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# TO ANALYSE THE EFFECTIVENESS OF MACROPRUDENTIAL INDICATORS IN REDUCING CREDIT RISK IN THE BANKING SECTOR

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***ABSTRACT***

*In the face of changing economic conditions, macroprudential policies have emerged as a very important tool to manage credit risk in the banking industry. The objective of this study is to evaluate how well various macroprudential policy tools, including countercyclical capital buffer (CCB), loan-to-value ratio (LTV), and debt-to-income ratio (DTI), mitigate credit risk. According to a research study, CCB helps banks become more resilient in the face of challenging economic times, while LTV and DTI rules have proven effective in reducing dangerous credit expansion in the housing sector. However, there are several obstacles in the implementation of these policies, including delays and regulatory evasion. This paper recommends the strengthening of more adaptive policy instruments, improved coordination between macroprudential and monetary policies, and the need for periodic evaluation of existing policies. We hope that by implementing these recommendations, financial stability can be maintained, and credit risk in the banking sector can be effectively minimized.*

***Keywords:*** *financial stability, credit risk, loan-to-value, debt-to-income, macroprudential regulation, and countercyclical capital buffers.*

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## INTRODUCTION

Amidst globalisation and the rapid advancement of information technology, the banking sector faces complex challenges, particularly when it comes to credit risk assessment. Credit risk is a key element that can affect the stability of a country's currency; if not managed appropriately, it can trigger a more serious currency crisis (Borio, 2014). Therefore, the importance of macroprudential policy development is increasing to maintain the stability of the overall financial system, especially due to the increasing interconnectedness between financial institutions (Adrian & Shin, 2010).

Macroprudential policies are designed to reduce the likelihood of systemic risk arising from the interaction between various financial institutions and markets. Instruments such as loan-to-value ratios, or limits on loan ratios, in relation to property values as well as minimum capital requirements play a significant role in preventing excessive credit behaviour and maintaining bank asset quality (Turner, 2016). Many countries have implemented these policies in the hope of minimising the accumulation of credit risk, especially during fluctuating economic conditions.

Nonetheless, the effectiveness of macroprudential instruments is still a matter of debate among academics and practitioners. Some studies suggest that while such policies may contribute to credit risk reduction, there are implementation and supervisory challenges that need to be addressed (Huang & Ratnovski, 2011). Moreover, not all instruments have similar impacts in different economic contexts.

This paper aims to analyse some effective macroprudential tools to reduce credit risk in the banking industry. The paper will evaluate the impact on bank quality and credit risk thresholds by analysing various existing policies. It is expected that the results of this study can provide constructive recommendations for regulators and the banking industry to maximise credit risk mitigation strategies. Thus, this paper will not only add to the academic literature but also provide practical guidance to improve risk management in the banking industry.

## LITERATURE REVIEW

### Macroprudential Policy

Macroprudential policy refers to measures taken by financial observers to

ensure the overall stability of the financial system. According to the G20 Working Group (2010), it is intended to enhance financial system stability and reduce systemic risks arising from institutional ties and financial institutions' reluctance to maintain procyclical stability. Procyclicality can reduce economic cycles, when financial institutions consistently provide more credit during economic expansions and less credit during contractionary times, thereby reducing systemic risk in the economy.

**Instruments Macroprudential**

One of the tools used to assess and mitigate systemic risk in the financial sector is macroprudential instruments. The two main issues addressed in these instruments are common exposures and procyclicality. Procyclicality refers to the implementation of a financial system that encourages faster economic growth during expansions and slows economic growth during contractions. Common exposure is a situation where several financial institutions share risks, thereby increasing the potential of the system (Bruno and Hyun, 2013). This instrument is used to mitigate three types of systemic risk: credit deterioration risk, liquidity risk, and risk of heavy capital inflows (Angelini et al., 2012).

**Credit Risk**

According to Goodhart (2011), credit risk is defined as the possibility of something going wrong or all the consequences of a credit transaction. According to Greuning & Bratanovic (2009), almost all regulators set standards for assessing credit risk which includes identifying potential risks and identifying potential risks and setting regulations on the size or parameters of credit risk assessment. One of the indicators used to assess credit risk is non-performing loans (NPL) (Haryanto, 2015). High NPLs indicate a lack of financial stability; Bank Indonesia sets a minimum NPL of 5%. When a bank's non-performing loan (NPL) ratio increases, so does its risk. This indicates that the bank has evidence of loans that cannot be repaid.

**Financing**

Financing refers to the process of providing funds to fulfil the investment or operational needs of an entity. In a banking context, financing can be done through various products such as personal loans, mortgages, or small and medium enterprise (SME) financing. Proper financing can help boost economic growth but also carries

risks if not managed properly.

**Probability of Default (PD)**

Probability of Default (PD) is a measure of the likelihood of a debtor failing to fulfil its obligations. PD can be calculated using historical data on default rates. The general formula for calculating PD is:

$$PD = \frac{Jumlah\ Debitur\ Gagal\ Bayar}{Jumlah\ Total\ Debitur}$$

For example, if out of 1000 debtors, 50 people default, then the PD is

$$PD = \frac{50}{1000} = 0.05\ atau\ 5\%$$

This simulation model can be used to envision the PD by considering various factors such as financial ratios and macroeconomic conditions.

**Loss Give Default (LGD)**

Loss Give Default (LGD) is a measure of the loss that may occur if the debtor defaults. LGD is calculated based on collateral value and recovery rate after default. The LGD formula is:

$$LGD = \frac{Kehilangan}{Eksposur\ pada\ Default}$$

For example, if the total loan is Rp100 million and after default the collateral value is only Rp40 million, then the loss is Rp60 million:

$$LGD = \frac{60\ juta}{100\ juta} = 0{,}6\ atau\ 60\%$$

This simulation model can help visualise LGD by considering various collateral value scenarios.

**Debt to Income Ratio (DTI)**

Debt to Income (DTI) is a ratio used to radiate an individual or entity's ability to repay debt based on their monthly income. DTI is calculated by dividing total monthly debt repayments by total monthly income, then multiplying by 100 to get the value in percentage form:

$$D\ saya = \left(\frac{Total\ Utang\ Bulanan}{Total\ Pendapatan\ Bulanan}\right) \times 100$$

For example, if someone has a total monthly debt of Rp5 million and a monthly income of Rp20 million:

$$D\ saya = \left(\frac{5\ juta}{20\ juta}\right) \times 100 = 25\%$$

The ideal DTI ratio is usually below 36%.

**Loan to Value Ratio (LTV)**

Loan to Value (LTV) is a ratio used to determine the proportion of the loan to the value of the secured asset. LTV is often used in property financing to assess credit risk; the higher the LTV, the greater the risk to the lender if the debtor defaults on the loan. For example, if a debtor wants to borrow Rp800 million to buy a property worth Rp1 billion, the LTV is:

$$LTV = \frac{Jumlah\ Pinjaman}{Nilai\ Properti} = \frac{800\ juta}{1\ miliar} = 0{,}8\ atau\ 80\%$$

**Credit Card Borrowing Cost (CCBC)**

Credit card borrowing costs (Credit Card Borrowing Costs - CCBC) include all costs associated with using a credit card, including interest and annual fees. CCBC can affect a pemb's decision to use a credit card and potentially impact credit risk if a pemb is unable to manage their payments properly.

**Risk Index Model (RIM)**

Risk Index Model (RIM) is a risk analysis tool used to assess potential risks in a loan portfolio. RIM considers various risk factors such as borrower profile, loan type, and economic conditions to provide a comprehensive assessment of the likelihood of default.

**Macroeconomic Factors Affecting Credit**

The macroeconomic environment has a significant impact on the banking sector.FestićandBekő(2008) state that exposure to macroeconomic risk is a component of systemic risk that affects the productivity of the banking sector. An increase in aggregate demand that is more economically sound may lead to an increase in macroeconomic risk as a result of increased lending to businesses and homes.

### Interest Rate

For banks, interest rates are the price of the commodity (money or cash) being sold. The determination of interest rates in Indonesia is based on the BI Rate. The BI Board of Governors is responsible for this, and it is implemented monthly through the use of liquidity in the currency market.

### Exchange Rate

The exchange rate or foreign exchange rate is defined as the amount of domestic money needed to obtain one unit of foreign currency. Economists distinguish between nominal and real exchange rates; the nominal rate is the relative price of the two countries' currencies, while the real rate is the relative price of the two countries' goods.

## RESEARCH METHOD

### Research Approach

This study employs a qualitative approach to analyze the effectiveness of macroprudential indicators in reducing credit risk within the banking sector. This approach is chosen as it allows the researcher to delve deeply into the experiences, perceptions, and practices of stakeholders in the banking sector.

### Research Design

The design of this research is exploratory and descriptive, aiming to:

- Identify and understand how macroprudential indicators are applied in the banking sector.
- Analyze the impact of these policies on credit risk management.

### Data Collection Techniques

1. **Literature Review:**

The researcher will conduct a comprehensive literature review to gather information from various relevant sources, including:

- Books and academic articles discussing the theory and practice of macroprudential indicators.

- Annual reports from banks and official publications from Bank Indonesia regarding macroprudential policies.
- Journal articles and previous studies examining the relationship between macroprudential indicators and credit risk.

The focus of the literature review will include critical analyses of:

- The effectiveness of various macroprudential indicators that have been implemented in Indonesia and other countries.
- The impact of macroprudential policies on financial stability and the reduction of credit risk.

2. **Policy Documentation:**

Collection of secondary data from relevant policy documents, including:

- Macroprudential policies issued by Bank Indonesia.
- Guidelines and regulations related to credit risk management in the banking sector.
- These documents will be analyzed to provide historical context and current developments regarding macroprudential policies.

## RESULT AND DISCUSSION

Macroprudential policies play an important role in reducing credit risk in the banking sector. Instruments such as loan-to-value (LTV) ratios, debt-to-income (DTI) ratios, and countercyclical capital buffers (CCBs) are designed to maintain financial system stability by minimising possible losses due to credit bottlenecks. For example, the LTV ratio limits the loan amount based on a certain percentage of the value of collateral, such as property. The purpose of this instrument is to ensure that borrowers have sufficient equity in the assets they guarantee, thereby reducing the risk of default. Research by Cerutti et al. (2017) shows that the implementation of LTV is effective in suppressing the growth of high-risk loans, especially during periods of rapid property price increases (Claessens, Ghosh, & Mihet, 2013). By setting limits on LTV, banks can reduce the likelihood of defaults as lenders are incentivised to maintain the value of collateralised assets.

On the other hand, the DTI ratio sets the maximum debt limit that individuals can have compared to their income. This policy aims to ensure that lenders have the

capacity to repay their debts. Kuttner and Shim (2016) found that DTI policies contribute to curbing unhealthy credit growth, particularly in consumer credit sectors such as housing and vehicles. By limiting the proportion of debt to income, banks can encourage more responsible lending practices and minimise the risk of future defaults.

Countercyclical capital buffers (CCB) are also an important instrument in macroprudential policy. CCBs are designed to increase banks' resilience to economic shocks by requiring banks to hold deposits during periods of economic expansion and low credit growth (Drehmann & Gambacorta, 2012). CCB serves as a safety net that can be used to absorb losses during economic downturns, thus helping to maintain bank solvency and liquidity (Aiyar et al., 2014). Research by Jiménez et al. (2017) shows that the implementation of CCB can support credit growth during times of economic expansion and provide support in times of crisis, thereby improving the stability of the banking system globally.

However, the implementation of macroprudential policies is not without challenges. One of the main challenges is the time lag between policy implementation and its impact on the banking sector and the economy as a whole. Changes in creditor and debtor behaviour do not always occur immediately after policies are implemented (Cerutti et al., 2017). In addition, there is potential for regulatory evasion where banks or other financial institutions may seek ways to circumvent policy restrictions. Examples include offshore lending or the use of financial products that are not strictly regulated by existing policies (Claessens et al., 2013).

To improve the effectiveness of macroprudential policies, it is suggested that a more adaptive approach be adopted so that policies can quickly adjust to changing economic conditions (Drehmann & Gambacorta, 2012). Adjusting loan terms based on real estate market dynamics or changes in credit conditions can help reduce risk (Kuttner & Shim, 2016). In addition, better coordination between macroprudential and monetary policies is needed so that both policies support each other in achieving financial stability objectives.

Overall, while instruments such as LTV, DTI, and CCB have proven effective in assessing credit risk and strengthening the banking sector, additional efforts are needed to address the challenges. With flexible budgeting, more effective coordination with monetary policy, and regular evaluation of the instruments used, it is expected that credit risk can be effectively mitigated and financial system stability can be maintained amidst fluctuating economic conditions.

## CONCLUSION

Macroprudential policies play an important role in reducing credit risk in the banking sector, especially in the context of economic instability caused by credit *boom-bust* cycles. Policy instruments *such as loan-to-value (LTV) ratios, debt-to-income (DTI) ratios*, and *countercyclical capital buffers (CCB )* have proven effective in suppressing credit risk, especially in the housing sector. LTV and DTI have proven to be very effective instruments to control excessive housing loan growth, which can trigger systemic risk. The CCB also helps banks maintain their capital resilience in the face of turbulent economic cycles, by providing an extra capital cushion during periods of credit expansion.

However, the success of macroprudential policies depends on proper implementation, including accurate timing of implementation, as well as cross-border coordination to address risks that are global in nature. Challenges such as time lags and potential regulatory evasion call for closer monitoring and continuous evaluation of policy effectiveness.

Overall, macroprudential policy cannot stand alone as a single solution, but needs to be integrated with complementary monetary and supervisory policies to ensure overall financial stability. The development of more appropriate instruments as well as, improvements in international coordination are also key in enhancing the effectiveness of this policy in the future.

## REFERENCE

(2013). *Key aspects of macroprudential policy*. *IMF Policy Paper*.

Adrian, T., & Shin, H. S. (2010). "Liquidity and Leverage." Financial Stability Review, 14, 1-7.

Aiyar, S., Calomiris, C. W., & Wieladek, T. (2014). Does macro-prudential regulation leak? Evidence from a UK policy experiment. _Journal of Money, Credit and Banking_, 46(s1), 181-214.

Aiyar, S., Calomiris, C. W., & Wieladek, T. (2014). How does credit supply respond to monetary policy and bank minimum capital requirements?. *European Economic Review*, 76, 151-167.

Akinci, O., & Olmstead-Rumsey, J. (2018). *How effective are macroprudential policies? An empirical investigation*. *Journal of Financial Intermediation*, 33, 33-57.

Anggitasari, A. A. 2013. Hubungan Simultan Antara Capital Buffer dan Risiko. Skripsi. Semarang: Universitas Diponegoro.

Borio, C. (2014). "The Financial Cycle and Macroeconomics: What Have We Learned?" Journal of Banking Regulation, 15(3), 175-198.

Bruno, Valentina dan Hyun Song Shin. 2013. *Assessing Macroprudential Policies: Case of Korea. Prepared for the Symposium Issue of the Scandinavian Journal of Economics on Capital Flow*

Cerutti, E., Claessens, S., & Laeven, L. (2017). The use and effectiveness of macroprudential policies: New evidence. _Journal of Financial Stability_, 28, 203-224.

Claessens, S., Ghosh, S. R., & Mihet, R. (2013). Macro-prudential policies to mitigate financial system vulnerabilities. _Journal of International Money and Finance_, 39, 153-185.

Crowe, C., Dell'Ariccia, G., Igan, D., & Rabanal, P. (2013). _How to deal with real estate booms: Lessons from country experiences_. _Journal of Financial Stability_, 9(3), 300-319.

Drehmann, M., & Gambacorta, L. (2012). The effects of countercyclical capital buffers on bank lending. *Bank for International Settlements Quarterly Review*.

European Systemic Risk Board (ESRB). (2014). _Recommendation on guidance for setting countercyclical capital buffers_. _ESRB/2014/1_.

Festic, M. dan Beko, J. 2008. The Banking Sector and Macroeconomic Performance in Central European Economies. Czech Jornal of Economics and Finance. No. 58, Vol. 3-4, pp. 131-151.

Goodhart, C. (2011). *The Basel Committee on Banking Supervision: a history of the early years 1974–1997. Cambridge University Press.*

Greuning, H. van, & Bratanovic, S. B. (2009). *Analyzing banking risk: A Framework f or Assessing Corporate Governance and Financial Risk. The World Bank.*

Haryanto, Sugeng. 2015. Determinan Capital Buffer: Kajian Empirik Industri Perbankan Nasional. Malang: Universitas Merdeka Malang.

Huang, R., & Ratnovski, L. (2011). "The Dark Side of Bank Wholesale Funding." Journal of Financial Stability, 7(3), 196-202.

Jiménez, G., Ongena, S., Peydró, J. L., & Saurina, J. (2017). _Macroprudential policy, countercyclical bank capital buffers, and credit supply: Evidence from the Spanish dynamic provisioning experiments_. _Journal of Political Economy_, 125(6), 2126-2177.

Kuttner, K. N., & Shim, I. (2016). _Can non-interest rate policies stabilize housing markets? Evidence from a panel of 57 economies_. _Journal of Financial Stability_, 26, 31-44.

Lim, C. et al. (2011). _Macroprudential policy: What instruments and how to use them? Lessons from country experiences_. _IMF Working Paper_, WP/11/238.

Lim, C. H., Columba, F., Costa, A., Kongsamut, P., Otani, A., Saiyid, M., Wezel, T., & Wu, X. (2011). Macroprudential policy: What instruments and how to use them? Lessons from country experiences. _IMF Working Paper_, WP/11/238.

Mankiw, N. Gregory. 2010. Teori Makroekonomi I, Edisi Kelima. Jakarta : Erlangga.

Mishkin, F.S., 2006, Ekonomi Uang, Perbankan, dan Pasar Keuangan, Terjemahan Soelistyaningsih, edisi 8, Salemba Empat, Jakarta.

Purnawan, E.M dan Nasir, A.M. 2015. The Role of Macroprudential Policy to Manage Exchange Rate Volatility, Excess Banking Liquidity and Credits. Buletin Ekonomi Moneter dan Perbankan, Volume 18, Nomor 1.

Reinhardt, D., & Sowerbutts, R. (2015). Regulatory arbitrage in action: Evidence from banking flows and macroprudential policy. _Bank of England Working Paper_, No. 546.

Shim, J. (2013). _Bank capital buffer and portfolio risk: The influence of business cycle and revenue diversification_. _Journal of Banking & Finance_, 37(3), 761-772.

Swaningrum, Ayu, dan Hariwan, Peggy. 2014. Evaluasi Efektifitas Kebijakan Makroprudensial Dalam Mengurangi Risiko Sistemik Di Indonesia. 3 rd Economics & BussinessResearch Festival.

Turner, A. (2016). "Between Debt and the Devil: Money, Credit, and Fixing Global Finance." Princeton University Press.

Utari, Diah dan Arimurti, Trinil. 2012. A Macro-Prudential Assessment For Indonesia. Bank Indonesia.

Wong, Ying, dan Campbell, Michael, 2010, “Financial Ratios and Prediction of Bankrupty: The Ohlson Model Applied to Chinese Publicly Traded Companies”, Journal of Organizational, Leadership and Business:1-15.