSS Statistics 23 software. Based on the results of the descriptive statistical analysis presented in Table 2, information can be obtained that the total amount of data used is 474 data obtained from 79 banking companies with a period of 6 years of observation (2014-2019).

[Table 2 about here.]

Furthermore, Table 3 below presents the results of multiple linear regression statistical tests. From the test results, the coefficient of determination R square is 0.705, which means that all independent variables, both the main and the control variables, can explain 70.5% of changes in the variability of the variables, while the remaining 29.5% is influenced by variables other than the research model.

[Table 3 about here.]

Table 3 also shows the significance value of the Lerner Index of 0.000, it can be concluded that the Lerner Index has a significant negative relationship to Non-Performing Loans (NPL). However, because the meaning of the interpretation of the Lerner index itself is the opposite of bank competition – where the decreasing Lerner Index variable indicates increasing competition – it means that there is a positive relationship between the bank competition variable and credit risk. On the other hand, a decrease in the Lerner Index value will increase the NPL value, which means that credit risk will increase.

[Table 4 about here.]

[Table 5 about here.]

The second hypothesis testing uses the Moderated Regression Analysis (MRA) method or interaction test to determine whether the moderating variable is able to increase or weaken the relationship between the independent variable and the dependent variable. Table 4 and 5 show the results of the analysis of the relationship between bank competition variables (lerner index) and credit risk (non-performing loans (NPL), with foreign bank penetration as the moderating variable.

From the results, it shows that the relationship between Penetration and Non-Performing Loans (NPL) in the first output is significant in a negative direction (t=- 1.659, p= 0.098), while the relationship is moderate (LERNER*PENE) in the second output, the result is not significant (t= 1.541, p= 0.124). This shows that, if considered as a stand-alone independent variable, foreign bank penetration has a negative relationship with NPL. However, when he interacted with the lerner index, the relationship became insignificant. In other words, foreign bank penetration cannot moderate the relationship between the Lerner Index and Non-Performing Loans (NPL), so it can be concluded that the second hypothesis (H2) is rejected.

Discussion

The results of this study are directly proportional to the theory because it is in accordance with the "competition fragility" view, means that banks with lower overall risk have more power in the market, and banks with higher market power tend to make credit risk higher. In accordance with research that has been carried out by several previous researchers such as Chen et al., (2019), Wibowo dan

Wibowo (2016), Turk Ariss (2010). As a measure of competition between banks, the Lerner Index has a negative relationship – or in other words, bank competition has a positive relationship – with the Non-Performing Loans (NPL) ratio as a measure of bank stability over credit risk.

Banks with high market power will improve the company's image in the banking market and the stability of the banking system will be stronger, this is because there are more customers who trust and use these banking services. Therefore, banks with high market power tend to have lower NPL ratios (Clark et al., 2018; Chen et al., 2019; Diallo, 2015; Dushku, 2016).

In the second model, the Moderated Regression Analysis (MRA) method or interaction test is used to determine whether the moderating variable is able to increase or weaken the relationship between the independent variable and the dependent variable. The relationship of Penetration to Non-Performing Loans (NPL) in the first output in Table 5 is significant in a negative direction, while the moderator relationship (LERNER*PENE) in the second output in Table 6 is not significant. This shows that, if considered as a stand-alone independent variable, foreign bank penetration has a negative relationship with NPL. However, when he interacted with the lerner index, the relationship became insignificant. In other words, foreign bank penetration cannot moderate the relationship between the Lerner Index and Non-Performing Loans (NPL).

Furthermore, in relation to foreign bank penetration in moderating the relationship between competition and credit risk, it can be concluded that foreign bank penetration cannot moderate the relationship between the lerner index and NPL. However, because the results where foreign bank penetration stands as its own variable have a significant negative relationship with NPL, it shows that foreign bank penetration acts as a moderating variable which is predictor or independent variable in moderating the relationship between Lerner and NPL variables.

The predictor moderating variable occurs when the coefficient 2 is significant, while the variable 3 is not significant (Sharma et al., 1981). This means that the foreign bank penetration variable (PENE) is more suitable to act as an independent variable in the relationship model formed. This finding is in line with the previous research conducted by Natsir et al., (2019) that the increasing number of foreign banks will weaken the credit risk of local banks. The decrease in credit risk makes local banks have control to choose debtors with potential for current and non-current credit payments. Claessens & Horen, (2012) also found the same thing, that the presence of foreign banks in developing countries was negatively related to the credit risk of domestic banks. The study also stated that although the existence of foreign banks has an important role in the local economic system, there are still obstacles and aspects that have not been fully mastered, due to lack of information. The penetration of foreign banks does not strengthen the relationship of competition with credit risk, and as the number of foreign banks entering Indonesia increases, the level of credit risk may decrease.

These two findings have taken into account the possible relationship of other independent variables that are not the main focus of this study, namely CAR, LDR, BOPO and GDPG. The results show that the Growth Rate of Gross Domestic Product (GDPG) has the highest beta value (regression coefficient) of 1.201 which means that the variable Growth Rate of Gross Domestic Product (GDPG) is the variable that has the most dominant relationship as a control variable to Non -Performing Loans (NPL). So, the greater the value of the Growth Rate of Gross Domestic Product (GDPG), the more it shows that the country is in an increasing economic condition which will affect the value of Non-Performing Loans (NPL), because the better the economic condition of a country means that people will the easier it is to pay its debts, which results in the value of assets owned by the bank also getting better.

These findings support the previous research conducted by Muljaningsih & Riska Dwi Wulandari, (2019) that GDPG has a significant relationship to the NPL of banks in Indonesia. When the GDPG condition increases, the income of the community and industry also increases, but this cannot reduce the level of non-performing financing. This is indicated due to the tendency of the Indonesian people to be considered consumptive, so that most of their income is prioritized for their consumptive needs compared to paying loan install ments to banks.

CONCLUSIONS

Credit risk is not only an important risk faced by banks, but is also directly related to the causes of the failure of a bank's performance. Based on the phenomena described previously, this study produces empirical evidence that competition can increase credit risk, while foreign bank penetration is unable to moderate the relationship between competition and credit risk. The research is based on 79 banks listed in the Indonesian Banking Directory published by the Financial Services Authority (OJK) for the 2014-2019 period. The research model used is multiple linear regression to test the hypothesis about the relationship between competition and credit risk, while the Moderated Regression

Analysis (MRA) model is used to test whether foreign bank penetration can strengthen the relationship between competition and credit risk.

From the results of the significance test obtained, the Lerner Index has a negative relationship to Non-Performing Loans (NPL). The higher market power will improve the company's image in the banking market and the stability of the banking system will be stronger, this is because many customers trust the bank, so many customers are confident to use these banking products and services. Therefore, banks with high market power tend to have lower NPL ratios. So it can be concluded that increasing bank competition will increase credit risk.

Furthermore, from the results of research conducted by the author, it was found that foreign bank penetration has not been able to moderate the relationship between bank competition and credit risk, but acts as an independent variable and is directly related to bank credit risk which is based on the results that foreign bank penetration has a negative relationship to risk. bank credit. Thus, it can be concluded that by increasing the penetration of foreign banks, it will reduce bank credit risk.

A limitation in the preparation of this research is that the data sources in the form of annual financial reports from several banks are incomplete, so that some banks cannot be included in this study. Furthermore, the authors only used four control variables and did not use other variables such as ROA and NIM. This shows that this research can still be developed in a larger scope.

It is recommended for researchers who will conduct similar research to use more complete bank data from the list of banks registered in the Indonesian Banking Directory published by the Financial Services Authority (OJK). In addition, the research period used was more extended to produce better research results. For further researchers, it is recommended to add other control variables such as ROA and NIM, to see other variables that can affect credit risk.

REFERENCES

Empirical investigation of micro finance banks of Pakistan. International Journal of Economics and Financial Issues, 5(2), 574–579.

Berger, A. N., Klapper, L. F., & Turk-Ariss, R. (2009). Bank competition and financial stability. Journal of Financial Services Research, 35(2), 99–118. https://doi.org/10.1007/s10693-008-0050-7

Boyd, J. H., & De Nicolo, G. (2005). The theory of bank risk taking and competition revisited. The Journal of finance, 60(3), 1329–1343.

Brei, M., Jacolin, L., & Noah, A. (2020). Credit risk and bank competition in Sub-Saharan Africa. Emerging Markets Review, 100716. https://doi.org/10.1016/j.ememar.2020.100716

Cao, A. Y., Chou, J., Gregory-smith, I., Montagnoli, A., Cao, Y., Chou, J., & Gregory-smith, I. (2020). Bank Competition and Financial Stability: Evidence from the U. S. Banking Deregulation Bank Competition and Financial Stability: Evidence from the U. S. Banking Deregulation ∗. 2020003.

Chen, J., & Zhu, L. (2019). Foreign penetration, competition, and financial freedom: Evidence from the banking industries in emerging markets. Journal of Economics and Business, 102, 26–38. https://doi.org/10.1016/j.jeconbus.2018.10.003

Chen, Nazir, Hashmi, & Shaikh. (2019). Bank Competition, Foreign Bank Entry, and Risk-Taking Behavior: Cross Country Evidence. Journal of Risk and Financial Management, 12(3), 106. https://doi.org/10.3390/jrfm12030106

Claessens, S., Demirgüç-Kunt, A., & Huizinga, H. (2001). How does foreign entry affect domestic banking markets? Journal of Banking & Finance, 25(5), 891–911.

Claessens, S., & Horen, N. van. (2012). Foreign Banks: Trends, Impact and Financial Stability; by Stijn Claessens and Neeltje van Horen; IMF Working Paper 12/10; January 1, 2012. Imf Working Paper, 10, 1–36.

Clark, E., Radić, N., & Sharipova, A. (2018). Bank competition and stability in the CIS markets. Journal of International Financial Markets, Institutions and Money, 54, 190–203. https://doi.org/10.1016/j.intfin.2017.12.005

Deak, N. L. (1984). International banking / Nicholas L. Deak, JoAnne Celusak (J. Celusak (ed.)). New York Institute of Finance.

Diallo, B. (2015). Bank competition and crises revisited: New results. Economics Letters, 129, 81–86. https://doi.org/10.1016/j.econlet.2015.02.015

Detragiache, E., Tressel, T., & Gupta, P. (2008). Foreign banks in poor countries: theory and evidence. The Journal of Finance, 63(5), 2123–2160.

Dushku, E. (2016). Bank Risk-Taking and Competition in the Albanian Banking Sector. South-Eastern Europe Journal of Economics, 14(2), 187–203.

Dwumfour, R. A. (2017). Explaining banking stability in Sub-Saharan Africa. Research in International Business and Finance, 41, 260–279. https://doi.org/10.1016/j.ribaf.2017.04.027

Fernandez de Guevara, J., Maudos, J., & Perez, F. (2005). Market Power in European Banking Sectors. Journal of Financial Services Research, 27(2).

Frederick, O. (2012). The Effect of Credit Risk Management on the Financial Performance of Commercial Banks in Kenya. DBA Africa Management Review, 1(1), 45–47. https://doi.org/10.5897/AJBM2013.7171

Ghenimi, A., Chaibi, H., & Omri, M. A. B. (2017). The effects of liquidity risk and credit risk on bank stability: Evidence from the MENA region. Borsa Istanbul Review, 17(4), 238–248. https://doi.org/10.1016/j.bir.2017.05.002

González, L. O., Razia, A., Búa, M. V., & Sestayo, R. L. (2017). Competition, concentration and risk taking in Banking sector of MENA countries. Research in International Business and Finance, 42, 591–604.

Hawtrey, K., & Liang, H. (2008). Bank interest margins in OECD countries. North American Journal of Economics and Finance, 19(3), 249–260. https://doi.org/10.1016/j.najef.2008.07.003

Jeon, B. N., Olivero, M. P., & Wu, J. (2011). Do foreign banks increase competition? Evidence from emerging Asian and Latin American banking markets. Journal of Banking and Finance, 35(4), 856–875. https://doi.org/10.1016/j.jbankfin.2010.10.012

Kabir Hassan, M., Sanchez, B., & Faisal Safa, M. (2013). Impact of financial liberalization and foreign bank entry on Islamic banking performance. International Journal of Islamic and Middle Eastern Finance and Management, 6(1), 7–42. https://doi.org/10.1108/17538391311310716

Kamus, T. P. P. (2007). Dictionary of Bahasa Indonesia (KBBI). Balai Pustaka. Universitas Terbuka. Usaha Keluarga.

Keeley, M. C. (1990). Deposit Insurance, Risk, and Market Power in Banking. The American Economic Review, 80(5), 1183–1200. http://www.jstor.org/stable/2006769

Lee, C. C., Hsieh, M. F., & Yang, S. J. (2016). The effects of foreign ownership on competition in the banking industry: The key role of financial reforms. Japan and the World Economy, 37–38, 27–46. https://doi.org/10.1016/j.japwor.2016.02.002

Luo, D., Dong, Y., Armitage, S., & Hou, W. (2017). The impact of foreign bank penetration on the domestic banking sector: New evidence from China. European Journal of Finance, 23(7–9), 752–780. https://doi.org/10.1080/1351847X.2014.1003314

Martinez-Miera, D., & Repullo, R. (2010). Does competition reduce the risk of bank failure?Martinez-Miera, D., & Repullo, R. (2010). Does competition reduce the risk of bank failure? The Review of Financial Studies, 23(10), 3638–3664. The Review of Financial Studies, 23(10), 3638–3664.

Micco, A., Panizza, U., & Yañez, M. (2004). Bank Ownership and Performance. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.1818718

Mody, A., & Peria, M. S. M. (2004). How foreign participation and market concentration impact bank spreads: evidence from Latin America (Vol. 3210). World Bank Publications.

Muljaningsih, S., & Riska Dwi Wulandari. (2019). The effect of inflation, BI Rate, and Gross Domestic Product (GDP) to Non Performing Loan (NPL) ration in Indonesian Banking Institution. OECONOMICUS Journal Of Economics, 3(2), 1–27.

Natsir, M., Soedarmono, W., April Yudhi, W. S., Trinugroho, I., & Warokka, A. (2019). Foreign penetration, competition, and credit risk in banking. Borsa Istanbul Review, 19(3), 249–257. https://doi.org/10.1016/j.bir.2019.05.003

Pham, Q. V., & Nguyen, M. T. (2020). Possible Impact From Foreign Bank Presence To the Performance of Local Commercial Banks in Vietnam. International Journal of Economics and Financial Issues, 10(2), 216–221. https://doi.org/10.32479/ijefi.9297

Rahman, A., Tvaronaviciene, M., Smrcka, L., & Androniceanu, A. (2019). The effect of bank competition on the cost of credit: empirical evidence from the Visegrad countries. Acta Polytechnica Hungarica, 16(4), 175–195.

Ramadhanti, C., Marlina, M., & Hidayati, S. (2019). The Effect Capital Adequacy, Liquidity and Credit Risk to Profitability of Commercial Banks. Journal of Economics, Business, and Government Challenges, 2(1), 71–78. https://doi.org/10.33005/ebgc.v2i1.66

Richard, M. (2020, Desember 17). Morgan Stanley: Tren Merger dan Akuisisi Bank oleh Asing Bakal Lebih Marak. https://finansial.bisnis.com. https://finansial.bisnis.com/read/20200807/90/1276324/morgan-stanley-tren-merger-dan-akuisisi-bank-oleh-asing-bakal-lebih-marak

Sharma, S., Durand, R. M., & Gur-Arie, O. (1981). Identification and Analysis of Moderator Variables. Journal of Marketing Research, 18(3), 291. https://doi.org/10.2307/3150970

Sinha, P., & Sharma, S. (2016). Relationship of financial stability and risk with market structure and competition: evidence from Indian banking sector. University Library of Munich, Germany.

Soedarmono, W., & Tarazi, A. (2016). Competition, Financial Intermediation, and Riskiness of Banks: Evidence from the Asia-Pacific Region. Emerging Markets Finance and Trade, 52(4), 961–974. https://doi.org/10.1080/1540496X.2015.1018039

Syofyan, S., & Usman, B. (2014). Foreign Bank Penetration In Asean And It's Impact Toward Banking Competition. OIDA International Journal of Sustainable Development, 9(12), 65–74.

Taşkın, F. D. (2019). The Impact of Financial Crisis on the Commercial Bank Net Interest Margins: Evidence from the Turkish Banking Industry. International Journal of Contemporary Economics and Administrative Sciences, 9(2), 428–442.

Turk Ariss, R. (2010). On the implications of market power in banking: Evidence from developing countries. Journal of Banking and Finance, 34(4), 765–775. https://doi.org/10.1016/j.jbankfin.2009.09.004

Usman, B., Syofyan, S., Nugroho, L., & Soeharjoto. (2018). Foreign Bank Penetration and Its Impact on Banking Industries. Eurasian Journal of Economics and Finance, 6(1), 64–83. https://doi.org/10.15604/ejef.2018.06.01.007

Valipaour, P. M. (2014). Analysis of The Capital Adequacy Ratio and Nonperforming Loans Relationship in the Banking Network of Iran. Journal of MOney and Economy, 9(3): 59-83.

Vives, X. (2011). Competition policy in banking. Oxford Review of Economic Policy, 27(3), 479–497. http://www.jstor.org/stable/23607113

Wibowo, B. (2016). Stabilitas Bank, Tingkat Persaingan Antar Bank dan Diversifikasi Sumber Pendapatan: Analisis Per Kelompok Bank di Indonesia. Jurnal Manajemen Teknologi, 15(2), 172–195. https://doi.org/10.12695/jmt.2016.15.2.5

Wibowo, B., & Prasetyo Siantoro, A. (2018). Tingkat Persaingan Bank dan Risiko Sistemik Perbankan: Kasus Indonesia. Jurnal Manajemen Teknologi, 17(3), 166–179. https://doi.org/10.12695/jmt.2018.17.3.1

Wibowo, I. G. B., & Wibowo, B. (2016). The Effect of Competition Level and Banking Concentration to Systemic Risks: Indonesia Case. SSRN Electronic Journal, 1–25.

Wu, J., Chen, M., Jeon, B. N., & Wang, R. (2017). Does foreign bank penetration affect the risk of domestic banks? Evidence from emerging economies. Journal of Financial Stability, 31, 45–61. https://doi.org/10.1016/j.jfs.2017.06.004

Yin, H. (2020). Foreign bank entry and bank competition: Cross-country heterogeneity. Global Finance Journal, April, 100558. https://doi.org/10.1016/j.gfj.2020.100558

Yulianti, E., Aliamin, A., & Ibrahim, R. (2018). The Effect of Capital Adequacy and Bank Size on Non-Performing Loans in Indonesian Public Banks. Journal of Accounting Research Organization and Economic, 1(2), 205-214.
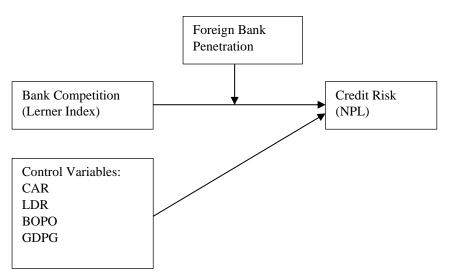
LIST OF FIGURES

Figure 1 | Research Model

LIST OF TABLES

TABLE 1 | Sample Selection

No	Criteria	Year					
		2014	2015	2016	2017	2018	2019
1	All commercial banks and foreign banks registered in the Indonesian Banking Directory issued by the Financial Services Authority (OJK) in 2014-2019	120	116	118	105	105	105
2	Companies with incomplete data for research purposes	(41)	(37)	(39)	(26)	(26)	(26)
3	Number of samples that meet the criteria	79	79	79	79	79	79
Total Sample				474			

TABLE 2 | Descriptive Statistics

	N	Mean	Std	Minimum	Maximum
NPL	474	0.016492	0.0130502	0.0003	0.0992
LERNER	474	0.233730	0.1606349	0.0004	1.5809
CAR	474	0.634639	5.0262415	0.0220	84.8600
LDR	474	0.976349	0.4649885	0.4754	4.8204
BOPO	474	0.870568	0.2054537	0.4721	2.5809
GDPG	474	0.050283	0.0008600	0.0488	0.0517
PENE	474	0.080667	0.0047243	0.0727	0.0862

Sources: Processing Output with SPSS 23

TABLE 3 | Multiple Linear Regression Test Statistic Results

Model	Unstandarized Coeffiecients		Standardized Coefficients	t	Sig.
	B	Std Error	Beta		
LERNER	-0.014	0.004	-0.174	-3.982	0.000
CAR	0.000	0.000	0.057	1.368	0.172
LDR	-0.001	0.001	-0.034	-0.786	0.432
BOPO	0.024	0.003	0.376	8.988	0.000
GDPG	1.201	0.628	0.079	1.912	0.056

Sources: Processing Output with SPSS 23

TABLE 4 | Stage 1 Moderation Test Results

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
LERNER	-0.019	0.004	-0.229	-5.103	0.000
PENE	-0.205	0.124	-0.074	-1.659	0.098

Sources: Processing Output with SPSS 23

TABLE 5 | Stage 2 Moderation Test Results

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
LERNER	-0.104	0.055	-1.276	-1.873	0.062
PENE	-0.459	0.206	-0.166	-2.230	0.026
LERNER* PENE	-1.070	0.694	1.051	1.541	0.124

Sources: Processing Output with SPSS 23