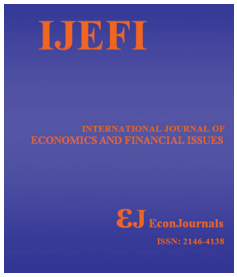

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Monetary Policy, Macroprudential Policy, and Credit Cycle: Evidence in the Indonesian Banking Industry

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ABSTRACT

This research aimed to analyse the effect of monetary policy and macroprudential policy on credit cycle for 41 conventional banks between 2010 and 2023 in Indonesia. Initially, four models using POLS and fixed effect models were executed in this paper. Subsequently, a Durbin-Wu-Hausman test identified issues of endogeneity in the models. Ultimately, a panel GMM estimation was employed. The findings revealed that central bank rate had a positive influence on credit cycle. While macroprudential policy had a negative impact on credit cycle. The interaction effect of macroprudential and monetary policies had an influence on lowering the credit cycle. The credit cycle is influenced negatively and significantly by Non-performing loans (NPL) and capital adequacy ratio (CAR). Meanwhile, inflation, economic growth and loan-to-deposit ratio (LDR) had a positive effect on the variable. The findings offer valuable policy insights for policymakers in Indonesia. Central banks should be aware of how banks' credit cycles behave in response to shocks from monetary and macroprudential policies.

Keywords: Credit Cycle, Monetary Policy, Macroprudential Policy, Indonesian Banks, Panel GMM
JEL Classifications: E32, E52, E58

1. INTRODUCTION

The monetary policy (MP) transmission mechanism is established by central bank (CB) to achieve price stability and economic growth (Tobal and Menna, 2020). In this context, the policy provided a monetary stimulus for the business world by relaxing bank loan and intensifying credit distribution. The CB as the authority is expected to conduct MP to regulate stable loan (Suhendra et al., 2022). The increase promotes economic activity to be more active in enhancing growth (Chugunov et al., 2021).

The role of banking in the credit channel through the reduction of loan rates is important in promoting economic recovery (Gomez-Gonzalez et al., 2021; Anwar et al., 2023; Ditta and Setiawan, 2024). This phenomenon shows the interaction between central banks, banking institutions, and real economic actors in conducting the intermediary function for transactions in the money market. Bernanke and Gertler (1995) stated that there were two types of credit channels, namely bank loan and balance sheet. According to the theory of bank loan channel, the expansion of MP by lowering interest rates leads to an increase in bank capability through an increase in reserves and deposits. Another impact of lower policy interest rates is a reduction in bank loans. This is because the policy interest rate is a reference to set the loan and increase bank credit (Anwar et al., 2024).

MP by changing central bank interest rates has the objective of achieving stable economic growth and inflation targets. Through the credit channel of the transmission mechanism, the variable influences the amount of credit provided by banks (Li et al., 2021; Boukhatem and Djelassi, 2022; Ho, 2024). In the short term, banks may fluctuate the amount of credit provided based on real economic conditions. According to Kashyap and Stein (2023) and Gersbach and Rochet (2017), various economic and financial

factors cause fluctuations in the amount of credit, namely changes in MP, business cycle, and market expectations. Therefore, banks are expected to increase the amount of credit in the expansion (Anwar et al., 2023; Chehayeb and Taher, 2024).

The existing research studies on the effects of MP have failed to produce a clear conclusion. This is due to the differences in the economic situation and financial systems. Some argue that the significant instability of the financial markets makes it difficult to regulate the credit cycle (Boissay et al., 2021; Anwar, 2023; Farihah et al., 2024). Empirical analysis clearly demonstrates that the credit cycle significantly influences overall economic activity. This is because periods of potential negative recessions either precede or follow most expansionary credit cycles. Lazarevic et al. (2022) also underscore the significance of regulatory and prudential measures in managing the credit cycle. Therefore, it's crucial to monitor and evaluate financial institutions more frequently to prevent credit extremism and its impact on stability. However, there is a misunderstanding of the relationship between MP and the credit cycle (Bräuning and Ivashina, 2020). International financial market spillovers affect the relationship between the two variables in the global financial system (Dées and Galesi, 2021). A good theoretical knowledge and a good empirical analysis are very important in order to achieve the objectives of the MP (Anwar and Suhendra, 2023).

Research studies have focused much attention on the dynamics of the money printing and credit cycle relationships. These interactions often intertwine with other stochastic links in the economy and financial system, resulting in sometimes unorthodox consequences. Moreover, this study looks into the effects of different MPs, such as changes in benchmark interest rates and asset purchase policies, at different points in the economic and financial cycle, such as when there is a lot of uncertainty and a financial crisis (Suhendra and Anwar, 2021). It is important that the economy is stable for the benefit of financial institutions and the entire economy (Ehigiamusoe and Samsurijan, 2021). This variable includes the general level of important macroeconomic indicators, such as the rate of inflation, unemployment, and economic growth. According to Anwar et al. (2023), in addition, another instrument that the central bank uses to achieve the objective of financial stability is the macroprudential policy (MAPP). As everyone knows, the credit cycle is one of the biggest macroeconomic threats. Macroeconomic policies can be used by central banks to control the credit cycle and thus reduce the probability of financial crises (Gómez et al., 2020; Belkhir et al., 2022; Ekinci et al., 2024).

The results of the analysis show that the CB rate has a positive and significant impact on the credit cycle. Hence, tight MP and MAPP increase the variable but decrease it. The results of the study revealed that the inflation rate, economic growth rate, and liquidity ratio have a significant positive correlation, while non-performing loans and the capital adequacy ratio have a significant negative correlation.

2. LITERATURE REVIEW

The relationship between MP and credit cycle is an important phenomenon in relation to bank credit and interest rates influencing demand and supply (Segev and Schaffer, 2020). Based on the transmission mechanism, central bank can reduce interest rate policies to increase the amount of bank credit distributed to the public. However, credit provided by banks increases bank risk-taking activities and reduces credit. In this context, fluctuations occur in banking credit distribution closely related to the cycle of increasing and decreasing bank credit in the economy (Barrell et al., 2020).

Previous research investigated the link between MP and credit cycle such as Beck et al. (2018), Bräuning and Ivashina (2020), De Schryder and Opitz (2021), Saini et al. (2021), Lazarevic (2022), Di Giovanni et al. (2022), Durdu and Zhong (2023). Beck et al. (2018) examined the role of relationship banking in influencing the cyclicality of credit. The loan strategies used by banks located near businesses are connected to credit limitations during two distinct phases of the credit cycle.

Bräuning and Ivashina (2020) investigated the impact of Federal Reserve MP in developing countries and most foreign bank provided credit to firms in US dollars. This shows a close relationship between Federal Reserve MP and the developing market. Di Giovanni et al. (2022) provided a granular view of GFC on local credit conditions. During economic booms, high non-core banks decrease loan rates and increase activity. Durdu and Zhong (2023) investigated the determinants of credit cycle, and the main driver was investment growth.

The efficiency of MAPP in the context of promoting and preserving macroeconomic stability has been discussed in detail by Gertler et al. (2020). The theoretical framework indicates that the variable can be used to moderate the credit cycle and, therefore, maintain macroeconomic stability. Nevertheless, it is still possible to identify and quantify systemic risks, and there is the problem of synchronisation (Zhang et al., 2020). Fiscal policies, which are pro-cyclical in economically vulnerable countries, increase the severity of the negative impacts of economic contractions and lead to credit crises. Thus, it can be seen that the use of pro-cyclical policies in economically vulnerable countries makes the impacts of economic downturns worse and may lead to credit crises. The crises are characterised by a freeze on credit and difficulty getting business credit. The theoretical review focusses on the necessity of MAPP to control the financial market and ensure its stability.

The following studies have been conducted on the impact of MAPP on the credit cycle: Fendoğlu (2017), De Schryder and Opitz (2021), and Lazarevic et al. (2022). Fendoğlu (2017) assessed the impact of the portfolio flows in developing market economies and the role of the MAPP tools. According to previous studies, the credit cycle is limited by borrower-based domestic measures and mandated reserves. The results show an increase in MAPP tools, particularly following the global financial crisis. De Schryder and Opitz (2021) aimed to establish the effectiveness of the measures that ensure financial stability in advanced economies. The study established a set of MAPP shocks that are specific to the sample. The impacts of the shocks were examined on the credit cycle-related variables in 13 EU countries for 1999-2018 period. A typical shock in MAPP decreases the bank loans to GDP ratio.

In this case, the shock actually helped to curb the credit cycle and hence financial instability by truly reducing the household and bank loan to GDP ratios. Lazarevic et al. (2022) investigated the link of the credit cycle and MAPP in a quantitative manner. The study used data from sixteen major developing market economies and different estimators to look at how four types of measures affected things. The findings presented in this study show that MAPP are useful in regulating the credit cycle in developing countries.

The effects of macroeconomic factors and bank-specific factors were looked into by Song and Ryu (2016), Anastasiou (2017), Bordalo et al. (2018), Figueroa and Leukhina (2018), Nguyen et al. (2020), and Saini et al. (2021). Song and Ryu (2016) examined the relationship between credit cycle and CAR of banks in Korea. The research analysed the modifications to the balance sheets of the banking industry in South Korea. The widening of the credit-to-GDP gap leads to an increase in the desired capital, decreasing the capital deficit. Consistent results are observed in different scenarios when using alternative indicators as predictor factors. Additionally, Anastasiou (2017) investigated the link between credit cycle and NPL. In the static model, the credit cycle had a significant influence on the level of NPL within Italian banks. The coefficient of the credit and business cycle varies, indicating that the state has a stronger impact on the evolution of NPL. A model resulting from diagnostic expectations is presented by Bordalo et al. (2018). Future results that become more probable because of new evidence are calculated by diagnostic expectations. Several characteristics and macroeconomic volatility are explained by these dynamics.

Figueroa and Leukhina (2018) investigated the dynamic interaction between macroeconomic fluctuations and financial markets. The funding of unproductive firms during economic expansions decreased aggregate productivity due to the producer composition effect. However, the foundation for economic recovery is established when loan standards exclude unviable businesses. In a global sample, Nguyen et al. (2020) examined the impact of institutions and economic openness on credit cycle. Between 2003 and 2017, the panel data includes 60 economies. Better institutions tend to increase expansion while stabilising credit cycle. Saini et al. (2021) attempted to comprehend the dynamics of credit and business cycle interactions at the aggregate and disaggregated levels in India.

3. DATA AND METHODOLOGY

3.1. Data

Irawan and Kacaribu (2017) calculated credit cycle in the banking industry, where MP has shifted from the management of money supply to the strategy of setting base interest rates. Central bank has adopted an inflation-targeting framework for the MP using interest rates as the primary tool. This decision was influenced by the successful experiences of countries New Zealand, the UK, and Canada. The variable representing MP is the central bank's interest rate (CB Rate). For MAPP, the index developed by Cerutti et al. (2017) was used to investigate the entire effect. Anwar et al. (2023) reported a dynamic factor model to convert the 12 MAPP instruments devised by Cerutti et al. (2017), into a numerical index ranging from 0 to 1.

Integrating macroeconomic variables is essential for a thorough analysis of the economic framework. Banks are the main sources of credit for businesses and hold the largest share of financial assets. Inflation is a measure of price changes, which can be used to analyse the impact of business on the credit cycle. This study employs Saini et al.'s (2021) approach to analyse the effects of inflation on financial institutions. The economic expansion may influence the decision-making processes of financial institutions. In line with the finding of De Schryder and Optiz (2021), economic growth has a positive impact on the credit cycle of banks. Several specific characteristics impact the credit cycle, such as NPL, LDR, and CAR. Such as what Anastasiou (2017) and Apergis and Eleftheriou (2019) found, NPL and LDR are said to have bad effects on the credit cycle, while Nwakanma et al. (2014) and Zhou and Tewari (2018) say they have good effects. Begenau (2020) and Lazarevic et al. (2022) also established the relationship of CAR with the credit cycle of banks and reported that capital reduced the variable.

3.2. Econometrics Methodology

This study used both macro and micro data to analyse the effects of MP and MAPP on the credit cycle. The panel dataset included 41 commercial banks whose shares were traded on the Indonesian stock exchange over the period 2010-2023. Panel methods were employed to examine the effects of MP and MAPP on the loan cycle of banks. The characteristics of the panel regression model can be considered from the non-random nature of each bank and the potential impact on the outcome variables. The effect of MP on the credit cycle in Equation 1 is estimated under the methodology of Stein (2021) and Di Giovanni et al. (2022). According to De Schryder and Opitz (2021), the impact of MAPP was investigated on credit cycle in equation 2. The combined impact was examined in equation 3 as reported by Agur (2019) and Silvo (2019). Finally, equation 4 is implemented to calculate the individual impacts of MP and MAPP, as well as the interaction. The models include inflation, economic growth, NPL, LDR, and CAR as control variables influencing credit cycle. In the general model, since the period t credit cycle is also influenced by t-1, the model dynamic is developed to address endogeneity issues in the estimation.

$$Credit\ Cycle_{it} = \alpha_0+\alpha_1 Credit\ Cycle_{it-1}+\alpha_2 CB\ Rate_{it}+\alpha_3 Inf_{it}+\alpha_4 Growth_{it}+\alpha_5 NPL_{it}+\alpha_6 LDR_{it}+\alpha_7 CAR_{it}+\varepsilon_{it} \quad (1)$$

$$Credit\ Cycle_{it} = \alpha_0+\alpha_1 Credit\ Cycle_{it-1}+\alpha_2 MAPP_{it}+\alpha_3 Inf_{it}+\alpha_4 Growth_{it}+\alpha_5 NPL_{it}+\alpha_6 LDR_{it}+\alpha_7 CAR_{it}+\varepsilon_{it} \quad (2)$$

$$Credit\ Cycle_{it} = \alpha_0+\alpha_1 Credit\ Cycle_{it-1}+\alpha_2 CB\ Rate_{it}*MAPP_{it}+\alpha_3 Inf_{it}+\alpha_4 Growth_{it}+\alpha_5 NPL_{it}+\alpha_6 LDR_{it}+\alpha_7 CAR_{it}+\varepsilon_{it} \quad (3)$$

$$Credit\ Cycle_{it} = \alpha_0+\alpha_1 Credit\ Cycle_{it-1}+\alpha_2 CB\ Rate_{it}+\alpha_3 MAPP_{it}+\alpha_4 CB\ Rate_{it}*MAPP_{it}+\alpha_5 Inf_{it}+\alpha_6 Growth_{it}+\alpha_7 NPL_{it}+\alpha_8 LDR_{it}+\alpha_9 CAR_{it}\ \varepsilon_{it} \quad (4)$$

Where Credit Cycle is a bank credit cycle, CB Rate is the central bank policy rate as a proxy of MP. MAPP is a macroprudential

policy index. Inf, Growth, NPL, LDR, and CAR are inflation, economic growth, non-performing loans, loan-to-deposit ratio, and capital adequacy ratio. However, the growing quantity of empirical research supports different reasons in favour of a dynamic model. Even though the coefficient of the lagged dependent variable may not be of primary relevance, incorporating dynamics into the model recovers consistent estimates for other parameters. In addition, the model allows for the resolution of potential endogeneity problems in the link between the credit cycle and stabilisation policy. Brana et al. (2019) and Anwar et al. (2024) have identified two primary issues, where the first issue is related to the endogeneity of the interest rates and credit cycle. Meanwhile, the second issue is related to a potential for reverse causation, showing that a future increase can be connected to the current expansion of MP.

A Durbin-Wu-Hausman test was performed to assess the endogeneity of the models. To address the issue, the most effective method is using dynamic panel data estimate proposed by Arellano and Bond (1991), as well as Blundell and Bond (1998).

4. RESULTS

4.1. POLS Result

Table 1 shows the output of POLS estimation where lag 1 has a positive significance. CB rate or Central Bank interest rate has a positive and significant effect, reporting that an increase is related to credit cycle. This result is in line with Di Giovanni et al. (2022), where the effect of central bank interest rate is positive. MAPP has a significant negative effect, where an increase in MAPP is related to a decrease in the variable. NPL and LDR have a significant negative and positive coefficient on the credit cycle, while CAR did not have a significant effect.

4.2. Fixed Effect (FE) Result

Table 2 displays the results of the FE estimation for each individual bank, where lag 1 has a positive significance on credit cycle. CB rate, NPL, money supply, ROA, efficiency, and inflation positively affect the variable. Meanwhile, the exchange rate negatively affects the variable.

The individual bank FE estimation results are presented in Table 2 where lag 1 has a positive significance. Model 1 shows a significant positive influence for the CB Rate and the other models did not show an effect. Therefore, there is a reduced influence of CB Rate on the credit cycle. MAPP reports a significant negative effect, while inflation and economic growth show a positive influence at a 5% level. According to Song and Ryu (2016), economic growth as reflected in the level of GDP increases with the credit gap in the long term. NPL has a significant negative coefficient, showing that the variable has a negative influence on the credit cycle. A high NPL leads to significant credit tightening, and this can limit economic growth since businesses and consumers have more difficult access to funds for investment and spending (Apergis and Eleftheriou, 2019). According to Zhou and Tewari (2018), LDR could influence credit growth and stability, while CAR did not have a significant influence.

Table 1: POLS estimation results

Variable	Dependent variable: Credit cycle			
	Model 1	Model 2	Model 3	Model 4
Credit cycle (−1)	0.4164***	0.4305***	0.4254***	0.4265***
	(0.0346)	(0.0347)	(0.0350)	(0.0349)
CB rate	0.0206*			0.0079
	(0.0107)			(0.0623)
MAPP		−0.2882**		−0.6807
		(0.1261)		(1.1194)
CB rate *MAPP			−0.0186	−0.0737
			(0.0201)	(0.1887)
Inflation	0.0036	0.0076	0.0125**	0.0034
	(0.0067)	(0.0054)	(0.0050)	(0.0080)
Economic growth	0.0092*	0.0103**	0.0121**	0.0081
	(0.0053)	(0.0051)	(0.0051)	(0.0054)
NPL	−0.0140*	−0.0119	−0.0139*	−0.0118
	(0.0077)	(0.0078)	(0.0078)	(0.0078)
LDR	0.0007***	0.0007***	0.0007***	0.0007***
	(0.0002)	(0.0002)	(0.0002)	(0.0002)
CAR	0.0002	0.0004	0.0002	0.0004
	(0.0007)	(0.0007)	(0.0007)	(0.0007)
R^2	0.2748	0.2770	0.2707	0.2802
Total cross-section	41	41	41	41
Total observation	512	512	512	512

Symbols *** is Prob. <1%

Table 2: FE results

Variable	Dependent variable: Credit cycle			
	Model 1	Model 2	Model 3	Model 4
Credit cycle (−1)	0.4165***	0.4289***	0.4239***	0.4252***
	(0.0360)	(0.0362)	(0.0364)	(0.0363)
CB rate	0.0194*			0.0114
	(0.0110)			(0.0636)
MAPP		−0.2531*		−0.7034
		(0.1307)		(1.1424)
CB Rate *MAPP			−0.0138	−0.0832
			(0.0206)	(0.1926)
Inflation	0.0028	0.0071	0.0111**	0.0032
	(0.0068)	(0.0055)	(0.0052)	(0.0082)
Economic growth	0.0088	0.0101*	0.0115**	0.0077
	(0.0054)	(0.0052)	(0.0053)	(0.0055)
NPL	−0.0252**	−0.0222**	−0.0255**	−0.0219**
	(0.0108)	(0.0110)	(0.0109)	(0.0110)
LDR	0.0010***	0.0010***	0.0010***	0.0010***
	(0.0003)	(0.0003)	(0.0003)	(0.0003)
CAR	0.0002	0.0005	0.0002	0.0006
	(0.0012)	(0.0012)	(0.0012)	(0.0012)
R^2	0.2824	0.2833	0.2782	0.2866
Total cross-section	41	41	41	41
Total observation	512	512	512	512

Symbols *** is Prob. <1

4.3. Endogeneity Test

The results of the Durbin Wu-Hausman test are shown in Table 3, where four estimated models are affected by endogeneity issues. A GMM model is used for estimation to tackle the problem of endogeneity.

4.4. GMM Estimation

Table 4 shows the results of panel system GMM, where CB rate has a significant positive effect on credit cycle. In this context, a decrease in CB rate leads to a more stable bank credit. MAPP has a negative and significant effect on credit cycle. An interaction

Table 3: Endogeneity test

Variable	Model 1	Model 2	Model 3	Model 4
Durbin-Wu-Hausman test	16.608** (0.0000)	15.538** (0.0000)	16.823** (0.0000)	18.279 (0.0000)
Total cross-section	41	41	41	41
Total observation	512	512	512	512

Symbols ** is Prob. <5%

Table 4: Panel system GMM estimator

Variable	Dependent variable: Credit cycle			
	Model 1	Model 2	Model 3	Model 4
Credit cycle (−1)	0.6889*** (0.0042)	0.6968*** (0.0121)	0.6228*** (0.0046)	0.6229*** (0.0040)
CB rate	0.0175*** (0.0021)			0.1199*** (0.0075)
MAPP		−0.0832*** (0.0169)		−2.5661*** (0.1312)
CB rate *MAPP			0.0156*** (0.0036)	0.4238*** (0.0211)
Inflation	0.0030*** (0.0008)	0.0032*** (0.0011)	0.0025*** (0.0004)	0.0058*** (0.0010)
Economic growth	0.0061*** (0.0007)	0.0092*** (0.0016)	0.0058*** (0.0008)	0.0048*** (0.0011)
NPL	−0.0230*** (0.0006)	−0.0319*** (0.0029)	−0.0215*** (0.0006)	−0.0291*** (0.0033)
LDR	0.0019*** (0.0001)	0.0024*** (0.0001)	0.0027*** (0.0001)	0.0027*** (0.0001)
CAR	−0.0045*** (0.0001)	−0.0051*** (0.0002)	−0.0047*** (0.0001)	−0.0026*** (0.0002)
AR (1)	0.0324	0.0206	0.0234	0.0174
AR (2)	0.2472	0.3563	0.3788	0.4032
Sargan test	0.9354	0.2188	0.5742	0.5226
Total cross-section	41	41	41	41
Total observation	436	436	436	436

Symbols *** is Prob. <1%

between MP and MAPP has a significant positive impact. This is relevant to the previous result, where achieving stable bank credit requires loose monetary and tight MAPP.

Higher inflation increases the length between bank credit and the trend. Economic growth shows a significant positive influence on credit cycle. According to Song and Ryu (2016), economic growth increases with the credit gap in the long term. NPL and CAR have a significant negative effect while LDR has a positive influence. The GMM model estimation results passed the Arellano-Bond test, where the estimation results were declared consistent without autocorrelation. The estimation also passed the Sargan test, and the results were declared valid.

5. DISCUSSION

MP and central bank rate have positive and significant effect on credit cycle. Therefore, a lower central bank rate creates a decreased credit cycle. This finding is in line with real business cycle theory where the variable runs through peak and trough phases. In an expansion period, a tight MP with an increased CB rate is applied to reduce an overheated economy. Banks respond to an increase in CB by increasing the loan rate. Since bank loans are expensive, the demand for bank credit decreases. Finally, growth reduces significantly to increase credit cycle. According to Durdu and Zhong (2023), increasing central bank rate raises the credit cycle in the consumer and property sectors. Di Giovanni et al. (2022) stated that a positive effect on the variable might be caused by inappropriate MP and economic uncertainty.

MAPP has a negative impact on credit cycle, reducing the variable. Empirical research in line with De Schryder and Opitz (2021), and Lazarevic et al. (2022) reported that MAPP could exert a beneficial impact on credit cycle. This variable plays a critical role in moderating credit growth and debt accumulation. Furthermore, the implementation of MAPP such as capital adequacy ratios, and countercyclical buffers reduces financial imbalances. Findings from the analysis indicated that MAPP helped contain credit growth and prevented the formation of asset price bubbles. This reported the ability to strengthen the resilience of the financial system. Putting in place macroprudential regulations also helps to deal with how connected financial institutions are, which lowers the risks of systemic risk and contagion that come with financial trouble. MAPP increase stability by increasing regulatory demands on systemically important institutions and supervisory control over them.

The impact of the combination of the CB rate and MAPP on the credit cycle is positive. Hence, the tightening of MP and MAPP will enhance the variable. The interaction is important for assessing the level of credit availability, the price of credit, and the level of economic activity and financial stability. In line with Agur (2019) and Silvo (2019) financial stability is impacted by the combination of MP and MAPP. Since there is more money in the economy, there will be a higher demand for credit as a result of higher inflation. According to Bernanke and Getler (1995), Inflation may lead to expansion of the credit cycle in the course of inflation. Rational agents will take more credit in order to buy the same amount of goods and services due to inflation. Similar findings have also been supported by empirical studies such as Barrell et al. (2020) and Alpanda et al. (2021). It therefore means that the enlarged credit cycle will help in the growth of the economy as the financial institutions are mainly focused on their role in financial intermediation in order to support national economic growth. This was confirmed by De Schryder and Optiz in 2021 when they presented evidence of the importance of commercial bank loans and financial intermediation in enhancing the economic growth rate.

Real income is also empirically linked to commercial bank loans in a way that fortified the connection between the credit cycle and economic growth. NPL has a negative effect on the credit cycle. The variable remains as an important factor in the determination of the banking system's financial soundness, as argued by Apergis and Eleftheriou (2019). A higher NPL is equal to higher risk and this in turn leads to a decline in bank loans and therefore the credit cycle. This is in concurrence with the previous works done by Anastasiou (2017) and Apergis and Eleftheriou (2019). LDR has a positive impact on the credit cycle and by rises in this variable, it means that the bank loans are growing at a faster rate than consumer funds. This is so because a higher LDR may result in higher economic

activity as more people and businesses can easily get access to credit. The empirical evidence of Nwakanma et al. (2014) and Zhou and Tewari (2018) is in conformity with this theoretical relationship. A higher CAR means that there is a negative effect on the credit cycle as it increases the bank's capital which in turn increases the stability of bank loans. A higher CAR means that the bank has more capital, which will be able to provide more loans. From this point of view, a financial institution has more resources to meet possible losses and reduce the chance of bankruptcy and the need for external help, as pointed out by Begenau (2020) and Lazarevic et al. (2022).

6. CONCLUSION

In conclusion, this research was conducted to examine the effect of MP and MAPP on credit cycle. The literature resource gap was analysed by examining the impact of the variables on Indonesian banks listed on stock exchange. On an extensive bank-level micro dataset, four-panel data were implemented before calculating POLS and FE models. The results showed that credit cycle of banks was not significantly influenced by MP or MAPP. However, Durbin Wu-Hausman test reported endogeneity problems in the estimated models. The next stage used a system GMM estimation, where credit cycle could be effectively reduced by implementing a constrained MAPP and a loosening MP. The interaction effect of MP and MAPP had an impact on stabilising credit cycle. The result offered valuable policy insights for developing countries, experiencing greater volatility compared to industrialised economies. In this context, central banks should be aware of the response to shocks from MP and MAPP.

This field attracted increased research attention, with numerous possibilities for further development. Firstly, the effects of stabilisation measures were examined on performance and risk-taking behaviour of banks in different countries and regions. This text provided information on the similarities and variations between countries, enabling the comparison of countries under distinct policy frameworks. The utilisation of cross-country panel method allowed the circumvention of constraint imposed by a limited sample size, facilitating the derivation of comprehensive results.

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