Impact of Macroprudential Policy on Demand KPR-FLPP

Retno Febriyastuti Widyawati[1]✉ , [2]Sisti Ujianti, [3]Ermatry Hariani, [4]Andi Lopa Ginting
[1,3]Faculty of Economics and Business, University of Wijaya Kusuma Surabaya
[2]Faculty of Economics and Business, University of Airlangga
[4]Faculty of Economics, Open University

Article Information	Abstract

The need for housing is increasing every year, along with the increase in population. However, the increase in housing reached 11.4 million units is not matched by the availability of housing because there are as many as 1.8 million marriages every year, and they need housing. This results in housing prices getting more expensive every year. Therefore, the government, through macroprudential policies, loosened down payments for house purchases so that there was an increase in housing demand. The purpose is to find out whether the macroprudential policy implemented by BI has an impact on the demand for the KPR-FLPP government program by examining the influence factors of inflation, GRDP, interest rates, and LTV on demand KPR-FLPP (financing housing subsidies to income society low from the government issued by a conventional bank and sharia bank) in East Java Province. This study employed Ordinary Least Squares (OLS) model multiple linear regression and time series from Q1:2010 to Q4:2020 for East Java. The macroeconomic variables applied in this study composed dependent variable is the demand for KPR-FLPP. While the independent variables are inflation, GRDP, interest rates, and LTV, with a dummy variable of 0 before LTV and 1 after the LTV. The study concluded that inflation and GRDP have an important role in the demand for KPR-FLPP. It means that inflation and GRDP raised significantly, causing more demand for KPR-FLPP in East Java. This study is expected to give contribution to East Java Government to policy makers to increase demand for KPR-FLPP in East Java.

INTRODUCTION

The house, which is community's primary needs in daily life, this already has many functions, including as a place to stay only and is considered an investment period long by the community. Housing needs are increasing every year, while the increasing total population the not balanced with the availability of housing (Ganthari and Syafri, 2018). The impact of the increasing of the population every year will have an impact on existing land. The rapid development of society will make the land less and more expensive. The government has taken this as a serious concern and problem. So from that, the government has given subsidies to Income Society Low (MBR) or, with the help of Subsidized Mortgage (FLPP) solutions provided by banks (Ujianti, 2021).

KPR-FLPP is financing housing subsidies to income society low from the government issued by conventional banks and sharia banks. Banks provide credit to low-income households in order for them to purchase or repair a home (Dewi, 2016). Now, mortgage financing is in demand by the public because have schemes or financing flow more easily, there loose credit, and every year houses always increase. Thoughts and reasons are what drive the speculation public more like mortgage financing state this will influence the price of the property so which will push happening price bubble (Sutanto, 2012) because of it is necessary regulation or regulation from government for permanent guard stability economy country macro with apply policy macro in sector finance, one of them namely the Central Bank Indonesia issued policy macroprudential, with the Loan to Value (LTV) instrument. LTV means policy for arranging how many total maximums from financing possible credit distributed or given banking to mark from property when a bank gives credit to consumer or society. The purpose of existence policy this to push the application principle of caution in distribution credit, to minimize and reduce happening risk credit and performance of a bank and, control for minimize enhancement price properties that can result in property price bubble (Muthia, 2019) .

Indonesia already applies LTV policy since in 2012 by 70%. However, since implemented in 2012, the current mortgage growth that experienced drop from 49 percent in Q2:2012 to 39 percent in Q4:2012. The LTV Policy finally experience change with determination of LTV to by 80 percent in 2015:Q3. However, what happened, the easing of the no capable upgrade mortgage growth. Moment it, Q4:2015, mortgage growth only grew 7%. Finally, BI is back to make changes with set LTV easing to 85 percent in Q3:2016. However, impact easing not yet can upgrade mortgage growth, which is currently that only grew 8 percent in Q4:2016. This is necessary assessment of repeat mortgage growth as a consequence of easing LTV policy (Muthia, 2019).

In 2021, BI will make a policy for loosening LTV by 100 percent credit property. That is, all funds that will be used for getting credit property will be borne fully 100% by the bank, or can said consumer only bear 0% (no pay down payment). Policy the apply for all properties, BI also makes policy, for Banks with Non-Performing Loan / Financing (NPL/NPF) less than 5%, credit LTV terms property by 100% for purchase first and second. However, if the NPL/NPF of the Bank is more than 5%, then credit property by 95% for House site and house stack type 21-70 to type more than 70, as well as shop. However, for house site and house stack type under 21, still permanent given LTV/FTV provisions are 100%.

There are several influencing variables KPR-FLPP demand, namely inflation and interest rate. Inflation and interest rate will influence the decision of someone to purchase a house credit. Theory Keynesian explain, the interest rate has a connection unidirectional with offer credit, and interest rate has reciprocal relationship with total demand credit. So, banks as lenders to the public need to be vigilant and careful in deciding to lend funds to consumers. This is because if the bank is not cautious, various systemic risks will be experienced by the bank, resulting in a decline in the bank's performance. Aside from the second variable mentioned above, there are two others that can influence KPR-FLPP demand: GRDP and loan-to-value policies (LTV).

Research conducted by Siravati (2018) shows that credit interest rate, inflation, and loan to value have a negative and significant effect on the demand for housing loans in Central Java; economic growth and loan to deposit have a positive and significant. Siagian (2017) shows that interest rate has a negative and insignificant effect on the demand for home ownership loans, while GRDP has a positive and significant effect on the demand for housing loans in Indonesia for the period 2001-2014. Fitriani et al. (2020) and Nurrahmania & Khoirudin (2022) show that credit interest rates have a negative and insignificant effect, while the gross domestic product has a positive and significant effect on the demand for housing loans in Indonesia.

Anggraini (2016) shows that credit interest rates have a negative and significant effect, and economic growth has a positive and significant effect. Inflation and the LTV dummy variable where 0 before LTV and 1 after LTV have a negative and insignificant effect on the demand for housing loans. Nurpita & Oktavia (2021) show that the population has a positive and significant effect, economic growth has a negative and significant effect, inflation has a negative and insignificant effect on housing loans in Indonesia.

The LTV is a major factor in determining the rate of interest customer pay on mortgages. The LTV ratio is important to debtors as they want to be sure they won't lose money if you can't afford to pay your mortgage. A loan to value (LTV) ratio is calculated by diving loan balance by customer home's appraised value. Its purpose is to provide a comparison between the value of the loan customer are seeking to take out versus the actual value of the customer home. LTV ratio will typically affect the mortgage rate customer able to obtain. If a lender provides a loan worth half the value of the asset, for example, the LTV is 50%. The lender's potential loss increases as the borrower or creditor fails to repay the loan, creating more risk. The main factor that impacts LTV ratios is the amount of the down payment, sales prices, and the appraised value of a property. The lowest LTV ratio is achieved with a higher down payment and a lower sales price.

One goal of LTV policy is to control financial stability and mitigate systematic risk that comes from increasing the prices of poverty. LTV also aim as a macroprudential instrument to promote a balanced and quality banking intermediation function in supporting national economic growth while maintaining financial system stability. The LTV ratio issued by Bank Indonesia (BI) has an influence on home ownership loans to several banks in Indonesia. The types of bank that are believed to be affected by this LTV ratio are Persero Bank, Private Bank, and People's Credit Bank. Actually, Persero Bank, like Bank Mandiri, Bank Negara Indonesia, Bank Rakyat Indonesia, Bank Tabungan Negara and Bank Syariah Indonesia, have the highest mortgage value of other banks. Thus, it can be concluded that the LTV ratio becomes the influence of the public to take home ownership loans.

In Indonesia, already many studies on KPR-FLPP demand. However, the results study still there is differences and debates. Besides that, still, seldom researcher do research in East Java with the use of LTV dummy variables (before and after LTV). East Java is one of the seven major provinces with the largest distribution house ownership credit for subsidized mortgage (KPR-FLPP) in the 2010-2020 period. Because of that, a researcher interested in researching the influence of inflation, GDP, rates interest, and the impact LTV policy (before and after) towards KPR-FLPP demands in East Java, Q1:2010 until Q4:2020.

RESEARCH METHODS

This study employed descriptive research methods with a quantitative approach, research descriptive was used to determine the effect KPR FLPP, Inflation, GRDP, interest rate and LTV. While the quantitative approach emphasized more on measurement theories with numerical variables and data analysis. Data were obtained from Ministry of PUPR, Bank Indonesia and the Central Bureau of Statistics with time series Q1:2010 until Q4:2020.

Dependent variable on this study was house ownership credit for subsidized mortgage (KPR-FLPP) demand, measured in unit. While

the first independent variable was inflation, measured in percent. The second independent variable was Gross Regional Domestic Product (GRDP) 2010 constant price, measured in billions of IDR. The third independent variable was the interest rate, measured in percent. The fourth was dummy LTV, measured 0 = before LTV and 1 = after LTV.

This study modified previous research. The difference and the gap in research with this paper was the use of variables and the time used. Anggraini (2016) uses credit interest rates, inflation, economic growth, and dummy LTV variables. While, this study used inflation, GDRP, interest rates, and dummy LTV. In addition, Anggraini (2016) used time Q1:2008-Q2:2015 and subject is Indonesia. While conducting this research, the time frame was Q1:2010-Q4:2020, and the subject was East Java. East Java was one of the seven major provinces with the highest distribution of house ownership credit for subsidized mortgages (KPR-FLPP) between 2010 and 2020.

Using the Ordinary Least Square Method, the analyst performed multiple linear regression to determine the direction and magnitude of the independent variable's influence on the dependent variable. Eviews 9 was used in the analysis tool. This research model's applications and equations are as follows:

$$KPR\ FLPP_i = \alpha + \beta_1 INF + \beta_2 GRDP + \beta_3 IR + \beta_4 Dummy\ LTV_4 + e_t \ ....(1)$$

Which KPR-FLPP is ownership credit for subsidized mortgage demand; INF is Inflation; GRDP is Gross Regional Domestic Product; IR is interest rate; and Dummy LTV which is 0 = before LTV and 1 = after LTV; $\beta\ is$ coefficient regression X1, X2, and X3; and e: error term

We analyses the classical assumption test was carried out which included the normality test, test multicollinearity, and heteroskedasticity test (Ginting & Widyawati, 2022). The next step is to test the statistical determination ($R2$), t test, F test. "The coefficient of determination (R2) is essential to measure how far the model's ability to explain the dependent variable (Widyawati et al., 2021). T test is used to see whether or not each independent variable is significant to the

dependent variable (Hariani et al., 2022); (Widyawati, 2017). The F test is carried out to see whether or not the independent variable is simultaneously (overall) significant to the dependent variables (Kuncoro, 2011).

RESULTS AND DISCUSSION

This result and discussion describe the effect KPR-FLPP by using the house ownership credit for subsidized mortgage, inflation, gross regional domestic bruto, interest rate and loan to value (LTV). The result showed the effect of main factors in house ownership credit for subsidized mortgage in East Java. Based on the result of descriptive statistical analysis (Table 1), GRDP revealed that the mean was 1635749. Meanwhile, interest rate was 5.94. This illustrated that the level of GRDP was higher in house ownership credit for subsidized mortgage. Other variables such as LTV mean of 0.65 indicated that LTV was minority for house ownership credit for subsidized mortgage in East Java.

Table 1. Descriptive Statistics

Variables	Mean	Max	Min.
KPR-FLPP	4295.2	10346.6	-5210.9
INF	4.2	8.4	1.3
GRDP	1635749	2432794	941545.5
IR	5.94	7.73	3.33
LTV	0.65	1.00	1.00

Source: Data Processed, 2022.

Table 1 shows a summary of descriptive statistics of some variables. The average KPR-FLPP was 4295,2; maximum value was 10346.6 and minimum value was -5210,9. The average inflation of 4.; maximum value was 8.4 and minimum value was 1.3. The average GRDP was 1635749; maximum value was 2432794 and minimum value was 941545.5. The average interest rate was 5.94; maximum value was 7.73 and minimum value was 3.33. Lastly, the average LTV was 0.65; maximum value was 1.00 and minimum value is 0.00. This shows that the highest home ownership loan is determined by the GRDP factor, then the interest rate, and inflation.

According to Figure 1, the trend of East Java inflation from Q1:2010 to Q4:2020

fluctuated and tended to fall. Many factors can influence inflation in a declining region. These factors can be from within or outside of a region.

East Java's inflation, which tended to fall from Q1:2010 to Q4:2020, was due to lower food prices, such as votalite food.
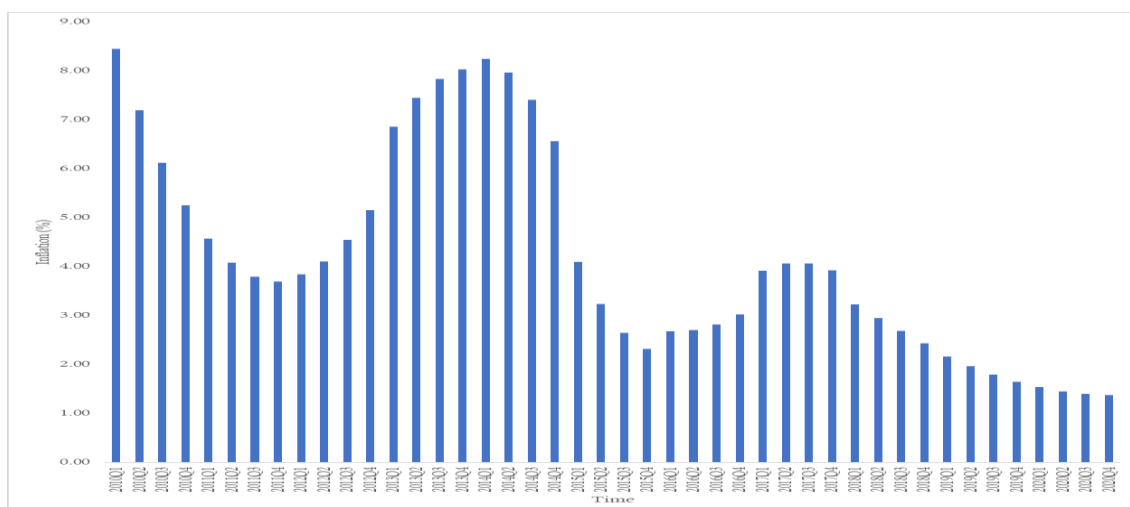

Figure 1. Inflation in East Java (%), Q1:2010 – Q4:2020
Source: Data Processed, 2022

According to Figure 2, the East Java GRDP has an upward trend from Q1:2010 to Q4:2020. Many factors can influence a region's GRDP, and these factors can come from within or outside the region. The demand side was driven by higher growth in household consumption, investment, and inter-regional net exports. From the supply side, the majority of business fields in East Java, including Manufacturing Industry, Trade, Construction, Accomodation and Food and Drink Provision, and Transportatin and Warehousing, increased from Q1: 2010 to Q4: 2020, but decreased from Q2: 2019 to Q4:2020 due to the Covid-19 pandemic, which caused an economic contraction. East Java's economy was still dominated by manufacturing sector; transportation and warehousing; car and motorcycle repair, agriculture, forestry and fisheries and construction. The four business fields played the most important role in East Java economy. So, East Java is experiencing economic growth overall, except for Mining and Quarrying sector; Government Administration, Defense, Compulsory Social Security and Education Servicess, all business sectors expanded.
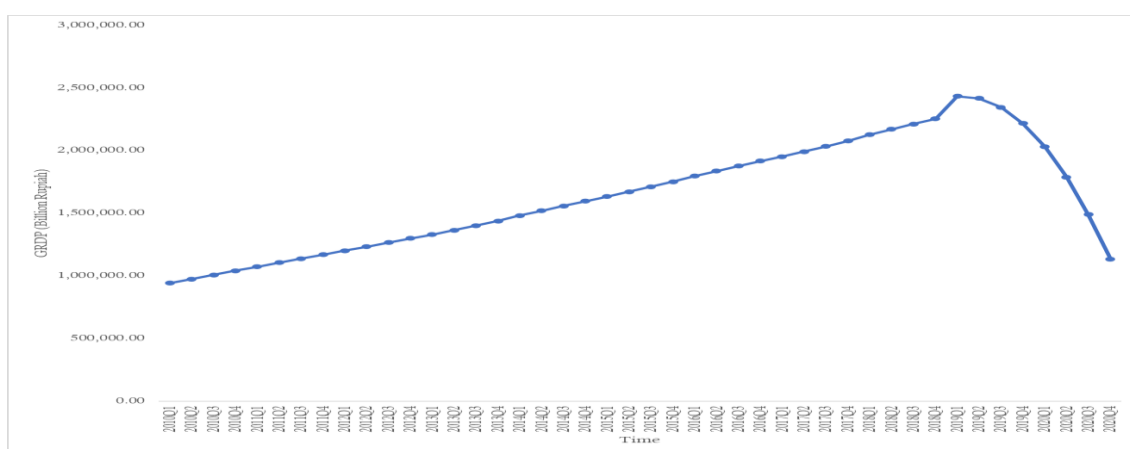

Figure 2. GRDP in East Java (Billion Rupiah), Q1:2010 – Q4:2020
Source: Data Processed, 2022

According to Figure 3, the trend of East Java interest rates from Q1:2010 to Q4:2020 fluctuated and tended to fall, and these factors can come from conditions within or outside a region. The supply and demand for money determine the interest rate (determined in the money market). The value of an interest rate is determined by two types of factors: internal and external factors. National income, money supply, and inflation are examples of internal factors. While foreign interest rates and the expected rate of change in foreign currency values are external factors.
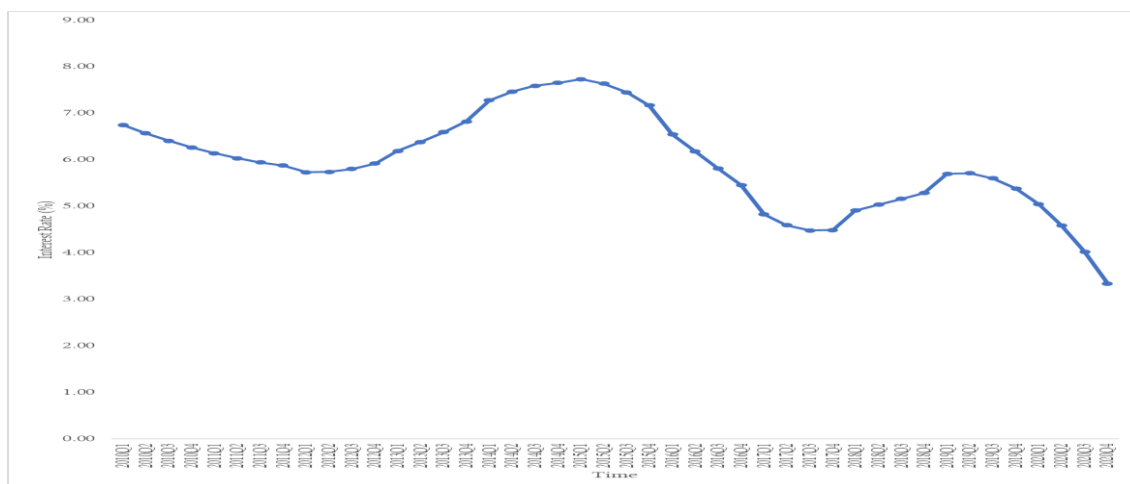

Figure 3. Interest Rate in East Java (%), Q1:2010 – Q4:2020
Source: Data Processed, 2022

In this study, classical assumption tests, including linearity test, multicollinearity test, heteroscedasticity test, autocorrelation test, and normality tests. Table 2 presents the classical assumption result from this result model.

Table 2. Classic Assumption Test

Steps	Types of Test	Score	Description
Linearity	Reset Tests	> 0.05	Model linear
Multicollonierity	Correlation	< 0.8	There was no Multicollonierity
Heteroscedasticty	Breusch Pagan	> 0.05	There was no Heteroscedasticity
Autocorellation	*Durbin two steps method*	dw < dl (1.087 < 1.3263)	There was no Autocorellation
Normality	Kolmograv Sminov	0.902 which is > 0.05	Normally distributed.

Source: Data Processed, 2022

The Ramsey Regression Equation Specification Error Test (RESET) test results in linearity; the probability of each variable showed that the model was a linear function. The results of the multicollinearity tests with variable correlation were less than 0.8, indicating that there was no multicollinearity.

Heteroscedasticity with the Breusch Pagan Godfrey test showed that each variable had a value of more than 0.05, meaning that there was no heteroscedasticity problem. Autocorrelation with the Durbin two steps method showed that the value of dw < dl, meaning there was no autocorrelation. Finally, the normality test using the Kolmograv–Sminov Z method showed probability value of 0.902, this value was more than 0.05, meaning that the research data was normally distributed.

The following steps were R Square and F-Test, with R Square equal to 0.3083 indicating that the independent variable explained 30% of the dependent variable and 70% was explained by variables outside the model. The F-test statistic indicated that the variable dependent can be explained by all independent variables. As a result, the probability F test was 0.000 smaller

than the probability α = 0.05 (5%) or 0.000 < 0.005, indicating that variable inflation, GRDP, interest rate, and LTV all had a significant effect on variable KPR-FLPP demand.

Table 3. T-Test

Variable	Coefficient	t-statistic	Probability
C	14912.36	4.144056	0.0002
Inflation	-684.1617	-2.591497	0.0134**
GRDP	-0.003313	-2.077864	0.0444**
Interest Rate	-281.0593	-0.587509	0.5602
LTV	-985.2031	-0.724256	0.4732

Notes: *Significance at α=5% level.
Source: Data Processed, 2022

From the result of t-test, the following multiple linear regression equation was obtained:

$$Y = 14912.36 - 684.1617 \text{ Inflation} - 0.003313 \text{ GRDP} - 281.0593 \text{ Interest Rate} - 985.2031(DLTV) \quad \text{...............................(2)}$$

As shown in Table 3, the coefficient was 14912. When inflation, GDP, interest rate, and LTV were held constant (independent variables) in relation to variable KPR-FLPP demand, variable demand for KPR-FLPP was 14912.36 units. Inflation has had a negative impact on demand for KPR-FLPP in East Java from Q1:2010 to Q4:2020. It means when inflation experienced increases by 1%, then KPR-FLPP demands will be decreased as many as -684.1617 units. Probability inflation variable was 0.0134 < α 5% (0.05), so Ho was rejected and Ha was accepted. Inflation has had a negative and significant impact on demand for KPR-FLPP in East Java from Q1:2010 to Q4:2020. The research results are in line with Bekmez (2014) and Dianria (2015). However, this research differs from Anggraini (2016); Iflima (2017); and Ujianti (2021) who claimed that inflation has a negative and insignificant effect on KPR-FLPP demand.

Inflation refers to the rate which prices goods and services increase over time. It is usually caused by changes in the supply and demand of goods, services, or money itself. If prices tend to go up over time, it encourages people to buy goods, services and even houses now rather than waiting for some later date. This means there is plenty of work for producers. This allows them to continue hiring people, who buy goods and services of their own.

According to the quantity of money theory, as the amount of money in circulation in society increases, so will market prices. This will result in inflation. When the purchasing power of a consumer decreases due to inflation, the decision to purchase a home decreases/decreases (Bekmez, 2014; Dianria, 2015).

When there is an increase in inflation, Bank Indonesia, as the Central Bank, will implement an easing policy of monetary contraction, which reduces money in circulation in the community, triggering an increase in interest rates, particularly interest rates on credit, which will reduce investment and consumption, particularly in the housing sector. So it is not surprising that as the cost of goods and services rises, so does the cost of housing. Indeed, inflation has a number of effects on the housing market, the most noticeable of which is an increase in home values. Furthermore, the Federal Reserve's reaction to inflation may have an impact on demand for KPR-FLPP..

GRDP had a negative impact on demand for KPR-FLPP in East Java from Q1:2010 to Q4:2020. This means that if the GRDP rises by 1 billion Rupiah, KPR-FLPP demand will fall by -0.003313 units. Probability GRDP variable was 0.0444 < α 5% (0.05). Ho was rejected and Ha was accepted. GRDP variable had a significant effect to KPR-FLPP demand variable. GRDP had a negative and significant impact on KPR-FLPP demand in East Java. Q1:2010–Q4:2020. This research is in accordance with research by Ujianti (2021). However, this study is not accordance with Siagian (2017) and Ayuningtyas & Astuti (2018).

These findings are consistent with data from the Ministry of PUPR indicating that a standard 10% allocation of GDP in developing countries is used to finance housing. Existing

restrictions criteria KPR-FLPP acceptance will have an impact on economic growth. When the GRDP grows, the quantity of demand for home loans decreases. This is due to the fact that purchasing a house with a subsidy type this is only allowed for income society monthly IDR 2,500,000 - IDR 7,000,000 with income that exceeds that is not permitted to take KPR subsidy type this. As a result, the government's program for low-income communities is complete and on target.

Interest rates had a negative impact on demand for KPR-FLPP in East Java from Q1:2010 to Q4:2020. It means that if interest rates rise by one percent, KPR-FLPP demand will fall by -281.0593 percent. Probability interest rate variable was 0.5602 > α 5% (0.05). Ho was accepted and Ha was rejected. Interest rate variable had no significant effect to KPR-FLPP demand variable. From Q1:2010 to Q4:2020, interest rates had a negative and insignificant impact on KPR-FLPP demand in East Java. The result of this study differs from Budi (2009); Diana (2015); Anggraini (2016); Iflima (2017); Siravati (2018). Meanwile, this study is relevant with reseacrh by Siagian (2017); Ayuningtyas & Astuti (2018); Nurrahmania & Khoirudin (2022).

Interest rates are not a major factor in determining the amount of money saved by a family or an individual. Interest rates will be kept as low as possible in this KPR-FLPP program to make it more accessible to people with lower-than-average income. You can, however, enjoy taking out your housing needs, and the government also provides additional subsidies with smaller credit interest rate cuts, which are still valid for this KPR-FLPP program. LTV dummy variable, where 0 indicates that there is no LTV and 1 indicates that there is LTV and there is KPR-FLPP demand. The probability LTV variable was 0.4732 > α 5% (0.05). Ho was accepted and Ha was rejected. LTV variable had no significant effect to KPR-FLPP demand variable. LTV dummy variable, meaning 0 if before there is LTV policy then will reduce KPR-FLPP demand, and 1 after there is LTV policy then will add KPR-FLPP demand is -985.2031.

Estimated results showed negative and insignificant influence, meaning that LTV variable did not effect KPR-FLPP demand in East Java from Q1:2010–Q4:2020. This is consistent with the study of Siravati (2018); Anggraini (2016) and Diana (2015). Meanwhile, different with research Nurrahmania & Khoirudin (2022). Theory monetary policy has a greater impact on credit housing, which occurs because demand for housing is determined by interest rates. Dornbusch and Fisher's views were bolstered by a statement from the Federal Reserve's Deputy Director of Policy Macroprudential. According to the stated statement, lower lending rates are thought to have a greater impact on mortgage loan growth than macroprudential policy.

Monetary policy is the central bank's action to influence the macroeconomic situation implemented in the money market. Actually, the purpose monetary policy is to maintain rupiah stability, one of which is reflected in the low and stable rate of inflation. To achieve this objective, Federal reserve's sets the interest rate as the main policy instrument to influence economic activity. 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 household is increasing.

CONCLUSION

This research aims to investigating influence inflation, GDP, rates interest, and impact LTV policy (before and after) towards KPR-FLPP demands in East Java, Q1:2010 until Q4:2020. The findings in this research discussed the effect of inflation, GRDP, interest rate, and LTV to demand for KPR-FLPP. The result of this study showed that inflation and GRDP have a significant to demand KPR-FLPP. As a result, if the amount of inflation and GRDP rises during the research period, so will demand for KPR-FLPP in East Java. Interest rate and LTV, on the other hand, have no significant effect on KPR-FLPP demand.

This study provides some implications. First, Bank Indonesia always monitor macroprudential LTV policies to mitigate

systematic possibilities arising from the growth KPR-FLPP. Second, Bank Indonesia is expected to be able to guard macroeconomic stability by controlling inflation and interest rate, so that it will encourage the publics ability to buy KPR-FLPP..

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