The Impact of Loan to Value Policy and Macroeconomic Variables Towards the Demand of Housing Loans

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Article Info	Abstract
	_____ The purpose of this study is to know and analyze the effect of credit interest rates, inflation, economic growth, loan to deposit ratio, loan to value to housing loan demand in Central Java. The sample of this study is housing loan demand, credit interest rates, inflation, economic growth, loan to deposit ratio, loan to value. The collect data was analyzed using quantitative method. This study used multiple linear regression analysis. The results of this study indicate that the credit interest rates and inflation is negative and significant effect towards housing loan demand in Central Java. Economic growth and loan to deposit ratio of positive and significant effect towards the housing loan in Central Java. Loan to value has no effect towards demand in Central Java.

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INTRODUCING

House is one of the primary needs of the community. Today, the house is not just for residence, the home becomes the benchmark of people's welfare. based on current economic developments and limited land, making housing prices quite high. This situation makes people with low income difficult to own a house. One alternative that can be taken is to seek loans through banking. The economic crisis that occurred in 2008 was driven by a credit bubble turned into a global crisis and has caused economic activity to fall drastically. Therefore, a policy framework needs to be developed to cope with the instability of the financial system, namely macroprudential policy.

The loan to value (LTV) ratio policy aims to mitigate systemic risk that may arise from the growth of housing loan which at that time reached more than 40% and the failure rate of customers to fulfill the obligation which at that time reached almost 10%. Excessive growth in housing loans may encourage an increase in property asset prices that do not reflect the actual price (bubble), which causes property prices to fall and thoroughly cause the economy to decline until an economic recession occurs.

Housing loan growth in Central Java is slowing down. In June 2013, the growth grew by 11.8%. Then in June 2014 decreased by 6.74%. In June 2015, housing loan growth decreased by 1.8%. While the value of loan that have been disbursed in September 2015 of Rp. 16.84 trillion. After easing, the growth In December 2015 was recorded at 1.5%. While the value of mortgages that have been disbursed in December 2015 of Rp. 17.10 trillion. The growth in December 2015 decreased compared to June 2015 at 1.8%. The decline continued after the relaxation of loan to value policy.

In September 2015, the lending rate was 13.86% higher compared to the previous period of 13.82%. On the other hand, the BI Rate benchmark rate decreased from 7.75% in December 2014 to 7.5% in March 2015. The decline in BI Rate interest rate was not followed by the decline in loan interest rates, but the increase in lending rates. The increase in lending rates was responded to a decline in mortgage growth in Central Java by 1.3% in September 2015 compared to June 2015 at 1.8% and June 2013 and June 2014 at 11.8% and 6.74%, respectively.

In September 2015 inflation in Central Java decreased by 0.15% compared to September 2014 by 0.22%. Inflation in Central Java is in a controlled condition where inflation is below Bank Indonesia's target of ± 4.5%. This was followed by the growth of housing loans in Central Java. Housing loan growth also decreased by 1.3% in September 2015 compared to June 2015 at 1.8% and June 2014 at 6.74%. Housing loans disbursed in September 2015 are recorded at Rp. 16.84 trillion.

Economic growth allegedly contributed to the demand for housing loans in Central Java. Economic growth in June 2013 amounted to 5.59% and mortgage growth in Central Java in June 2013 of 11.8%. The growth of mortgages is declining following the decline of economic growth. Economic growth in June 2014 was 5.03%, housing loan growth in Central Java was 6.74%. Economic growth again declined by 4.67% in June 2015. The growth of mortgages also decreased by 1.8%, the total of housing loan that has been distributed in Central Java amounted to Rp.16, 62 trillion.

The Loan to Deposit Ratio (LDR) is also expected to influence the demand for housing loans in Central Java. Housing loan growth in Central Java in June 2013 was 11.8%, the LDR ratio in June 2013 was 86.8%. The growth of housing loan in Central Java declined in June 2014 by 6.74%, the LDR ratio was 90.25%. The decline in mortgage growth in Central Java again occurred in June 2015. The growth of housing loan in Central Java in June 2015 was 1.8%, while the LDR ratio was 88.46%. The amount of housing loan that has been disbursed in Central Java is Rp. 16.84 trillion.

Based on the background of the above problem, the authors intend to examine the influence of lending rates, inflation, economic growth, loan to deposit ratio, loan to value to the demand for housing loans in Central Java.

RESEARCH METHOD

The type of data used in this study is secondary data that is data that has been collected by data collection agencies and published to the public. The data is sourced from the Central Bureau of Statistics of Central Java, Indonesia Federal Reserves, and the Financial Services Authority, especially in 2008 until 2017. The type of data used is time series data.

Data analysis technique used is multiple linear regression. This analysis includes statistical tests as well as classical assumption tests. The statistical test consists of hypothesis test (t test, F test), determinant coefficient (R2). The classical assumption test consisted of multicollinearity test, heterokedastity test, autocorrelation test, normality test.

The research model in this research as follows

$$Log\ (KPR) = \alpha - \beta_1\ SBDK - \beta_2\ INF + \beta_3\ PE + \beta_4\ LDR + \beta_5\ dummy\ LTV + \varepsilon ....(1)$$

Whereas :

KPR	: Allocation of Mortgage
SBK	: basic rate
INF	: inflation
PE	: economic growth
LDR	: loan to deposit ratio
dummy LTV	: dummy loan to value policy, before is 0 dan and after is1.

RESULTS AND DISCUSSION

Multicollinearity is the existence of a perfect and definite linear relationship between or all the variables that explain from the regression model. Tests on multicollinearity can be done with Client Test that is comparing R2 compound with partial R2.

Table 1. Client Test

Variabel	R^2 parsial	R^2 majemuk	Hasil
SBDK dengan INF,PE,LDR,LTV	0.194931	0,903250	Bebas Multikolinearitas
INF dengan SBDK,PE,LDR,LTV	0.311108	0,903250	Bebas Multikolinearitas
PE dengan SBDK,INF,LDR,LTV	0.285069	0,903250	Bebas Multikolinearitas
LDR dengan SBDK,INF,PE,LTV	0.667842	0,903250	Bebas Multikolinearitas
LTV dengan SBDK,INF,PE,LDR	0.679923	0,903250	Bebas Multikolinearitas

Source: Data processed

From table 1 it is known that R2 is compound> R2 partial (5 R2 partial), ie 0.90325> 0.194931, 0.311108, 0.285069, 0.667842, 0.679923. So based on this client method can be concluded that the model is free from multicollinearity problem.

Heterocedasticity is a deviation of OLS assumptions in the form of impaired variance estimates generated by constantly estimated OLS estimates. In this study heterocedasticity test conducted with white test facility in Eviews program is with White heterocedasticity cross term.

Table 2. Heteroscedasticity test

F-statistic	2.057.596	Prob. F(5,31)	0.0978
Obs*R-squared	9.219.518	Prob. Chi-Square(5)	0.1006
Scaled explained SS	4.804.878	Prob. Chi-Square(5)	0.4402

Source: Data processed

From table 2 above can be seen Prob. Chi-Square 01006> 0.05, it can be concluded that the model is free from heteroscedasticity problems.

Autocorrelation is a state in which confounding factors are one to another interconnected. Tests on autocorrelation

symptoms in this study were performed using the
LM test (Bruesch Godfrey method).

Table 3. Autocorrelation test

F-statistic	1.541.996	Prob. F(2,29)	0.2310
Obs*R-squared	3.556.531	Prob. Chi-Square(2)	0.1689

Source: data processed

From table 3 is known Prob. Chi-Square 0.1689> 0.05, it can be concluded if the model is free from autocorrelation.

The significance test of the influence of the independent variable on the variable through t test will only be valid if the residual we get has a normal distribution. To test the residual of normal distribution in a model hence required normality test. The method used in this study using Jarque-Berra statistical probability test.
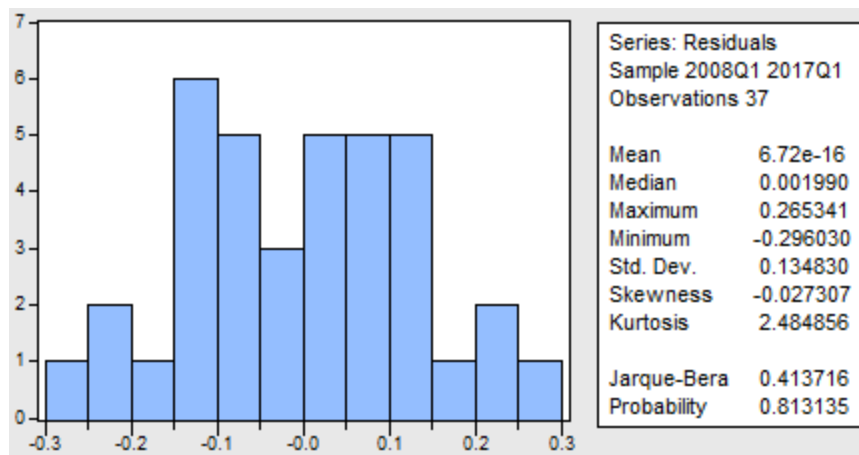

Figure 1. Normality test
Source: Data processed

From result of normality test show that Jarque-Berra statistic probability equal to 0,813135> 0,05. It can be concluded that the residuals in this research model are normally distributed.

The t test basically shows how far the influence of one independent variable individually in explaining the variation of the dependent variable (Kuncoro, 2007).

Table 4. t Test Result

Variabel	t-Statistik	t-Tabel	Probabilitas	Kesimpulan
SBDK	-2,780088	1,684	0,0092	signifikan pada α = 5%
INF	-3,493793	1,684	0,0015	signifikan pada α = 5%
PE	5,673616	1,684	0,0000	signifikan pada α = 5%
LDR	6,957383	1,684	0,0000	signifikan pada α = 5%
LTV	-1,14547	1,684	0,2608	tidak signifikan pada α=5%

Source: data processed

Based on table 4, lending rates, inflation, economic growth, loan to deposit ratio are significant at α = 5%, while loan to value policy relaxation is not significant at α = 5%.

F test use to determine the influence of independent variables together to the dependent variable. According to the result, it is known that F-count = 57.88301 and F-table = 2.45, thus F-count (57.88301)> F-table (2.45). Then the independent variable (base rate of credit, inflation, economic growth, loan to deposit ratio and loan to value variable) together have a significant effect on the demand for housing loan in Central Java.

The determinant coefficient describes how much percentage of the total variation of the dependent variable described by the model. The value of R2 in this research is 0.903250. This means that the demand for housing loans in Central Java can be explained by the variation of the model from the base rate of credit, inflation, economic growth, loan to value ratio (dummy) of 90.32% and the remaining 9.68% other variables outside the model.

Multiple linear regression equation model with Ordinary Least Square approach is used to know the effect of independent variable to dependent variable. Based on regression result using computer program Eviews 6.0. the results obtained are as follows:

Table 5. Regression output

Variabel	Koefisien	Standar Error	t-Statistik	Probabilitas
C	9,644377	0,483013	19,96711	0,0000
SBDK	-0,036172	0,013014	-2,779512	0,0092
INF	-0,036401	0,009048	-4,022877	0,0003
PE	0,275728	0,025747	10,70895	0,0000
LDR	0,038858	0,004689	8,287734	0,0000
LTV	-0,112806	0,056955	-1,180622	0,0566
R-squared			0,958002	
F-Statistik			141,4260	
DW Statistik			1,547938	

Source: data processed

According to the statistical output, the equation as follows:

KPR = 9.644377 - 0.036172 SBDK - 0.036401 INF + 0.275728 PE + 0.038858 LDR - 0.112806 LTV

Estimation results show the interest rate of credit (SBDK) has a negative and significant effect on the real level of 5% with a coefficient of 0.036172. This shows that if the SBDK increases by 1% then the demand for housing loans (mortgage) fell by 0.036172%.

While for inflation (INF) have negative and significant effect on 5% real level with coefficient of 0.036401. This indicates if the INF increases by 1% then the demand for housing loans (mortgages) fell by 0.036401%. The economic growth (PE) has a positive and significant effect on the 5% real level with a coefficient of 0.275728. This shows that if PE rose 1% then demand for credit rose by 0.275728%.

Loan to Deposit Ratio (LDR) has positive and significant effect on 5% real level with coefficient of 0.038858. This indicates if PE rose 1% then demand for credit rose by 0.038858%. Loan to Value (LTV) has negative and insignificant effect on 5% real level with coefficient of 0.112806. This indicates that if LTV is tightened, it will reduce the demand for housing loan (KPR) by 0.112806%.

Influence of Loan Interest Rate on Housing Loan Demand

Based on the test results, the basic lending rate variable has a negative and significant effect on the demand for housing loans. This result is in line with previous research conducted by Budi (2009), Dianria (2015) and Anggraini (2016). This study is in accordance with the classical

theory which states that there is a negative relationship between demand for credit and lending rates. If lending rates are high then lending money is more expensive, resulting in lower demand for credit from the public.

The influence of inflation towards housing loan demand

Based on the test results, the inflation variable has a negative and significant effect on the demand for housing loans. This result is in line with previous research conducted by Bekmez (2014), Dianria (2015). This study is in accordance with the quantity theory of money. The quantity theory of money explains, when the money supply rises then the prices will increase and cause inflation. While inflation has increased, people's purchasing power decreases and demand for credit decreases. In the event of an increase in inflation, the central bank conducts a contractionary monetary policy such as reducing the money supply. This policy leads to an increase in interest rates. The increase in interest rates, especially lending rates will increase the cost of capital so that ultimately can reduce investment and consumption, especially in the housing sector.

The influence of economic growth toward housing loan demand

Based on the test results, it is found that economic growth has a positive and significant impact on the demand for housing loans in Central Java. This result is in line with previous research conducted by Bekmez (2014) and Anggraini (2016). This research is in accordance with the theory of the development hypothesis which states that the development of the financial sector has an important influence in economic development (Kuncoro, 2009). The higher the credit disbursed in a sector, it will spur economic growth in the sector and ultimately can increase economic growth. Conversely, high economic growth will lead to higher credit demand as well. If the economic condition is less enthusiastic or unstable then credit demand will also decrease.

The influence *Loan to Deposit Ratio* towards housing loan demand

Based on the test results obtained that the loan to deposit ratio has a positive and significant impact on demand for housing loans in Central Java. This result is in line with previous research by Dianria (2015). The results of this study in accordance with the theory of supply that states that the higher the price of an item more and more goods offered. Conversely, the lower the price of an item the less the goods offered. Credit offerings are influenced by the amount of funds collected from the so-called Third Party Funds. The collection of funds by banks is an operational activity in obtaining funds from the community which will be used as provision of funds for lending. The greater the amount of fund raising the greater the amount of credit that can be disbursed.

The influence of Loan to Value towards housing loan demand

Based on the test results, the policy variable loan to value ratio has no significant effect on the demand for housing loans. The findings in this study are in line with Dianria (2015) and Anggraini (2016) research results. Dornbusch and Fisher (2008) argue that monetary policy is more influential on housing loans. This is due to the demand for housing affected by interest rates. Opinions from Dornbusch and Fisher were also reinforced by a statement from Federal Reserves Deputy Director of Policy Makasarrudential Ita Rulina. The stated statement is that the lower lending rate is considered more affecting the growth of mortgage loans than macroprudential policy. Monetary policy is the central bank's action to influence the macroeconomic situation implemented through the money market. The ultimate goal of monetary policy is to maintain and maintain rupiah stability, one of which is reflected in the low and stable rate of inflation. To achieve this objective, Federal reserves sets the interest rate as the main policy instrument to influence economic activity with the ultimate

goal of achieving inflation. changes in the BI Rate affect deposit rates and bank lending rates. If the economy is sluggish, Bank Indonesia can use expansionary monetary policy such as lower interest rates to encourage economic activity. The decline in the BI Rate cuts loan interest rates so that demand for loans from companies and households is increasing (Simorangkir, 2013).

Housing investment theory mentions one important factor that affects housing demand is the availability of credit (especially housing loans). The amount of available credit is affected by the interest rate. In general the credit available for housing comes from savings. Increased interest on bonds, for example, will encourage people to take their savings to buy bonds. As a result, the available funds (credit) for housing is decreasing so that the demand for housing falls. There is a negative relationship between the interest rate and the demand for housing. If the interest rate increases then decrease the amount of available credit. Reduced credit available will decrease the number of houses built. If the number of houses built decreases, then demand for housing loans will decline (Nopirin, 2000).

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CONCLUSION

Based on the results of research and discussion of loan interest rates negatively and significantly affect the demand for housing loans in Central Java. Inflation has a negative and significant impact on demand for housing loans in Central Java. Economic growth has a positive and significant impact on demand for housing loans. Loan to deposit ratio has a positive and significant impact on demand for housing loans. Loan to value has no effect on mortgage demand.

Based on the conclusion of the research result and discussion, the suggestion in this research is for Federal reserves to review macroprudential policy instruments other than loan to value to reduce the systemic risk that may arise due to the growth of mortgage loan.

In addition, Federal reserves is expected to maintain macroeconomic stability by controlling inflation as well as maintaining the benchmark interest rate so that the purchasing power of the community is maintained as well as encouraging domestic economic growth in order to increase housing loan growth. For researchers who want to do further research on loan to value, it is expected to examine the factors that make the loan to value policy does not affect the demand for housing loans in order to illustrate the influence of factors that make the loan to value policy does not affect the demand for credit ownership house in Central Java.

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