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PREFACE

We are very grateful to God Almighty for his grace that the 9th Indonesian Finance Association (IFA) International Conference was held successfully on October 11-12, 2023. The 9th IFA International Conference was held virtually, supported by our generous host, the Indonesian Stock Exchange (IDX).

The theme of this conference is "Sustainable Finance and Capital Market: Investing in a Greener Future". In recent years, there has been a growing recognition that the traditional approach to finance and investment must evolve. The integration of environmental, social, and governance (ESG) factors into decision-making processes has gained momentum, leading to a paradigm shift towards sustainable finance. We hope our conference can uncover some recent issue and challenges in sustainable finance and capital markets. Nevertheless, most importantly, we will also foresee what the future holds for financial markets.

This event will not be a success without the close collaboration between the Indonesian Finance Association and the Self-Regulatory Organization of Indonesia's Capital Market as the main sponsor.

Finally, we would like to thank all participants and presenters who have been supporting the Indonesian Finance Association conference. We have a total of 80 submitted papers from 5 countries: Indonesia, India, Macao, Spain, and Taiwan. After a process of double-blind review, we hand-picked 66 high-quality articles to be presented at the conference. From these 66 articles, there were 30 articles, from four countries, have agreed to include their full paper in the proceedings.

We sincerely hope that these proceedings will benefit all the participants and readers. We welcome any suggestions and constructive feedback to improve the next IFA conference and proceedings, and we look forward to seeing you again.

Yogyakarta, December 2023

Editors

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LOAN GROWTH AND BANK RISK; EMPIRICAL STUDY ON COMMERCIAL BANKS IN ASIA-PACIFIC

Erfan Rachmadi[1*], Muizzuddin[1], Taufik[1]

ABSTRACT

This research examined the effect of credit growth and banking risk in the Asia-Pacific. The data were collected from 353 commercial banks in Bankfocus from 2012 to 2021. The research used Generalized least squares (GLS) estimation, which showed the relationship between credit growth and bank risk. Bank risk is proxied by Non-Performing Loans (NPL), Equity to Total Assets (ETA), and Return on Assets (ROA). The research found that credit growth negatively affects Non-Performing Loans (NPL) and Equity to Total Assets (ETA). Meanwhile, credit growth positively impacted Return on Assets (ROA). In addition, this study also conducted a comparative assessment based on bank size and credit growth rate. The results mentioned that banks in Asia-Pacific were selective in extending credit so that the risk of default was opposite to credit growth. The limitation of this research is that the research sample and the variables of risk measurements are still limited. For further research, adding samples and risk measurement variables is recommended.

Keywords: credit growth, bank risk measurements, commercial bank, asia-pacific

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1. INTRODUCTION

Banks are one of the sectors tightly regulated by the authorities because they involve multiple parties, namely, collecting funds from the public and disbursing them in the form of loans to the public (Fahrul et al., 2016). Enhancing the credit profile can benefit the bank by increasing market share, elevating income, and improving overall business outcomes (Kumar & Sarker, 2021). The presence of a substantial amount of credit can also boost the economy by converting savings into investments. Nevertheless, significant credit expansion can introduce risks for banks (Wu et al., 2022).

Credit risk management involves evaluating the financial position of business owners and determining the amount of credit extended to help banks minimize losses and prevent liquidity (Ugwoke et al., 2022). However, banks that adopt a more aggressive lending approach encounter challenges in dealing with substantial credit risk over the next two to three years, as evidenced by higher provisions for credit losses (Dang, 2019; Kumar & Sarker, 2021). This condition implies that hastily implemented credit growth policies result in poorer bank performance. A decline in performance can potentially negatively impact the bank and lead to adverse consequences or suboptimal achievement of the bank's goals and objectives (Fahrul et al., 2016). Furthermore, according to another banking risk relationship hypothesis, it is suggested that market risk, credit risk, and liquidity risk have a noteworthy impact on credit expansion (Gurendrawati et al., 2021). This situation exposes banks to multiple risks stemming from bank credit growth.

Meanwhile, another perspective suggests that credit growth may not significantly impact bank risks when banks can effectively mobilize capital, thus balancing bank liquidity while managing risk effectively (Amador et al., 2013). Other aligned research findings indicate that credit growth does not necessarily correlate with credit risk because high bank credit growth does not always coincide with a high level of Non-Performing Loans (NPLs) and vice versa (Agustriana, 2018). Credit risk management will involve the assessment of the business owner's capital position and the extent of credit granted to assist the bank in reducing losses and preventing liquidity (Ugwoke et al., 2022). This is in line with the assumption that credit growth, coupled with effective risk management methods, can contribute to the sustainable development of banks.

In this research, three variable measurements are proxied to assess bank risk. Non-performing loans, as a source of credit risk, represent the uncertainty of whether the principal and interest on loans can be recovered (Chen et al., 2021; Tölö & Virén, 2021). For instance, non-performing loans are likely to have difficulty recovering both principal and interest or only a small portion of the principal can be recovered, thus posing credit risk and reducing the cash flow of commercial banks (Jiajia et al., 2023). Our findings indicate that NPLs in the Asia-Pacific banking sector have a negative impact on credit growth. This is consistent with previous researcher's understanding, which suggests that banks, concerned about future problem loans due to a decline in lending standards, will have a negative correlation between credit growth and non-performing loans (Kashif et al., 2016; Vithessonthi, 2016) In other words, banks are

no longer lending to borrowers at risk of bankruptcy, so banks are tightening their lending policies.

The equity to total assets ratio is the second proxy for the bank risk variable to be measured in this study. One research mentioned that the equity ratio (equity to total assets) strongly impacts bank performance when measured by profitability (Durand & Le, 2022). Several studies have concluded a positive relationship between capital and profitability (Iannotta et al., 2007; Lee & Hsieh, 2013). This relationship is explained by the fact that well-capitalized banks face lower default risk than small-capitalized banks, allowing them to benefit from lower funding costs (Admati et al., 2013). In other words, banks with substantial capital have a smaller credit growth risk than small-capital banks. This is further compounded by banks with stringent equity requirements that can reduce funding costs, leading to improved performance.

Profitability against assets serves as the third proxy for risk. Several studies indicate that high credit growth leads to below-average bank performance in the third year due to lower return on assets (Fahlenbrach et al., 2018). In contrast to rapidly growing banks, the authors argue that slow loan growth results in better outcomes (Fahlenbrach et al., 2018). Some literature focuses on the effect of rapid growth on income, suggesting that businesses growing faster will have lower returns in the future (Kumar & Sarker, 2021). Other studies show that banks that grow excessively have lower earnings than those growing slowly (Hou et al., 2015).

Based on the explanation above, it can be indicated that research related to credit growth and risk remains a highly interesting topic for discussion and is still accompanied by limitations in the research objectives for further investigation. Therefore, the aforementioned discussion raises the question about the effect of credit growth on bank risk, the correlation between loan growth and bank capital strength, and the relation between loan growth and risk-adjusted profitability.

This paper focuses on commercial banks in Asia-Pacific countries because Asian countries are laboratories for implementing various banking sector policies (Muizzuddin et al., 2021). Supported by the opinion that the advanced pattern of globalization has caused banking in the Asia-Pacific Region to be affected to continue to grow (Santoso et al., 2021). To our knowledge, very few studies have investigated the impact of loan growth at the bank level in Asia-Pacific countries. Furthermore, a document search on the Scopus database with the keyword "loan growth" found 294 articles from 1996 to 2023[2]. This means that this research is still relevant to the current conditions. Scopus data also states that the focus of research attention is dominated by the Journal of Banking and Finance source with a total of 23 studies. This means that this research is still minimal so the main focus of "loan growth" is still very much needed.

The results of this study can help regulatory authorities and bank decision-makers control unusual credit expansion to prevent adverse impacts on banks. We have organized the rest of

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[2] The latest scopus data in March 2023. Accessed through visualization of bibliometric analysis related to the topic of loan growth

the paper as follows: In Section 2, we review the related literature, and in Section 3, we define the data, variables, and methodology. In Section 4, we report the estimation method and descriptive statistics, and in Section 5, we show the regression results & findings. Section 6 contains the conclusions.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Agency Theory

One of the important aspects of the sustainability of modern companies is the practice of good corporate governance. Many existing theories indicate that the improved performance of a business is influenced by good corporate governance (Haris et al., 2019). The agency relationship is an activity where one party (the principal) appoints another party (the agent) to manage service activities within a company, accompanied by the delegation of authority for management. The agent is responsible to the principal for managing the bank to ensure the company's performance remains good (Putri & Kusumaningtias, 2020).

Agency theory can explain the positive relationship between credit growth and bank risk when a CEO is willing to maximize the bank's income during their tenure. However, if credit growth is excessive, it can reduce liquidity and increase NPL in the future (Wu et al., 2022). Given the effects mentioned above of credit growth on bank risk, adjusting credit growth plays a crucial role in achieving optimal results while minimizing potential risks. Therefore, agency theory suggests that the actions and decisions of managers are highly important in pursuing the bank's profitability (Ali & Puah, 2018)

Wu, Nguyen, and Nguyen (2022) mentioned that adjustments from agency theory lie in decision-making by bank strategic management and the bank owners. According to (Keskis & Kassie, 2021), Agency theory analyzes the relationship between a business enterprise and its managers chosen to represent the Company, and the owners need to incur agency costs to control decisions. Consequently, agency costs will help enhance the bank's and its shareholders' long-term value. Therefore, banking is also a favorable laboratory for agency theory testing due to the abundance of quality data available about firms in this industry (Berger & Bonaccorsi di Patti, 2006). As such, agency theory in the banking sector needs proper analysis (Farag et al., 2017). This analysis is a consequence of the duty of bank boards to protect the funds of all capital providers.

Bank Credit

Banks always ensure that their lending activities take place regularly and continuously. Significant and constant borrowing is a source of economic capital, so businesses or individuals will receive stable funding to serve production and business activities (Wu et al., 2022). Banking is a sector that stimulates economic activity, so it is often said to be a banking-based economy (Kaufmann & Valderrama, 2008). It has long been observed that bank credit activity is cyclical (Becker & Ivashina, 2014). Although the relationship between bank credit growth (hereafter "credit growth") and non-performing loans is expected to be positive, it may vary over time under some conditions (Vithessonthi, 2016). Based on previous literature, high loan

growth and declining credit standards can help understand reckless loan growth policies (Kumar & Sarker, 2021).

In addition, with continuous improvement efforts to enhance credit quality, economic entities' access to credit capital becomes faster and easier to contribute to maintaining the smooth operation of credit institutions (Wu et al., 2022). Bank credit helps promote the equalization of profit levels across industries, and banks also serve a very important function in the stability of people's lives. Rapid credit growth will result in higher risks for banks in the following years, implying that a hasty credit growth policy causes banks worse outcomes (Kumar & Sarker, 2021). This means that if credit growth is slow, it will result in low risk, and vice versa. Credit risk is related to Non-Performing Loan.

A non-performing loan refers to the inability of the debtor to pay part or all of its obligations to the creditor in the amount and time specified in the contract (Agustriana, 2018). Non-Performing Loan increases along with the supply of credit in both developing and developed countries, as a result, the performance of the banking sector decreases (Ahmed et al., 2021). Previous researchers revealed that to improve understanding of how NPLs affect credit growth, the impact on capital adequacy and bank profitability can be considered (Tölö & Virén, 2021).

Bank liquidity problems are thought to be only a symptom of bankruptcy problems in banks and not the cause of serious deterioration in bank performance (Boyson et al., 2014). This is supported by other studies that say that liquidity risk will not significantly adversely affect bank performance if the bank's credit risk is under control (Chen et al., 2021). The findings of a study revealed that forcing banks to finance themselves with more equity and maintain adequate liquidity can limit credit supply in the short term (Rauf, 2023).

Countries with similar capital levels would be expected to have very different outcomes in terms of profitability (Risk) (Jiajia et al., 2023). This has serious implications for policymaking. Higher profitability reduces risk-taking incentives in core businesses because shareholders internalize more negative risk realization (Martynova et al., 2020). However, banks with good profitability can improve risk management (Bitar et al., 2018).

The Relationship Between Loan Growth and Bank Risk

Some studies mention that increasing NPLs will accompany high credit growth (Gurendrawati et al. 2021; Kumar and Sarker 2021; Setiawan and Pratama 2019). This can be interpreted that credit growth will cause a lot of bad debts in the bank. The high competition in the market can make banks relax their credit standardization. However, when standardization is relaxed, it will quickly cause NPLs to increase (Wu et al., 2022). A sharp increase in credit may reduce the bank's credit risk provisions but will tend to increase the risk in the following year. Research conducted on loan growth and its effect on performance with the object of research on banks in Vietnam over the period 2006 to 2017 found that banks that are more aggressive in lending may face higher credit risk in the next two to three years, as indicated by higher levels of loan loss provisions (Dang, 2019). That is why many researchers investigate the control activities of bank credit activities in anticipation of facing credit risk that explodes

in the next few years.

Banks should be cautious about credit growth, which is likely to be a threat to the bank's performance. Kumar and Sarker (2021) state that bank risk management efficiency programs must be intensified. Banks must actively pay attention to the examination and supervision process in controlling bank risks associated with credit growth. Furthermore, Kumar and Sarker (2021) also mentioned that the role of regulation in maintaining the financial sector is very necessary.

A rapid increase in credit can weaken a bank's solvency in a short period. Banks continue to lend accordingly when credit increases, but benefits are not added to equity (Wu et al., 2022). At the same time, lending using mobilized capital and equity will increase banks' liquidity risk in the short term. In an unstable economy, the negative impact of credit growth on liquidity will experience more severe risks. (Wu et al., 2022).

High loan growth indicates the expectation of earning greater interest income. However, overgrown banks will have lower income levels than slow-growing banks. Credit growth can bring short-term benefits to banks when interest income increases, and corporate performance measurement criteria show positive signs (Wu et al., 2022). However, in the long run, it brings risks to shareholders and successor managers.

Hypotheses
Loan Growth and Bank Risk Measurements

Agency theory can explain the positive relationship between loan growth and bank risk as the CEO will do everything to maximize the bank's earnings during his tenure. Given the effects of credit growth on bank risk, adjusting credit growth is important in achieving optimal results while minimizing possible risks. This means that agency theory requires a good risk analysis. Meanwhile, the bank risk hypothesis formulates a possible mechanism relating to non-performing financing. It means that this is a consequence of the duty of the bank board to protect the funds of all capital providers.

Non-performing loans cannot be recovered and turn into bad debts. Banks with higher credit growth are more likely to be exposed to NPLs, especially in developing countries with uncertain returns (Ahmed et al., 2021). According to Wu, Nguyen, and Nguyen (2022), NPL is measured by the bad debts/total loans ratio. A higher NPL ratio indicates that the bank is at increased risk of loan loss and the associated loan costs. Banks with poor credit quality face more risk in their loan portfolio, resulting in higher NPLs (Ahmed et al., 2021).

ETA is the ratio of equity to total assets intended to assess the liquidity or adequacy of bank equity. According to Priono and Pangestuti (2019), the ETA ratio is a metric used to measure capital strength. Generally, banks with a high equity ratio are considered safer against the risks that will be carried. In addition, banks with a high equity ratio are less likely to require external financing, positively impacting bank profitability. It is important for creditors because it measures the company's ability to finance fixed assets with equity. According to Wu, Nguyen, and Nguyen (2022), a high ETA ratio will be accompanied by high bank liquidity and reduced bank risk.

ROA is the bank's rate of return, which describes how profitable a bank is. Meythi (2013) says that ROA is a ratio used to measure the net profit generated by the company's assets. ROA is measured by comparing net income and total assets. A greater ROA indicates higher profitability, and a more stable bank or lower bank risk said the greater the ROA, the lower the bank's risk. Setting strategies with prudent principles in credit management is important because it will prevent banks from experiencing losses in the future. This is related to agency theory, where the company agent tries his best to keep the company in good condition. Therefore, an increase in ROA is also an important indicator for banks to evaluate performance (Wu et al., 2022).

H$_{1a}$: Loan growth has a positive effect on Non-Performing Loans
H$_{1b}$: Loan growth has a negative effect on Equity to Total Asset
H$_{1c}$: Loan growth has a positive effect on Return on Assets

Loan to Total Assets and Bank Risk Measurements

LTA is the ratio of loans to total assets, which is the overall assessment of loans. When this ratio is large, it can affect the bank's risk. When the amount of loans is too large, it makes liquidity and bad debts difficult to control, but it is also an opportunity to increase the level of profit for banks (Wu et al., 2022). Therefore, LTA will tend to have the same effect on NPL and ROA, but LTA will have a negative impact on ETA.

H$_{2a}$: Loan to Total Assets has a positive effect on Non-Performing Loans
H$_{2b}$: Loan to Total Assets has a negative effect on Equity to Total Asset
H$_{2c}$: Loan to Total Assets has a positive effect on Return on Assets

Cost to Income and Bank Risk Measurements

According to Wu, Nguyen, and Nguyen (2022), the CI ratio assesses the costs of earning revenue (mostly calculated from interest income or loan activity). An increase in the cost of revenue may indicate that lending is increasing (Kumar & Sarker, 2021). At the same time, when CI increases, it would indicate that lending activities may be inefficient, and it is necessary to incur other costs that have not brought in much revenue. Therefore, CI tends to have a positive effect on NPL and ETA.

H$_{3a}$: Cost to Income has a positive effect on Non-Performing Loans
H$_{3b}$: Cost to Income has a positive effect on Equity to Total Asset
H$_{3c}$: Cost to Income has a negative effect on Return on Assets

Bank Size and Bank Risk Measurements

SIZE is a variable to measure bank size with the natural logarithm of total wealth. Bank size can be expressed in total assets. The larger the bank's assets, the larger the size of the bank (Priono & Pangestuti, 2019). When scale increases, it can cause bank activities to increase (opening more branches, adding new services, or business models to increase non-interest income). Large banks can take more risks due to higher market power (Muizzuddin, 2021). In

the case of effective scaling, ROA will increase due to more sources of income (T. H. M. Nguyen et al., 2021). Increasing size and rapidly increasing the number of customers without good control over human resources and processes will increase NPL (Kumar & Sarker, 2021). At the same time, increasing assets through equity will reduce solvency; in other words, SIZE can reduce the ETA of the bank.

H$_{4a}$: Bank Size has a negative effect on Non-Performing Loans

H$_{4b}$: Bank Size has a positive effect on Equity to Total Asset

H$_{4c}$: Bank Size has a negative effect on Return on Assets

3. DATA AND METHODS

Data and Sample

The population in this study was 15 Asia-Pacific countries with a total of 7,037 commercial banks. The sample in the study consisted of 15 countries with 353 commercial banks in Asia-Pacific in the period 2012-2021. The sample determination in this study uses banking data from 15 Asia-Pacific countries with a total of 353 commercial banks. This sample is selected based on banks operating in Asia-Pacific countries with data sourced from Moody's Analytics BankFocus.

Methods

The following panel data is analyzed by estimating Eq. (1) using the dependent variable Non-Performing Loan (NPL); Eq. (2) using the dependent variable Equity to Total Assets (ETA); Eq. (3) using the dependent variable Return on Assets (ROA). The equations used in this model are:

$$\tag{1}$$

$$NPL_{it} = \alpha_i + \beta_1 LG_{it} + \beta_2 LTA_{it} + \beta_3 CI_{it} + \beta_4 SIZE_{it} + \beta_5 GDP_{it} + \beta_5 INF_{it} + \varepsilon_{it} \tag{2}$$

$$ETA_{it} = \alpha_i + \beta_1 LG_{it} + \beta_2 LTA_{it} + \beta_3 CI_{it} + \beta_4 SIZE_{it} + \beta_5 GDP_{it} + \beta_5 INF_{it} + \varepsilon_{it} \tag{3}$$

$$ROA_{it} = \alpha_i + \beta_1 LG_{it} + \beta_2 LTA_{it} + \beta_3 CI_{it} + \beta_4 SIZE_{it} + \beta_5 GDP_{it} + \beta_5 INF_{it} + \varepsilon_{it}$$

With balance sheet data used, fundamental analysis models such as the Fixed Effect Model (FEM) and Random Effect Model (REM) will be used (T. H. M. Nguyen et al., 2021); (D. Van Nguyen et al., 2020). Then, the researcher will use the Hausman test to select the appropriate model for the research data. Furthermore, researchers use autocorrelation and heteroscedasticity tests.

The results of the Heteroscedasticity Test are used to determine whether or not there is a deviation from the classical assumption of heteroscedasticity, namely the existence of inequality of variance from residuals for all observations in the regression model. If the variance of the residuals from one observation to another is constant, it is called homoscedasticity; if it is different, it is called heteroscedasticity. A good regression model is a model of homoscedasticity or no heteroscedasticity. If the probability is> 0.05 (α), certainly, the model does not contain elements of heteroscedasticity (Mahdiana & Amin, 2020). Then, it displays the autocorrelation test, which is used to test whether there is a correlation of variables in the prediction model with changes in time (Nugroho et al., 2019). In this case, the authors calibrate the model through Generalized Least Squares (GLS) and use generalized least squares to fit the panel-data linear model (Wu et al., 2022). This estimation allows for AR (1) autocorrelation within the panel and cross-sectional correlation and heteroscedasticity between panels.

4. RESULTS

Summary Statistics

Table 1. presents descriptive statistics for each measure/proxy of the research variables used. The number of observations, mean value, standard deviation, minimum value, and maximum value are shown in the table.

Table 1. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min.	Max.
Dependent variable					
NPL	3,530	0.029	0.041	0	0.643
ETA	3,530	0.086	0.049	-0.129	0.865
ROA	3,530	0.007	0.009	-0.181	0.051
Independent variable					
LG	3,529	0.071	0.158	-0.666	2.227
Control Variable					
LTA	3,530	0.594	0.131	0.063	0.907
CI	3,460	0.574	0.168	0.256	1.071
SIZE	3,530	17.059	1.792	11.404	22.432
Macroeconomics Variable					
INF	3,530	2.373	2.325	-1.139	10.578
GDP	3,144	1.16	0.822	-1.217	2.161

Notes: NPL is a measure of bank credit risk; ETA is a measure of bank capital strength; ROA is a measure of bank profitability; LG is a measure of bank loan growth; LTA is a measure of overall bank lending; CI is a measure of bank activity; SIZE is the natural logarithm of total assets to indicate bank size; INFL is each country's inflation rate; and GDP is each country's gross domestic income growth rate.

The higher the NPL will cause the bank to experience poor credit levels. That way this can cause the number of non-performing loans to increase, which will reduce the performance and operational activities of the bank (Khamisah et al., 2020). The higher the ETA ratio, the smaller the loan capital used to finance the company's assets (Meythi, 2012). The higher the ROA, the higher the bank's efficiency in utilizing company facilities to generate profits, causing small risk levels (Zurriah, 2021).

Correlation Structure

Table 2. provides information about the correlation between independent variables. The standard rule in pairwise correlation explains that if the coefficient between independent variables is high (>0.8), then there is a multicollinearity problem (Gujarati & Porter, 2012; Muizzuddin, 2021). The results of the pairwise matrix show that there are no problems related to multicollinearity problems. Overall, the diagnostic test shows that there is no multicollinearity issue.

Table 2. Correlation Coefficient Matrix

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) NPL	1.00								
(2) ETA	0.05*	1.00							
(3) ROA	-0.29*	0.23*	1.00						
(4) LG	-0.13*	0.05*	0.22*	1.00					
(5) LTA	-0.04	0.05*	-0.03	-0.06*	1.00				
(6) CI	0.04	-0.22*	-0.41*	-0.21*	0.18*	1.00			
(7) SIZE	-0.20*	-0.34*	0.03	-0.03	-0.17*	-0.33*	1.00		
(8) INF	0.37*	0.26*	0.14*	0.16*	-0.07*	-0.24*	-0.23*	1.00	
(9) GDP	0.10*	0.27*	0.25*	0.36*	-0.15*	-0.51*	-0.05*	0.45*	1.00

Notes: This table displays the pairwise correlation matrix of independent variables for basic regression analysis. A coefficient value of <0.8 indicates that the model is free from multicollinearity problems. Furthermore, the notation* indicates significance at the 1% level.

Regression Results

The regression analysis results using panel data use the Hausman test to select a model that matches the Fixed Effect Model or Random Effect Model research data. The analysis results show that the Fixed Effect Model is consistent with the research data. Then, heteroscedasticity is also carried out to test whether there is an inequality of variance in the regression model from the residuals of one observation to another (Irawan & Kusuma, 2019). Then autocorrelation is also carried out to test whether variables are correlated in the prediction model with changes in time (Nugroho et al., 2019). However, autocorrelation and variable variance exist in the Fixed Effect Model. Therefore, the GLS error correction model is used for the analysis (Wu et al., 2022). For comparison, the results of the panel data regression analysis are still presented with three estimation models, namely OLS, FEM, REM, and GLS. The variables NPL (Non-Performing Loan), ETA (Equity to Total Asset), and ROA (Return On Asset) are each measures of bank risk, while Loan Growth is the independent variable. Meanwhile, there are control variables (Loan to Total Asset, Cost to Income, and SIZE) and

macroeconomic variables (Inflation and Gross Domestic Product).

Regression Results For NPL

Based on Table 3. the results obtained show that LG has a significant negative effect on NPL. This indicates that the amount of credit the bank provides is high, but the bank considers the inability of most customers to pay their obligations to the bank, so the bank is more selective in providing credit to customers to minimize the risk of default. Furthermore, this also occurs due to the demand shift and productivity shift used by banks in screening potential debtors by setting credit standards in lending (Agustriana, 2018).

Table 3. Regression Results For NPL

Dependent Variabel: NPL	OLS	FEM	REM	GLS
Independent Variable				
LG	-0.0199***	-0.0175***	-0.0199***	-0.0097***
	(0.0049)	(0.0048)	(0.0049)	(0.0009)
Control Variable				
LTA	-0.0249**	-0.0254	-0.0249**	-0.0102***
	(0.0126)	(0.0168)	(0.0126)	(0.0018)
CI	0.0259**	0.0306*	0.0259**	0.0127***
	(0.0104)	(0.0160)	(0.0104)	(0.0014)
SIZE	-0.0031***	-0.0030	-0.0031***	-0.0026***
	(0.0010)	(0.0031)	(0.0010)	(0.0002)
Macroeconomics Variable				
INF	0.0028***	0.0018***	0.0028***	0.0006***
	(0.0005)	(0.0005)	(0.0005)	(0.0001)
GDP	0.0015**	-0.0005	0.0015**	0.0009***
	(0.0007)	(0.0006)	(0.0007)	(0.0001)
Constant	0.0753***	0.0749	0.0753***	0.0644***
	(0.0240)	(0.0592)	(0.0240)	(0.0038)
Observations	3,084	3,084	3,084	3,084
Number of banks	353	353	353	353
R-squared		0.0336		

Hausman test	0.0000
Heteroskedasticity test	0.0000
Autocorrelation test	0.0000

Notes: The ***, **, * denote significance levels at 0.01, 0.05, and 0.10, respectively. Robust Standard Error is in brackets.

Credit standards will be tightened to lower credit risk and minimize the possibility of granting credit to unworthy debtors. This will reduce the possibility of non-performing loans to banks in the future. So, there is loan efficiency in lending activities in banks (Wu et al., 2022). Some previous studies also provide the same results, including research by Kavkler, Repina, and Festic (2011) with a sample of banks in 5 European Union countries (Estonia, Latvia, Lithuania, Bulgaria, and Romania); research by (Kusuma and Haryanto (2016) with a sample of 12 banks in Indonesia in 2013 to 2015; research by Ozili (2015) which examined 80 banks in the world in 2004 to 2013; and (Ekanayake and Azeez (2015) with a sample of 24 commercial banks in Sri Lanka with the period 1999 to 2012.

LTA has a coefficient of -0.0102, meaning that LTA negatively impacts NPL. These results align with Firmansyah and Sam (2022), who argue that banks allocate costs to channel credit according to customer goals. Banks will easily provide credit according to the customer's criteria, financial condition, and income. This means that banks will be selective in providing credit to customers to minimize the risk of default. That way, high LTA does not have a high impact on NPL. These results follow research conducted by Dwihandayani (2016), Nugraha, AY, and Damayanti (2019), and Shingjergji (2013), which states that Loan to Total Asset has an opposite effect on Non-Performing Loan.

Bank-specific variables proxied by CI (Cost to Income) significantly positively affect NPL. This relationship indicates that if the bank has a high CI value, the operating cost at the bank will be large. The greater the operating cost, the higher the NPL. This means that if operating costs increase, it will reduce revenue. A decrease in income can reflect loan losses and lead to more inefficiency on the part of the bank (Ofori-abebrese et al., 2016). Low management quality in managing Cost to Income will cause an influence on the increase in non-performing loans (Maryandi, 2016). The same results can be found in research (Louzis et al., 2010; Rabbani & Rahadian, 2021; Soekapdjo & Tribudhi, 2020).

The SIZE (Bank Size) variable indicates that several things determine the size of the bank, namely total assets and ownership of own capital. According to Agustriana (2018), the greater the volume of credit banks provide, the greater the opportunity for banks to reduce the spread level, which is the difference between the cost of funds and credit interest. Spreads will reduce credit interest so that banks become better at providing credit to customers (Yuningsih & Putra, 2020). This will facilitate credit payments and reduce non-performing loans. So, bank size has a significant negative effect on credit risk. This result has similarities to research (Khemraj et al., 2014; Wu et al., 2022; Wulandari et al., 2021).

Macroeconomic factors that significantly positively affect NPLs prove that an increase in inflation in Asia-Pacific countries will encourage high NPLs. Increased inflation is caused by an increase in the general price of goods and administrative policies (Prasetyo, 2018). High inflation increases household and company or corporate costs, reducing the funds available for bank debt payments (Ghosh, 2015). That way, the risk of default will increase. The same results can be found in research (Nkusu, 2011; Sakinah, 2021; Škarica, 2014). Turning to GDP, which shows a negative value. This shows that high public income will also experience high public consumption. This causes an increase in production output, which increases business income (Hernando et al., 2020). That way, the possibility of default by a corporation for debt at a bank will decrease. This means that it will reduce the NPL ratio. This result can also be found in research (Amelia, 2019).

Regression Results For ETA

Table 4. shows that when banks grow credit, liquidity will decrease because there is a decrease in cash in the bank for credit growth activities. This result also implies that if the bank provides a lot of credit, it will reduce liquidity so that it is prone to reducing bank equity or, in other words, increasing the bank's liquidity risk. So that the strength of bank capital will be reduced(Wu et al., 2022). In addition, banks with a high equity ratio are less likely to need external financing, positively impacting bank profitability. This is important for creditors because it measures the company's ability to finance fixed assets with equity. This means no positive influence exists between the equity ratio and loan growth. This result aligns with Kumar and Sarker (2021), who argue that credit growth is opposite to ETA.

LTA is used to measure the bank's liquidity, which is its ability to provide credit through the total assets owned by the bank (Priono & Pangestuti, 2019). LTA is equal to the ratio of the amount of credit disbursed to the total assets owned by the bank. This indicates that banks channeling large amounts of credit should be supported by good credit quality so that the long-term financial health of the bank runs well (Zeuspita & Yadnya, 2019). This negative result is in line with the hypothesis of this paper, which states that when the amount of LTA is too large, it will make liquidity and bad debts difficult to control, but it is also an opportunity to increase the level of profit for banks. So, LTA tends not to affect ETA.

Table 4. Regression Results For ETA

Dependent Variabel: ETA	OLS	FEM	REM	GLS
Independent Variable				
LG	-0.0098**	-0.0097**	-0.0098**	-0.0040***
	(0.0045)	(0.0045)	(0.0045)	(0.0010)
Control Variable				
LTA	-0.0018	0.0017	-0.0018	0.0309***

	(0.0200)	(0.0222)	(0.0200)	(0.0027)
CI	-0.0217	-0.0021	-0.0217	-0.0412***
	(0.0145)	(0.0175)	(0.0145)	(0.0019)
SIZE	-0.0122***	-0.0178***	-0.0122***	-0.0105***
	(0.0026)	(0.0059)	(0.0026)	(0.0003)
Macroeconomics Variable				
INF	0.0034***	0.0035***	0.0034***	0.0014***
	(0.0005)	(0.0006)	(0.0005)	(0.0001)
GDP	0.0004	-0.0013*	0.0004	0.0010***
	(0.0007)	(0.0008)	(0.0007)	(0.0002)
Constant	0.3008***	0.3849***	0.3008***	0.2574***
	(0.0515)	(0.1044)	(0.0515)	(0.0060)
Observations	3,084	3,084	3,084	3,084
Number of banks	353	353	353	353
R-squared		0.0826		
Hausman test		0.0000		
Heteroskedasticity test		0.0000		
Autocorrelation test		0.0000		

Notes: The ***, **, * denote significance levels at 0.01, 0.05, and 0.10, respectively. Robust Standard Error is in brackets.

Turning to CI, which shows a significant negative effect on ETA. The high CI causes a decrease in bank efficiency (Rafelia & Ardiyanto, 2013). This shows that the greater the bank's operating costs, the smaller the bank's capital ratio, as measured by ETA. This is in line with the researcher's hypothesis, arguing that when CI increases, it will indicate that lending activities may be inefficient. It is necessary to incur other costs that have not brought in much revenue.

The SIZE variable has a relationship with ETA. This is because the larger the size of the bank, the higher the level of investor or customer confidence to invest or finance the bank (Rumalutur et al., 2021). Large banks have a large market share, so that they can increase bank assets. Thus, if it is related to ETA, the results are opposite because ETA is the ratio of capital to bank assets. If bank assets increase, ETA will decrease. So that if the size of the bank increases, the ETA will get smaller. This result is in line with Wu, Nguyen, and Nguyen's (2022) hypothesis, which says that increasing assets through equity will reduce solvency; in other words, SIZE can reduce the ETA of the bank. This result can be found in research

(Sulistyowati, 2017).

Statistically, the Inflation variable has a positive effect on ETA. This shows that high inflation will increase the bank's ETA. High inflation will cause people's consumption of goods to increase, so people will be burdened by the increase (Wijaya, 2019). On the other hand, banks will be affected by the condition of the community. The bank will experience a decrease in income, resulting in the risk of community default on the financing made by the bank. So, if seen on the ETA side, it will increase because the ratio between equity and bank assets will cause higher equity than assets. So, it can be said that the higher the Inflation, the higher the equity ratio in the bank. Furthermore, the GDP variable indicates that the higher the GDP, the more people's income will increase, along with the increase in GDP (Pebrianto, 2018). That way, the intensity of the community in investing deposits and savings in the bank will increase, thereby increasing equity in the bank (Pasaribu & Mindosa, 2021).

Regression Results For ROA

Loan growth proxied by LG means that loan growth makes greater profits. This result is consistent with theory as well as previous research. The dominance of research on this subject shows a similar effect of LG on ROA (Foos et al., 2010; Kavkler et al., 2011). Loan growth increases interest income, considered the main source of income for banks. Therefore, increasing the loan growth rate increases the bank's profit and reduces the NPL ratio. This shows that the efficiency of bank lending is shown both in terms of loan volume growth and increased efficiency of credit management (Wu et al., 2022). With the increasing amount of credit disbursed, the credit growth is in line with the increase in profits in banking companies (Adistya & Mawardi, 2018). This result can be found in Dang (2019), with a research sample of commercial banks in Vietnam from 2006 to 2017, and Kumar and Sarker (2021), with a sample of 8 banks in Asia from 2011 to 2019.

Furthermore, the results of LTA and ROA show that the Loan to Total Asset level impacts increasing credit to increase bank profits. The results of this study indicate that banks channeling large amounts of credit should be supported by good credit quality, using prudential principles in lending so that the possibility of risks borne by banks can decrease and the possibility of interest income earned by banks so that the rate of return on assets will be higher (Zeuspita & Yadnya, 2019). This is in line with the hypothesis of researchers who argue that when the number of loans is too large, it makes liquidity and bad debts difficult to control, but it is also an opportunity to increase the level of profit for banks (Wu et al., 2022). Therefore, LTA will tend to have the same effect on ROA.

The results further indicate that banks with high CI ratios tend to have lower ROA. This means that the bank's efficiency level in running its operations affects its income level. The high CI ratio indicates that operating costs are large, so banks find it difficult to manage their resources to efficiently carry out their business activities (Anindiansyah et al., 2020). These results are the same as research by Bitar, Pukthuanthong, and Walker (2017) with a sample of 1,992 with 39 countries incorporated in the OECD (Organization for Economic Co-operation

and Development) from 1999 to 2013; and research by Olson and Zoubi (2011) with a sample of 10 countries incorporated in MENA (Middle East and North Africa) from 2000 to 2008.

Table 5. Regression Results For ROA

Dependent Variable: ROA	OLS	FEM	REM	GLS
Independent Variable				
LG	0.0065**	0.0067**	0.0065**	0.0015***
	(0.0027)	(0.0028)	(0.0027)	(0.0002)
Control Variable				
LTA	0.0031	0.0046	0,0031	0,0034***
	(0.0020)	(0.0035)	(0.0020)	(0.0003)
CI	-0.0223***	-0.0268***	-0.0223***	-0.0186***
	(0.0020)	(0.0025)	(0.0020)	(0.0003)
SIZE	-0.0011***	-0.0043***	-0.0011***	-0.0005***
	(0.0002)	(0.0005)	(0.0002)	(0.0000)
Macroeconomics Variable				
INF	0.0000	0.0001*	0.0000	0.0002***
	(0.0001)	(0.0001)	(0.0001)	(0.0000)
GDP	0.0004***	0.0007***	0.0004***	0.0003***
	(0.0001)	(0.0002)	(0.0001)	(0.0000)
Constant	0.0359***	0.0916***	0.0359***	0.0228***
	(0.0047)	(0.0092)	(0.0047)	(0.0007)
Observations	3,084	3,084	3,084	3,084
Number of banks	353	353	353	353
R-squared		0.1178		
Hausman test		0.0000		
Heteroskedasticity test		0.0000		
Autocorrelation test		0.0000		

Notes: The ***, **, * denote significance levels at 0.01, 0.05, and 0.10, respectively. Robust Standard Error is in brackets.

SIZE has a significant negative effect on ROA. This indicates that increasing SIZE shows

that the company can manage the resources owned by the bank so that the bank can maximize its income. According to Agam and Pranjoto (2021), large assets are obtained from channeling large loans and credit to increase bank profitability, assuming the bank has channeled credit effectively and returned the loan on time. The larger the size of a company, the greater the opportunity for the company to generate profits by providing credit to third parties or by expanding the banking business network by opening new branches, which will impact profitability (ROA) (Duan & Niu, 2020).

Turning to macroeconomic variables that generally have a significant positive effect on profitability. These results prove that inflation arises when bank managers correctly anticipate inflation and increase net interest margins, allowing revenues to increase faster than costs (Davis et al., 2022). These results are in line with research by Firtescu and Roman (2015) with a sample of 29 commercial banks in Bulgaria and Romania from 2003 to 2012, and research by (Asysidiq and Sudiyatno (2022) with a sample of 26 Indonesian private commercial banks from 2017 to 2021. The next macroeconomic variable is GDP, which has an effect of 0.0003 and shows a significant figure of 1% (Table 4.). This shows that the contribution of the GDP variable can affect the demand for credit and deposits (Rumalutur et al., 2021). The higher the GDP level, the higher the bank's income. These results align with research (Davis et al., 2022; Olson & Zoubi, 2011).

5. CONCLUSION

This study examines the effect of credit growth on commercial bank risk in 15 Asia-Pacific countries from 2012 to 2021. The results show that the indicators of credit growth have a significant negative effect on the NPL and ETA risk models. Only ROA has a significant positive effect. This happens because banks in Asia-Pacific are more selective in lending, so the default risk is opposite to credit growth. However, banks are less focused on equity, which can pose a liquidity risk to the bank. While profitability has an influence in line with credit growth, meaning that banks in Asia-Pacific mostly benefit from credit growth, this study also considers bank specification and macroeconomic variables.

Bank specific factors include loan ratio, efficiency, and bank size, which significantly affect the level of bank risk. Lending ratio and bank size have a negative direction on NPL risk. Meanwhile, bank efficiency has a positive direction on NPL risk. Turning to the influence on the size of ETA risk. Efficiency and bank size have the opposite direction, while the loan ratio has a positive influence. The size of bank risk is proxied by the profitability ratio (ROA). Efficiency and bank size have a negative influence in contrast to the positive loan ratio. Macroeconomic factors include inflation and GDP, which positively affect the variable size of bank risk.

The study results have important implications for banks when developing loan growth strategies. Banks should consider the trade-off between profitability and liquidity risk when increasing loan growth. Bank risk also comes from lending activities, so banks should consider diversifying business models to increase bank income in future periods. At the same time, an operating model that increases interest income will also transfer bank risk through loan

securitization and credit derivatives. Therefore, this model must be studied more thoroughly (Foos et al., 2010). Asia-Pacific banks' credit ratings and risk management activities need to be maintained as they currently show results proving that banks are doing well by increasing loan growth but reducing NPL.

REFERENCES

Adistya, R., & Mawardi, W. (2018). *Faktor-Faktor Yang Mempengaruhi Profitabilitas Bank Dengan Pertumbuhan Kredit Sebagai Variabel Intervening (Studi pada Bank Umum Go Public yang Terdaftar di Bursa Efek Indonesia Tahun 2012-2016)* [Factors Affecting Bank Profitability With Credit Growth As An Intervening Variable (Study of Go Public Commercial Banks Listed on the Indonesian Stock Exchange 2012-2016)]. *7*, 1–15.

Admati, A. R., Demarzo, P. M., Hellwig, M. F., & Pfleiderer, P. (2013). *Fallacies, Irrelevant Facts, and Myths in the Discussion of Capital Regulation : Why Bank Equity is Not Socially Expensive.*

Agam, D. K. S., & Pranjoto, G. H. (2021). *Pengaruh CAR, LDR, BOPO, dan Size Terhadap ROA pada Sektor Perbankan yang Terdaftar di BEI 2015-2019* [The Influence of CAR, LDR, BOPO, and Size on ROA in the Banking Sector Listed on the IDX 2015-2019]. *Jurnal Kajian Ilmu Manajemen*, *1*(2), 160–167.

Agustriana, D. (2018). *Analisis Pengaruh Pertumbuhan Kredit, Ukuran Bank, Tingkat Likuiditas, dan Rasio Modal Terhadap Risiko Kredit Pada Bank Umum Konvensional Go Public yang Terdaftar Di Bursa Efek Indonesia* [Analysis of the Effect of Credit Growth, Bank Size, Liquidity Level, and Capital Ratio on Credit Risk in Conventional Go Public Commercial Banks Listed on the Indonesian Stock Exchange]. *Fakultas Ekonomi, Universitas Islam Indonesia*, *66*, 37–39.

Ahmed, S., Majeed, M. E., & Thalassinos, E. (2021). *The Impact of Bank Specific and Macro-Economic Factors on Non-Performing Loans in the Banking Sector : Evidence from an Emerging Economy. Risk and Financial Management*, *14*, 217.

Ali, M., & Puah, C. H. (2018). *The internal determinants of bank profitability and stability An insight from banking sector of Pakistan. Management Research Review.* https://doi.org/10.1108/MRR-04-2017-0103

Amador, J. S., Gómez-González, J. E., & Pabón, A. M. (2013). *Loan growth and bank risk: new evidence. Financial Markets and Portfolio Management*, *27*(4), 365–379. https://doi.org/10.1007/s11408-013-0217-6

Amelia, K. R. (2019). *Analisis Non Performing Loan Bank Pembangunan Daerah Periode 2012-2016* [Analysis of Non-Performing Loans of Regional Development Banks for the 2012-2016 Period]. *Jurnal Ilmiah Mahasiswa Universitas Surabaya*, *8*(1), 2088–2098.

Anindiansyah, G., Sudiyatno, B., Puspitasari, E., & Susilawati, Y. (2020). *Pengaruh CAR, NPL, BOPO, dan LDR Terhadap Roa Dengan Nim Sebagai Variabel Intervening (Studi Pada Bank Yang Go Publik Di Bursa Efek Indonesia Periode Tahun 2015-2018)* [The Influence of CAR, NPL, BOPO, and LDR on Roa with Nim as an Intervening Variable (Study of Banks that Go Public on the Indonesian Stock Exchange for the 2015-2018 Period)]. *Proceeding SENDIU*, 978–979.

Asysidiq, K. M., & Sudiyatno, B. (2022). *Pengaruh CAR, NPL, LDR, GDP dan Inflasi Terhadap ROA Pada Bank Umum Swasta Nasional Devisa yang Terdaftar di Bursa Efek Indonesia Periode 2017-2021* [The Influence of CAR, NPL, LDR, GDP and Inflation on ROA in National Private Commercial Banks with Foreign Exchange Listed on the Indonesian Stock Exchange for the 2017-2021 Period]. *Jurnal Mirai Management*, *7*(2), 66–84.

Becker, B., & Ivashina, V. (2014). Cyclicality of credit supply: Firm level evidence. *Journal of Monetary Economics*, *62*(1), 76–93. https://doi.org/10.1016/j.jmoneco.2013.10.002

Berger, A. N., & Bonaccorsi di Patti, E. (2006). Capital structure and firm performance: A new

approach to testing agency theory and an application to the banking industry. *Journal of Banking and Finance*, *30*(4), 1065–1102. https://doi.org/10.1016/j.jbankfin.2005.05.015

Bitar, M., Pukthuanthong, K., & Walker, T. (2017). The effect of capital ratios on the risk, efficiency and profitability of banks: Evidence from OECD countries. *Journal of International Financial Markets, Institutions & Money*. https://doi.org/10.1016/j.intfin.2017.12.002

Bitar, M., Pukthuanthong, K., & Walker, T. (2018). Journal of International Financial Markets, Institutions & Money The effect of capital ratios on the risk, efficiency and profitability of banks : Evidence from OECD countries q. *Journal of International Financial Markets, Institutions & Money*, *53*, 227–262. https://doi.org/10.1016/j.intfin.2017.12.002

Boyson, N., Helwege, J., & Jindra, J. (2014). Crises, Liquidity Shocks, and Fire Sales at Commercial Banks. *Financial Management (Forthcoming)*.

Chen, W. Da, Chen, Y., & Huang, S. C. (2021). Liquidity risk and bank performance during financial crises. *Journal of Financial Stability*, *56*(June), 100906. https://doi.org/10.1016/j.jfs.2021.100906

Dang, V. D. (2019). The effects of loan growth on bank performance: Evidence from Vietnam. *Management Science Letters*, *9*, 899–910. https://doi.org/10.5267/j.msl.2019.2.012

Davis, E. P., Karim, D., & Noel, D. (2022). International Review of Financial Analysis The effects of macroprudential policy on banks ' profitability ☆. *International Review of Financial Analysis*, *80*(June 2020), 101989. https://doi.org/10.1016/j.irfa.2021.101989

Duan, Y., & Niu, J. (2020). Liquidity Creation and Bank Profitability Liquidity Creation and Bank Profitability. *North American Journal of Economics and Finance*, 101250. https://doi.org/10.1016/j.najef.2020.101250

Durand, P., & Le, G. (2022). Banks to basics! Why banking regulation should focus on equity. *European Journal of Operational Research*, *301*(1), 349–372. https://doi.org/10.1016/j.ejor.2021.10.057

Dwihandayani, D. (2016). *Analisis Kinerja Non Performing Loan (NPL) Perbankan Di Indonesia Dan Faktor-Faktor Yang Mempengaruhi NPL* [Analysis of Non-Performing Loan (Npl) Performance of Banking in Indonesia and Factors That Influence NPL]. *100*, 265–274.

Ekanayake, E. M. N. ., & Azeez, A. . (2015). Asian Economic and Financial Review Determinants Non-Performing Loans Commercial Banks : Evidence From Sri Lanka In Contribution / Originality. *Asian Economic and Financial Review*, *5*(6), 868–882. https://doi.org/10.18488/journal.aefr/2015.5.6/102.6.868.882

Fahlenbrach, R., Prilmeier, R., & Stulz, R. M. (2018). Why Does Fast Loan Growth Predict Poor Performance for Banks? *The Review of Financial Studies*, *31*(3), 1014–1063. https://doi.org/10.1093/rfs/hhx109

Fahrul, M., Syafi', R., & Rusliati, E. (2016). Credit Risk, Market Risk, Operational Risk and Liquidity Risk on Profitability of Banks in Indonesia. *Trikonomika*, *Volume 15*(2), 78–88.

Farag, H., Mallin, C., & Ow-yong, K. (2017). Corporate Governance in Islamic Banks : New Insights for Dual Board Structure and Agency Relationships. *Journal of International Financial Markets, Institutions & Money*. https://doi.org/10.1016/j.intfin.2017.08.002

Firmansyah, M., & Sam, S. (2022). *Faktor-Faktor Yang Mempengaruhi Non-Performing Loan Pada Bank BUMN di Indonesia Tahun 2010-2019* [Factors Influencing Non-Performing Loans at State-Owned Banks in Indonesia 2010-2019]. *Jurnal Sosial Ekonomi Dan Humaniora*, *8*, 193–199.

Firtescu, B., & Roman, A. (2015). Internal And External Determinants Of Commercial Banks

Profitability: Empirical Evidence From Bulgaria And Romania. *Faculty of Economics and Business Administration*.

Foos, D., Norden, L., & Weber, M. (2010). Loan growth and riskiness of banks. *Journal of Banking and Finance*, *34*(12), 2929–2940. https://doi.org/10.1016/j.jbankfin.2010.06.007

Ghosh, A. (2015). Banking-industry specific and regional economic determinants of Non-Performing Loans: Evidence from US State. *Journal of Financial Stability*. https://doi.org/10.1016/j.jfs.2015.08.004

Gujarati, D. N., & Porter, D. C. (2012). *Dasar-dasar ekonometrika : Basic Econometrics* (Ed. 5 Buku). Jakarta : Salemba Empat.

Gurendrawati, E., Khairunnisa, H., Ulupui, I. G. K. A., Zakaria, A., & Suryarini5, T. (2021). Bank Risk Profile and Credit Growth in Indonesia. *Jurnal Ilmiah Akuntansi Dan Bisnis*, *16*(1). https://doi.org/10.24843/JIAB.2021.v16.i01.p06

Haris, M., Yao, H., Tariq, G., Malik, A., & Javaid, H. (2019). Intellectual Capital Performance and Profitability of Banks: Evidence from Pakistan. *Journal of Risk and Financial Management*, *12*(2), 56. https://doi.org/10.3390/jrfm12020056

Hernando, A., Miranda, E., Luvena, L., Theodora, A., Kadarusman, Y. B., & Ariyan, G. A. (2020). *Dampak Faktor Makroekonomi terhadap Non Performing Loan pada Kredit Produktif Bank Umum di Indonesia* [The Impact of Macroeconomic Factors on Non-Performing Loans on Productive Credit of Commercial Banks in Indonesia]. *Studi Akuntansi & Keuangan Indonesia*, *3*(1), 1–28.

Hou, K., Xue, C., & Zhang, L. (2015). *Digesting Anomalies : An Investment. 28*(3), 650–705. https://doi.org/10.1093/rfs/hhu068

Iannotta, G., Nocera, G., & Sironi, A. (2007). *Ownership structure, risk and performance in the European banking industry. 31*, 2127–2149. https://doi.org/10.1016/j.jbankfin.2006.07.013

Irawan, D., & Kusuma, N. (2019). *Pengaruh Struktur Modal Dan Ukuran Perusahaan Terhadap Nilai Perusahaan*. [The Influence of Capital Structure and Company Size on Company Value] *Jurnal AKTUAL*, *17*(1), 66. https://doi.org/10.47232/aktual.v17i1.34

Jiajia, L., Kun, G., Fangcheng, T., Yahan, W., & Shouyang, W. (2023). The effect of the disposal of non-performing loans on interbank liquidity risk in China: A cash flow network-based analysis. *Quarterly Review of Economics and Finance*, *89*, 105–119. https://doi.org/10.1016/j.qref.2023.03.005

Kashif, M., Iftikhar, S. F., & Iftikhar, K. (2016). Loan growth and bank solvency: evidence from the Pakistani banking sector. *Financial Innovation*, *2*(1). https://doi.org/10.1186/s40854-016-0043-8

Kaufmann, S., & Valderrama, M. (2008). Bank lending in Germany and the UK: Are there differences between a bank-based and a market-based country? *International Journal of Finance & Economics*, *13*, 266–279. https://doi.org/10.1002/ijfe.345

Kavkler, A., Repina, S., & Festic, M. (2011). *The macroeconomic sources of systemic risk in the banking sectors of five new EU member states. 35*, 310–322. https://doi.org/10.1016/j.jbankfin.2010.08.007

Keskis, Y., & Kassie, A. (2021). Determinants of Agency Banking (Cbe-Birr) in Commercial Bank of Ethiopia, Exploratory. In *St. Mary's University School of Graduate Studies* (Issue June). St. Mary's University School of Graduate Studies.

Khamisah, N., Nani, D. A., & Ashsifa, I. (2020). *Pengaruh Non-Performing Loan (NPL), BOPO dan Ukuran Perusahaan Terhadap Return on Assets (ROA) Perusahaan Perbankan yang Terdaftar di Bursa Efek Indonesia (BEI)* [The Influence of Non-

Performing Loans (NPL), BOPO and Company Size on Return on Assets (ROA) of Banking Companies Listed on the Indonesian Stock Exchange (BEI)]. *3*(2), 18–23.

Khemraj, Pasha, T. and, & Sukrishnalall. (2014). The determinants of non-performing loans : an econometric case study of Guyana. *Munich Personal RePEc Archive*, *53128*.

Kumar, P., & Sarker, N. (2021). Loan growth and bank risk : empirical evidence from SAARC countries. *Heliyon*, *7*(January), e07036. https://doi.org/10.1016/j.heliyon.2021.e07036

Kusuma, E. C., & Haryanto, A. M. (2016). *Analisis Pengaruh Variabel Kinerja Bank (CAR, ROA, BOPO dan LDR), Serta Pertumbuhan Kredit Dan Kualitas Kredit Terhadap Non Performing Loan (NPL)* [Analysis of the Influence of Bank Performance Variables (CAR, ROA, BOPO and LDR), as well as Credit Growth and Credit Quality on Non-Performing Loans (NPL)]. *5*(2015), 1–13.

Lee, C., & Hsieh, M. (2013). Journal of International Money The impact of bank capital on profitability and risk in Asian banking. *Journal of International Money and Finance*, *32*, 251–281. https://doi.org/10.1016/j.jimonfin.2012.04.013

Louzis, D. P., Vouldis, A. T., & Metaxas, V. L. (2010). Macroeconomic and bank-specific determinants of non-performing loans in Greece: a comparative study of mortgage, business and consumer loan portfolios. *Economic Research Department*.

Mahdiana, M. Q., & Amin, M. N. (2020). *Pengaruh Profitabilitas, Leverage, Ukuran Perusahaan, dan Sales Growth Terhadap Tax* [The Influence of Profitability, Leverage, Company Size, and Sales Growth on Tax]. *Jurnal Akuntansi Trisakti*, *0832*, 127–138.

Martynova, N., Ratnovski, L., Vlahu, R., & Bundesbank, D. (2020). Bank profitability, leverage constraints, and risk-taking ☆. *Journal of Financial Intermediation*, *44*(December 2018), 100821. https://doi.org/10.1016/j.jfi.2019.03.006

Maryandi, M. S. (2016). *Analisis Pengaruh Faktor Internal Bank Terhadap Non Performing Loan Berdasarkan Generalized Method Of Moment* [Analysis of the Influence of Bank Internal Factors on Non-Performing Loans Based on the Generalized Method of Moment]. *Jurnal Keuangan Dan Perbankan*, *20*(3), 496–506.

Meythi. (2012). *Rasio Keuangan Yang Paling Baik Untuk Memprediksi Nilai Perusahaan* [The Best Financial Ratios for Predicting Company Value].

Meythi. (2013). *Rasio Keuangan Terbaik untuk Memprediksi Nilai Perusahaan* [Best Financial Ratios for Predicting Company Value]. *Jurnal Keuangan Dan Perbankan*, *17*(2), 200–210.

Muizzuddin. (2021). *Kompetisi, Regulasi, Kualitas Kelembagaan, Dan Stabilitas Bank Di Negara-Negara Asia Pasifik.* [Competition, Regulation, Institutional Quality, and Bank Stability in Asia Pacific Countries]. Unpublished Dissertation, Universitas Gajah Mada.

Muizzuddin, Tandelilin, E., Hanafi, M. M., & Setiyono, B. (2021). Does Institutional Quality Matter in The Relationship Between Competition and Bank Stability ? Evidence From Asia. *Journal of Indonesian Economy and Business*, *36*(3), 283–301.

Nguyen, T. H. M., Jeong, T. H., Yeon Kim, S., Kim, K. Bin, Ha, T. H., Ahn, S. J., & Kim, Y. H. (2021). Porous structures prepared by a novel route: Combination of digital light processing 3D printing and leaching method. *Journal of Manufacturing Processes*, *67*, 46–51. https://doi.org/https://doi.org/10.1016/j.jmapro.2021.04.049

Nguyen, D. Van, Dang, D. Q., Pham, G. H., & Do, D. K. (2020). *Influence of Overconfidence and Cash Flow on Investment in Vietnam* *. *7*(2), 99–106. https://doi.org/10.13106/jafeb.2020.vol7.no2.99

Nkusu, M. (2011). Nonperforming Loans and Macrofinancial Vulnerabilities in Advanced Economies. *IMF Working Paper*.

Nugraha, Y. S., AY, B., & Damayanti, R. (2019). *Analisis Pengaruh Jumlah Kredit, Loan To Asset Ratio (Lar), Dan Loan To Deposit Ratio (Ldr) Terhadap Non-Performing Loan Di Pt Bank Rakyat Indonesia (Persero) Tbk Cabang Wonogiri Tahun 2018* [Analysis of the Effect of Credit Amount, Loan To Asset Ratio (Lar), and Loan To Deposit Ratio (Ldr) on Non-Performing Loans at Pt Bank Rakyat Indonesia (Persero) Tbk Wonogiri Branch in 2018]. *Edunomika*, *03*(02), 428–432.

Nugroho, D., Mangantara, M., & Tulung, J. E. (2019). P*engaruh CAR, BOPO, NIM, dan NPL Terhadap ROA Industri Bank Umum Swasta Nasional Periode 2014-2018* [The Influence of CAR, BOPO, NIM, and NPL on the ROA of the National Private Commercial Bank Industry for the 2014-2018 Period]. *Jurnal EMBA*, *7*(3), 4222–4229.

Ofori-abebrese, G., Pickson, R. B., & Opare, E. (2016). The Effect of Bank Specific Factors on Loan Performance of HFC Bank in Ghana. *International Journal of Economics and Finance*, *8*(7), 185–192. https://doi.org/10.5539/ijef.v8n7p185

Olson, D., & Zoubi, T. A. (2011). *Efficiency and bank profitability in MENA countries*. *12*, 94–110. https://doi.org/10.1016/j.ememar.2011.02.003

Ozili, P. K. (2015). How Bank Managers Anticipate Non-Performing Loans Evidence from Europe, US, Asia and Africa. *Applied Finance and Accounting*, *1*(2), 73–80. https://doi.org/10.11114/afa.v1i2.880

Pasaribu, P., & Mindosa, B. (2021). the Bank Specific Determinants of Loan Growth and Stability: Evidence From Indonesia. *Journal of Indonesian Economy and Business*, *36*(2), 93–123. https://doi.org/10.22146/jieb.v36i2.1385

Pebrianto, M. (2018). *Devisa Terhadap Nilai Impor Barang Indonesia Dari Jepang, Singapura Dan Tiongkok Tahun 1987- 2016* [Foreign Exchange Against the Value of Imports of Indonesian Goods from Japan, Singapore and China 1987-2016].

Prasetyo, A. S. (2018). *Dampak Makroekonomi Terhadap Nonperforming Loans : Studi Kasus Bank Konvensional Di ASEAN* [Macroeconomic Impact on Nonperforming Loans: Case Study of Conventional Banks in ASEAN]. 223–233.

Priono, A., & Pangestuti, I. R. D. (2019). *Faktor-Faktor Yang Berpengaruh Terhadap Profitabilitas Bank Konvensional dan Bank Syariah Di Indonesia* [Factors That Influence the Profitability of Conventional Banks and Sharia Banks in Indonesia]. *Diponegoro Journal of Management*, *8*, 113–127.

Putri, S., & Kusumaningtias, R. (2020). *Faktor-Faktor yang Memengaruhi Pembiayaan Bermasalah pada Bank Umum Syariah di Indonesia* [Factors that Influence Problematic Financing in Sharia Commercial Banks in Indonesia]. *Jurnal Akuntansi ...*, *8*(2).

Rabbani, M. N., & Rahadian, D. (2021). *Faktor-Faktor Yang Berpengaruh Terhadap NPL Bank BUMN* [Factors That Influence the NPL of BUMN Banks]. *5*(c).

Rafelia, T., & Ardiyanto, M. D. (2013). *Pengaruh Car , Fdr , Npf , Dan Bopo Terhadap Roe Bank Syariah Mandiri Periode Desember 2008-Agustus 2012* [The Influence of Car, Fdr, Npf, and Bopo on Roe of Bank Syariah Mandiri for the Period December 2008-August 2012]. *1*, 1–9.

Rauf, A. (2023). Bank stability and the price of loan commitments. *Journal of Financial Intermediation*, *54*(March), 101027. https://doi.org/10.1016/j.jfi.2023.101027

Rumalutur, M. R., Suhartono, & Mongid, A. (2021). *Kebangkrutan Bank Pasca Krisis Ekonomi Global Di Asean* [Bank Bankruptcy Post Global Economic Crisis in ASEAN]. *Balance*, *XVIII*(2).

Sakinah, D. F. (2021). *Analisis Faktor Faktor Yang Mempengaruhi Non Performing Loan (NPL)* [Factor Analysis Of Factors Affecting Non Performing Loan (Npl)]. *Jurnal*

Ekonomi Pembangunan.

Santoso, W., Yusgiantoro, I., & Soedarmono, W. (2021). Research in International Business and Finance The bright side of market power in Asian banking : Implications of bank capitalization and financial freedom. *Research in International Business and Finance*, *56*(October 2020), 101358. https://doi.org/10.1016/j.ribaf.2020.101358

Setiawan, R., & Pratama, A. A. P. (2019). *Modal, Tingkat Likuiditas Bank, Npl Dan Pertumbuhan Kredit Perbankan Indonesia* [Capital, Bank Liquidity Levels, Npl and Indonesian Banking Credit Growth]. *Matrik : Jurnal Manajemen, Strategi Bisnis Dan Kewirausahaan*, *13*(1), 96. https://doi.org/10.24843/matrik:jmbk.2019.v13.i01.p10

Shingjergji, A. (2013). The Impact of Bank Specific Variables on the Non Performing Loans Ratio in the Albanian Banking System. *Research Journal of Finance and Accounting*, *4*(7).

Škarica, B. (2014). Determinants of non-performing loans in Central and Eastern European countries. *Financial Theory and Practice*. https://doi.org/10.3326/fintp.38.1.2

Soekapdjo, S., & Tribudhi, D. A. (2020). *Pengaruh faktor eksternal dan internal terhadap kredit bermasalah perbankan konvensional di Indonesia External and internal factors effect on commercial banking non-performing loans in Indonesia* [The influence of external and internal factors on conventional banking non-performing loans in Indonesia External and internal factors effect on commercial banking non-performing loans in Indonesia]. *17*(2), 278–286.

Sulistyowati, C. (2017). *Pertumbuhan Kredit Dan Tingkat Keberisikoan Bank* [Credit Growth and Bank Risk Level]. *Jurnal Manajemen Indonesia*, *15*(2), 93. https://doi.org/10.25124/jmi.v15i2.700

Tölö, E., & Virén, M. (2021). How much do non-performing loans hinder loan growth in Europe? *European Economic Review*, *136*, 103773. https://doi.org/10.1016/j.euroecorev.2021.103773

Ugwoke, R. O., Onyeanu, E. O., Ugwoke, O. V., & Ajayi, T. A. (2022). *Evaluating Coaching Intervention for Financial Risk Perception and Credit Risk Management in a Nigerian Sample*. *13*(July), 1–8. https://doi.org/10.3389/fpsyg.2022.962855

Vithessonthi, C. (2016). Deflation, bank credit growth, and non-performing loans: Evidence from Japan. *International Review of Financial Analysis*, *45*, 295–305. https://doi.org/10.1016/j.irfa.2016.04.003

Wijaya, R. S. (2019). *Pengaruh Faktor Makro Ekonomi Terhadap Kredit* [The Influence Of Macroeconomic Factors On Credit]. *4*(1), 36–48.

Wu, S.-W., Nguyen, M.-T., & Nguyen, P.-H. (2022). Does loan growth impact on bank risk? *Heliyon*, *8*(8). https://doi.org/10.1016/j.heliyon.2022.e10319

Wulandari, B., Khetrin, & Seviyani, K. (2021). *Pengaruh Loan To Deposit Ratio (Ldr), Biaya Operasional, Pendapatan Operasional (Bopo), Kurs, Capital Adequacy Ratio, Ukuran Bank Dan Inflasi Terhadap Non Performing Loan (Npl) Di Perusahaan Perbankan Terdaftar Di BEI* [The Influence of Loan To Deposit Ratio (Ldr), Operational Costs, Operational Income (Bopo), Exchange Rate, Capital Adequacy Ratio, Bank Size and Inflation on Non-Performing Loans (NPL) in Banking Companies Registered in BEI] *Journal of Economic, Business and Accounting*, *5*, 45–52.

Yuningsih, D., & Putra, A. (2020). *Analisis Faktor Internal Dan Eksternal Yang Mempengaruhi Interest Rate Spread (IRS) Bank Bumn Di Indonesia Periode 2004 Q1 – 2017 Q2* [Analysis of internal and external factors that influence the interest rate spread (IRS) of state-owned banks in Indonesia for the period 2004 Q1 – 2017 Q2]. *ICA Ekonomi*,

1.

Zeuspita, A. C. A., & Yadnya, I. P. (2019). *Pengaruh Car, Npl, Der Dan Lar Terhadap Roa Pada Bank Umum Di Bursa Efek Indonesia* [The Influence of Car, Npl, Der and Lar on Roa in Commercial Banks on the Indonesian Stock Exchange]. *E-Jurnal Manajemen*, *8*(12), 7411–7430.

Zurriah, R. (2021). *Pengaruh Return On Asset (ROA) Terhadap Nilai Perusahaan* [The Effect of Return on Assets (ROA) on Company Value]. *Jurnal Akmami*, *2*(3), 580–587.