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The Role of Macroprudential Policy Instruments on Credit Distribution in Indonesia

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Abstract

One of the objectives of the macroprudential policy instrument is to reduce the procyclicality of bank credit growth. This study aims to analyze the Bank Indonesia macroprudential policy in controlling property loans. The research variables consist of independent variables, namely loan to value (LTV) as dummy variables, consumption loan interest rates, GDP and LTV as interaction variables with consumer loans and the dependent variable, namely property loans. The research method uses panel data regression analysis. The data used in this study are secondary data for the period 2009 - 2018. The results show that the fixed effect model is the right model for analyzing whether macroprudential policy instruments (LTV) are able to control property credit.

Keywords: Macroprudential, Property Loans, Loan to Value, Proxycyclicity, GDP

1. Introduction

The global economic and financial crisis teaches that macroeconomic stability is not only possible by maintaining low and stable inflation and a stable exchange rate and it supports Indonesia's international trade. This is because macroeconomic instability increasingly originated from the disruption of the balance that occurs in the financial sector (Bank Indonesia, 2014). The crisis that occurred in the United States in 2008, and then spread to various countries in the world shows that instability in the financial sector has a serious impact on the real sector (Agung, 2010).

Based on the 2018 Indonesian Economic Report, the momentum of Indonesia's economic recovery continued in 2018. Economic growth in 2018 was recorded at 5.17%, an increase compared to the previous year's growth of 5.07% and was the highest growth since 2013. In general, the performance showed that the Indonesian economy remains solid, considering that at the same time world economic growth in 2018 is on a slowing trend and global uncertainties are on the rise. The increase in economic growth in 2018 is inseparable from the positive impact of the policy mix adopted by Bank Indonesia and the Government in responding to global uncertainty. On the one hand, monetary policy responses that are pre-emptive, front-loading, and ahead of the curve to maintain economic stability, especially the exchange rate, as well as the government's commitment to maintain the prospect of scale sustainability, give confidence to economic actors to expand their businesses. On the other hand, accommodative policy directions from central-regional fiscal policies, including spending on infrastructure

projects, financial market deepening policies, macroprudential policies, payment system policies, and structural policies provide stimulus for economic activity. The implementation of these policies, in turn, encourages continued business activity and increased economic growth (Indonesian Economic Report, 2018).

Macroprudential policy has long been an integral part of Bank Indonesia policy. The development of macroprudential policy at the international level has been relatively new and has been widely discussed in recent times. The term macroprudential policy has only come to the forefront and had become a concern since the 2008 global financial crisis. However, the application of macroprudential policy instruments has been carried out in various countries to address specific aspects of systemic risk without calling it a macroprudential policy (Unsal, 2011). Basically the implementation of macroprudential policy has to consider several principles, namely (1) macroprudential policy is not a substitute for monetary policy, but rather complementary to monetary policy (Beau et al., 2012; Hallet et al., 2011; Hanson et.al, 2005); (2) macroprudential policy measures must have clear targets, for example to limit short-term capital flows and limit credit to the property sector (Bank of England, 2009, Unsal, 2011), (3) macroprudential policy must be implemented effectively (Agung, 2010, Nicolo dan Lev, 2012). The problem that occurs in the banking world, from the four principles in the implementation of macroprudential policy, is the second principle, which is to limit credit to the property sector. This is due to the high demand for property sector loans that can disrupt the financial system's stability, encourage high-interest rates on bad loans, and slow economic growth. Indonesia pursued an accommodative macroprudential policy to maintain the momentum of economic growth, while consistently maintaining financial system stability. Kannan and Alasdair (2012) analyzed monetary and macroprudential policy rules in a model with house price booms. Using a dynamic stochastic general equilibrium (DSGE) model with housing, this paper shows that strong monetary reactions to accelerating mechanisms that push up credit growth and house prices can help macroeconomic stability. In addition, using a macroprudential instrument specifically designed to dampen credit market cycles would also provide stabilization benefits when an economy faces financial sector or housing demand shocks. However, the optimal macroprudential rule under productivity shocks is not to intervene. Therefore, according to this research, it is crucial to understand the source of house price booms for the design of monetary and macroprudential policy.

One of the macroprudential policy instruments relating to controlling home ownership loans and property-backed consumption loans is the loan to value (LTV) policy. In Islamic banking, the term loan to value is better known as financing to value. LTV ratio is the ratio between the value of credit that can be given by the collateral value in the form of property at the time of granting credit based on the last assessment (Bank Indonesia Circular Letter, No. 15/40/DKMP). The purpose of the LTV policy is to anticipate or prevent the emergence of bad credit (creditors default) which if left unchecked will affect the economic stability, prevent price increases that do not reflect the actual prices, better known as economic bubbles (Saraswati, 2014).

Saputra (2016) analyzed macroprudential policy instruments in mitigating credit risk in Indonesia using credit growth variables as the dependent variable, BI Rate, GDP, real exchange rate, Capital Buffer, GWMLDR (reserve requirement) as independent variables. Suriani (2016) conducted macroprudential policy analysis determined by Bank Indonesia through the Loan to Value (LTV), Loan to Deposit Ratio (LDR) instruments for commercial bank credit in Aceh Province, as the controlling variable is GDP. Tayler and Ziberman (2016) studied the role of macroprudentials related to bank capital regulation and monetary policy in channel model borrowing costs with endogenous financial friction, driven by credit risk, bank losses and bank capital costs in the UK. This friction causes a financial accelerator mechanism and motivates the examination of macroprudential instruments. After credit shocks, countercyclical regulation is more effective than monetary policy in promoting price, financial and macroeconomic stability. When supply shocks occur, merging macroprudential regulations with strengthening the anti-inflation policy stance will be more optimal. This finding emphasizes the importance of the Basel III agreement in reducing the output-inflation trade-off faced by the central bank, and raises doubts about the conventional (and unconventional) desires of the Taylor government during a period of financial difficulties. Nuryana (2017) examine the assessment of the effectiveness of macroprudential instruments in reducing bank credit risk in Indonesia. The results showed that simultaneous Capital Buffer and Reserves Requirement (GWM) LDR significantly influence credit risk. Partially Capital

Buffer has an effect on credit risk, while the LDR GWM has no effect on credit risk. Dana (2018) studied how to evaluate macro-prudential policy in mitigating risk on procyclical credit growth with a registry data approach. Structural Vector Autoregression (SVAR) analysis method is used to evaluate macro-prudential policy in influencing credit growth. The results showed that LTV instruments can reduce credit growth but not to procyclical mitigation. Dissimilar results in the implementation of CCB and GWM + LDR instruments are capable of procyclical credit mitigation. Policies that can be implemented by the central bank are the establishment of early warning system in macro-prudential policy as well as strengthening of Countercyclical Buffer (CCB), Loan to Value (LTV) instruments and Minimum Reserve Requirement + Loan Funding Ratio (GWM + LFR) in capturing systemic risks from various sources which further strengthens the assessment and surveillance.

The purpose of this study is to find the right model to analyze the role of macroprudential policy and analyze the effect of macroprudential policy on the distribution of property loans so as to explain the role of macroprudential policy. This study adopted the Ardely and Syofyan research model (2016), but the research period was expanded from 2009 to 2018.

2. Method

The data in this study are secondary data from 4 bank groups namely state-owned banks, regional government banks, national private banks and foreign banks or mixed banks with a 10-year research period, 2009-2018. The dependent variable of this study refers to the research of Ardely and Syofriza Syofyan (2016), namely KPR and KPA property loans distributed from 4 groups of banks, namely state banks, regional government banks, national private banks and foreign banks or mixed banks. The variables of this study include:

1. KPR and KPA property loans distributed from 4 groups of banks, property loans, namely long-term loans provided by financial institutions, including banks to debtors to build or own a house on a land with collateral certificate of ownership of the house and the land itself
2. Loan to Value (LTV) Policy, LTV Policy is one of Bank Indonesia's macroprudential policy instruments aimed at controlling property loans. In this study, LTV policy variables will be in the form of dummy variables, before and after this policy is applied, referring to Ardely and Syofriza Syofyan (2016). Dummy 0 shows the time from before 2012, while dummy 1 is from 2012 to 2018.
3. Consumption Loan Interest Rates (CLIR), and consumption credit interest rates, which are payments for the amount of property loans provided by banks. Consumption credit data in this study is in the form of percentage applied by 4 groups of banks
4. Gross Domestic Product (GDP), Gross Domestic Product is one indicator to measure the country's economic growth. The GDP used in this study is GDP with a 2010 base year.
5. The variable of LTV and CLIR interaction, The variable of LTV and CLIR interaction in this study is the multiplication between LTV and CLIR during the data processing stage

Global economic conditions that are still experiencing pressure due to the crisis confronted the Indonesian economy with some minor challenges in 2009. Although slowing compared to 2008, economic growth in 2009 could reach 4.5%, the third-highest after China and India. (Bank Indonesia, 2009). This is the reason he chose 2009 as the initial year of research. The model used in this study adopted a model from Ardely and Syofriza Syofyan (2016) using dummy variables, as seen below:

$$Y = \beta_0 + \beta_1.LTV - \beta_2.CLIR + \beta_3.GDP - \beta_4LTV*CLIR + e$$

Note:

$Y =$ property loans KPR and KPA; $CLIR =$ Consumption Credit Interest rates

$\beta_0 =$ constanta; $GDP =$ Gros Domestic Product

$\beta_1, \beta_2, \beta_3, \beta_4 =$ regression coefficient; $LTV =$ Loan to Value dummy variable

$LTV*CCIR =$ Loan to Value interaction variables and consumption credit interest rates

$e =$ residual/error

The estimation method in this study uses panel data regression. The initial step in processing data in this study is to test the classical assumptions, which aim to ensure that the model obtained meets the basic assumptions in the

regression analysis that includes the assumption of normality, no autocorrelation, no multicollinearity and no heteroscedasticity. The next test is the test using the Mackinnon, White and Davidson (MWD) method to determine whether the model is linear or log-linear. The next is to estimate using Common Effects, Fixed Effects and Random Effects. The selection of models between Common Effect and Fixed Effect is done through the Chow test or likelihood ratio test. The next process of selecting a model between Fixed Effect and Random Effect is done through the Hausmann test.

3. Results and Discussion

In the initial part of the discussion, the variable conditions used in this study were elaborated during the study period, from 2009 to 2018. Based on 2018 Indonesian Banking Statistics, the largest amount of nominal credit extended to the public was reached by state-owned banks, namely Rp. 2,244,788 billion. The lowest amount of credit, carried out by the Regional Development Bank (BPD) group, was Rp. 426,051 billion. Easing of LTV / FTV KPR covered three main aspects, namely easing the amount of LTV / FTV ratio for the first credit facility, easing of indent facilities, and easing payment terms. After easing the LTV / FTV provisions for mortgages in August 2018, mortgage loan growth remained high. During 2018, mortgages grew by 12.7%, mainly supported by the acceleration of growth in type of at / apartment type mortgages above 70m². Credit growth for the whole 2009-2018 can be seen in Figure 1. below.

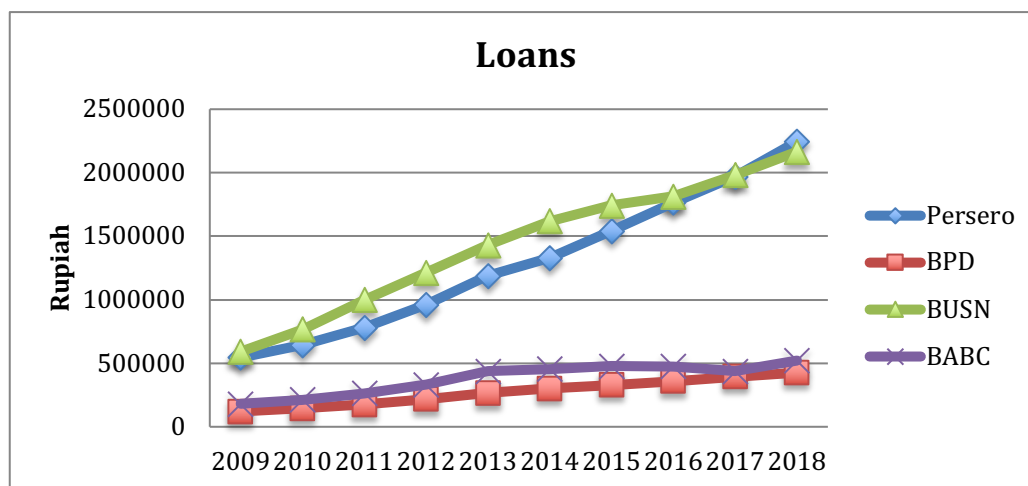


Figure 1. Growth in property loans in 4 Bank Groups for the period 2009-2018

GDP growth from 2009 to 2011 as seen in Figure 2, was relatively not too sharp, which is 2178851 billion, 2314459 billion and 2464677 billion respectively. GDP in 2012 experienced a sharp increase. Based on the 2012 Indonesian economic report, amid a slowing world economy, Indonesia's economy in 2012 grew quite high by 6.2%, mainly supported by domestic demand (Bank Indonesia, 2012). The achievement of national economic growth in 2012 was still supported by the economic contribution of the Java region and the Jakarta region which remained large, accompanied by the economic contribution of the Eastern Indonesia Region (KTI) which had increased. Until 2018, GDP growth had shown an increasing trend.

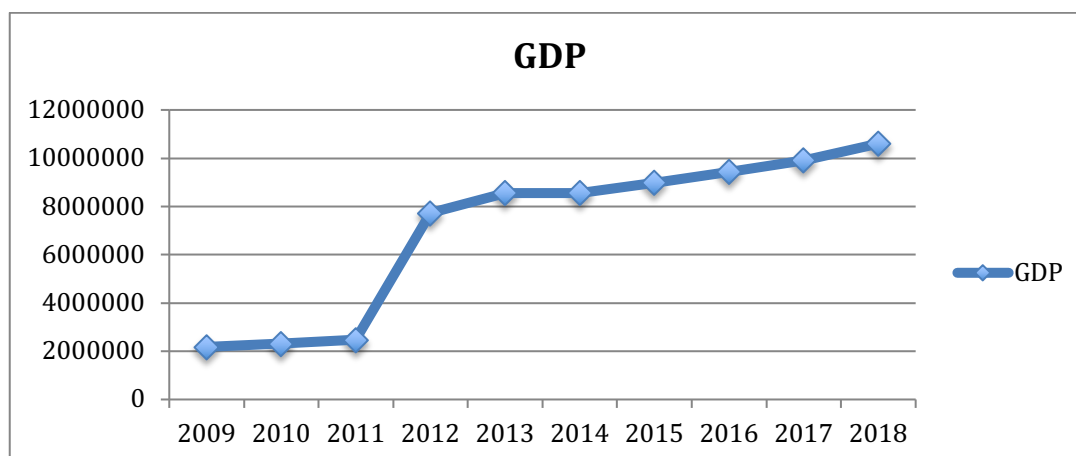


Figure 2. GDP growth for the period 2009-2018

The link between GDP and credit is described as follows. A decline in GDP is a sign of an economic recession, so the demand for goods and services decreases. This decrease will cause a decrease in demand for credit, which in turn results in an increase in bank interest rates. During expansive conditions, GDP growth will increase, while interest rates tend to decrease. A decrease in interest rates causes demand for credit to increase, especially for loans that are of concern to the public, namely consumer loans. The increase in lending causes an increase in real credit moving procyclically and growing relatively faster (Ardely dan Syofyan, 2016).

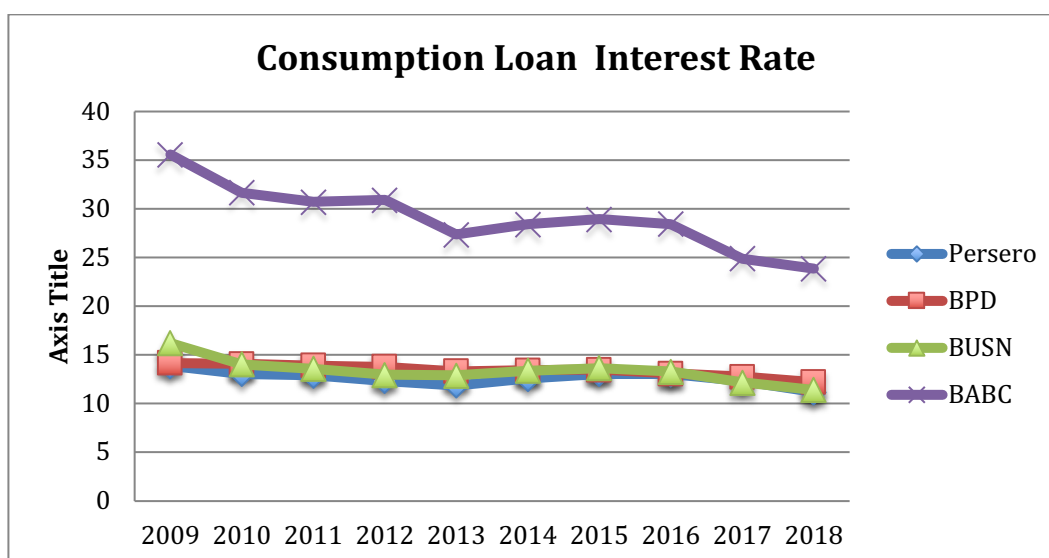


Figure 3. Growth in Consumption Loan Interest Rates for the period 2009-2018

As shown in Figure 3. CLIR for foreign and joint venture banks is much higher than state-owned banks, regional development banks (BPD) and national private commercial banks (BUSN) as shown in Figure 3. CLIR for state-owned banks, BPD and BUSN are in the range of 11% -16%. CLIR of 16% occurred in 2009 by BUSN. The condition of the BUSN bank at that time showed that BUSN was trying to maximize lending and was optimistic about the condition of the Indonesian economy after the global crisis that occurred in 2008.

Before estimating, an important step to take is to test the classical assumptions as a condition for panel data regression. Based on the normality test that has been done, it can be concluded that the data of the amount of credit channeled, GDP, and consumption credit interest rates have to meet the normality assumption. The next step is a multicollinearity test conducted to find out whether or not there are any deviations from the classical assumptions of multicollinearity. The test results show that the tolerance value of the three variables is more than 0.10 and the VIF value is less than 10. Therefore there is no multicollinearity problem in the regression model. Heteroscedasticity test is used to test whether in the regression model there is an unequal variance of the

residuals for all observations. Results from the heteroscedasticity test can be seen from plot graphs between variables with residuals. If there are certain patterns on scatterplots (wavy, widened, and then narrowed), then heteroscedasticity is present. If there are no clear patterns, but there are spread points above and below zero on the Y axis, then heteroscedasticity has not occurred. If the autocorrelation test results of Durbin Watson (DW) values is 1.547, and the DW value is between -2 and +2 then it shows that autocorrelation did not occur.

Panel data is best for detecting and measuring impacts that simply cannot be seen in pure cross-section or pure time-series data (Gujarati and Dawn C. Porter, 2012). Before panel data regression, the data were tested using the MacKinnon White and Davidson (MWD) method. The first step is to form a new regression to get the residual value, and store the residual value (Res1 = resid). The next process is to form a new variable F1 = Y - Res1. Then it is the linear log regression model. This has also to obtain the residual value (Res2 = resid) and a new variable F2 = log Y - Res2 is formed. Following is to create a new variable that needs to be created is Z1 = log F1 - F2 and Z2 = antilog (F2 - F1). Next is to perform regression by entering the variable Z1 in the linear equation regression and Z2 in the log-linear regression equation. Regression results show that both linear and log-linear models show equally good results, with a high coefficient of determination R² for each equation, 0.890 and 0.897, respectively. In selecting the best model in the panel data analysis model begins by choosing between the estimation model using the Common Effect Model or the Fixed Effect Model using the Chow test (Widarjono, 2013). The following equation is generated from the estimation of the common effect model:

$$Y = 1398 \text{ LTV} - 11082.31 \text{ CLIR} + 0.062 \text{ GDP} + 62862 \text{ LTV} * \text{CLIR} + e$$

$$P\text{-value} = 0.0007 \quad 0.1906 \quad 0.0594 \quad 0.0012$$

R-Squared determination coefficient for the common effect model is 0.376. Variables that affect property loans are LTV and LTV interaction variables and consumption credit interest rates. The next step is to make an estimate using the fixed effect model that results in the following equation and p value:

$$Y = 300882 + 7398.3 \text{ LTV} - 1208.70 \text{ CLIR} + 0.0553 \text{ GDP} + 62862 \text{ LTV} * \text{CLIR} + e$$

$$P \text{ value} = 0.5800 \quad 0.0042 \quad 0.9658 \quad 0.0010 \quad 0.0355$$

The coefficient of determination of R-squared for fixed-effect models is 0.890. Based on the results from the Chow test, a probability level of 0.00 is obtained which is smaller than 0.05. Therefore the right model is the Fixed Effect model. The next step is to conduct a Hausman test to choose between Fixed Effect and Random Effect models. After the Hausman test, a chi-square probability value of 0.00 was obtained. It can be concluded that the right model for this study is the Fixed Effect model. These results are not in line with the study by Ardely and Syofa (2016). The results from processing with the fixed effect method obtained a value of 0.890. This shows the ability of all independent variables namely the LTV variable, consumption credit interest rates, GDP and LTV interaction variables with consumption credit interest rates in explaining the change of the dependent variable namely KPR and KPA property loans in Indonesia by 89%, while the remaining 11% explained by other independent variables are not included in the model. KPR type of apartment has the opportunity to grow high, among others. It is influenced by factors like limited land and practical lifestyle of the community, especially in big cities.

The accommodative macroprudential policy contributed to an increase in bank credit that grew by 11.8%, the highest in the last 4 years. The increase in credit was mainly contributed by loans that supported the production process in the form of working capital loans and investment loans that increased by 12.3%. The direction of macroprudential policy is pursued through various tools. Loan to Value or Financing to Value (LTV / FTV) ratios for Housing Loans (KPR) are relaxed to encourage growth through the property sector. This has a large multiplier effect on the economy. The role of micro, small and medium enterprises (MSMEs) in driving the economy is also increasingly encouraged by increasing the MSME credit ratio target from 15% to 20% in 2018 (Bank Indonesia, 2018).

4. Conclusion

In this study, the most appropriate model in analyzing the role of macroprudential policies in the distribution of property loans in this study is the fixed effect model. Based on the results of panel data regression, it can be seen that LTV as a proxy for macroprudential policy, GDP, CLIR and the interaction of LTV with GDP affects property loans. Based on data analysis, macroprudential policy through the LTV instrument implemented in June 2012 played a role in controlling KPR and KPA property loans in Indonesia. In this study the limitation is the Loan to Value (LTV) variable. This is only in the form of a dummy variable, not in the form of total LTV. Therefore the description of the condition of LTV is limited.

References

- Agung, J. (2010). Mengintegrasikan kebijakaxn moneter dan makroprudensial: menuju paradigma baru kebijakan moneter di Indonesia pasca krisis global. *Working Paper*, No. 07, Bank Indonesia.
- Ardely, N. P. dan Syofriza S. (2016). Efektivitas kebijakan makroprudensial Bank Indonesia. *Media Ekonomi* , 24(1), 49-62.
- Bank Indonesia. (2009). Laporan perekonomian Indonesia 2009. Jakarta: Bank Indonesia.
- _____. (2012). Kajian stabilitas keuangan No. 19, September 2012. Jakarta: Bank Indonesia.
- _____. (2014). Laporan perekonomian Indonesia 2014. Jakarta: Bank Indonesia.
- _____. (2018). Laporan perekonomian Indonesia 2018. Jakarta: Bank Indonesia.
- Bank of England. (2009). The role of macroprudential policy. A Discussion Paper.
- Beau, D., Laurent C. dan Benoit M. (2012). Macro-prudential policy and the conduct of monetary policy.” *Working Papers 390*, Banque de France.
- Bole, Velimir, Janez Prasnikar, dan Domen Trobec. (2014). Policy measures in the deleveraging process: a macroprudential evaluation. *Journal of Policy Modeling* 36. 410-432.
- Gujarati, D.N. dan Porter, D.C. (2012). *Dasar-dasar ekonometrika buku 2 Edisi 5*. Mc-Graw Hill Salemba Empat, Jakarta.
- Kannan, P., Rabanal P., and Scott, Alasdair M. (2012). Monetary and Macroprudential policy rules in a model with house price booms. *The B.E. Journal of Macroeconomics*, 12(1), 1-42.
- Nicolo, G. D., Favara G., and Ratnovski, L. (2012). Externalities and macroprudential Policy. *IMF Staff Discussion Note*, Research Department, International Monetary Fund.
- Nuryana, I. (2017). Assessment efektivitas instrumen makroprudensial dalam mengurangi risiko kredit kredit perbankan di Indonesia (studi pada perbankan go public periode 2012-2015). *Jurnal Ilmu Manajemen dan Akuntansi*, 5(1). 55-68.
- Saputra, M. J. (2016). Assessment Instrumen Kebijakan Makroprudensial dalam Memitigasi Risiko Kredit di Indonesia: Analisis Data Panel. *Thesis*, Faculty of Economics and Business, Universitas Lampung.
- Taylor, W.J dan Ziberman, R. (2016). Macroprudential regulation, credit spreads and the role of monetary policy. *Staff Working Paper* No. 599, Bank of England.
- Unsal, D. F. (2011). Capital Flows and Financial Stability: Monetary Policy and Maroprudential. *IMF Working Paper*, WP/11/189
- Widarjono, A. (2013). *Ekonometrika teori dan aplikasi untuk ekonomi dan bisnis*. Edisi Kedua, Fakultas Ekonomi UII, Yogyakarta.