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ANALYSIS OF MACROECONOMIC INDICATORS AFFECTING FARMERS' EXCHANGE RATE IN SOUTH KALIMANTAN

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ABSTRACT

This study aims to analyze the development and the influence in short- and long-term of macroeconomic indicators: inflation, interest rates, economic growth, average grain prices, open unemployment rate and also the farmer exchange rate on farmers' exchange rates (NTP) in South Kalimantan Province. The data used is quarterly data from 2010 to 2023. The development of various macroeconomic indicators was analyzed using descriptive analysis, while their impact was analyzed using the Autoregressive Distributed Lag (ARDL) model. The results of the study show that those macroeconomic indicators are relatively fluctuating in line with the phenomenon that occurred in that period. Based on estimates with the ARDL(4,3,1,4,2,2) model in the short term, the NTP in the same quarter of the previous year, the average price of grain at the current time and at the time of the past six months, the current inflation, inflation of the past 3, 6, and 9 months, as well as the open unemployment rate of the past six months had a significant effect on $\alpha = 5\%$ and 10%. In the long term, it shows that of those macroeconomic indicators do not have a significant effect on $\alpha=5\%$ on farmer exchange rate in South Kalimantan.

Keywords: Farmer Exchange Rate, Macroeconomics, Ardl.

1. INTRODUCTION

The agricultural sector plays a very important and fundamental role in development. In achieving the second Sustainable Development Goals (SDG's) program, namely eliminating hunger, achieving food security and good nutrition, and improving sustainable agriculture, the agricultural sector has a very significant contribution. The second SDG's globally has been stagnant since 2020. Based on the progress report on the achievement of the SDGs from SDSN, Indonesia's progress in the SDGs has been delayed. Last year Indonesia was ranked 75th with a score of 70.2. This year, it is ranked 78th with a score of 69.4 (Bappenas, 2023).

In the economy of South Kalimantan, the agricultural sector also plays an important role, this can be seen from its contribution to South Kalimantan's GDP in 2023, the agricultural, forestry, and fisheries business fields provide a share of 11.37 percent, or ranked second after Mining and Quarrying. However, the role of the agricultural sector tends to decline every year.

In addition to its contribution to the economy of South Kalimantan, this sector also plays a very important role in the absorption of labor in South Kalimantan. Based on the August 2023

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National Labor Force Survey (Sakernas), labor absorption in the agricultural, forestry, and fisheries business fields is the largest, reaching 29.47 percent of the total working population in August 2023. Despite absorbing the largest workforce in South Kalimantan, the agricultural sector continues to experience a decline in the percentage of labor absorption from year to year.

The essence of development is an effort to improve welfare for the entire community. Farmers as the main pillar of the agricultural sector play a very important role in development, including: maintaining food availability, economic stability, and environmental sustainability. The very strategic role of farmers should also be a priority for the government and all parties to continue to be studied and further researched in order to produce appropriate policies based on accurate data so that farmers become more prosperous.

Multidimensional measurement of farmers' welfare has not been fully realized until now due to the challenge of capturing all aspects that affect their welfare comprehensively and sustainably. The Farmer Exchange Rate (NTP) is a proxy indicator of welfare in terms of production and prices. The welfare of farmers is also influenced by the exchange power of agricultural products. NTP is present as an overview of the level of competitiveness of agricultural products compared to other products (Simatupang, 1992). Although the NTP does not cover all dimensions of farmers' welfare, as an easily measurable and readily available indicator, its use is invaluable to study. The NTP since 2021 has also been used by the government as the basis for the State Budget, which was then included in the 2020-2024 National Medium-Term Development Plan (RPJMN) as a development indicator. Based on Permendagri No. 54/2010, NTP is also used as an indicator of farmers' welfare in the focus of the regional economy.

The Farmer Exchange Rate is a comparison of the Price Index Paid by Farmers compared to the Index Received by Farmers. The Farmer Accepted Price Index is an indicator of farmers' income that shows the development of commodity producer prices produced by farmers, while the Farmer Paid Index is an indicator of the costs that farmers must spend for their household production and consumption activities. In other words, the Farmer Exchange Rate is the ability of agricultural products produced to meet the needs of goods for production and the needs of farmers' households.

The interpretation of the NTP value can be seen from the amount, if the NTP value is more than 100, it means that farmers have increased in trade. The NTP is less than 100, which means that farmers have decreased in trade, while if it is worth 100, it means that there is no change in farmers in terms of trade. South Kalimantan's NTP in May 2024 decreased by 0.29 percent compared to the April 2024 NTP, from 114.24 to 113.90 (BPS, 2024). The decline in NTP was due to a deeper decline in the Farmer Accepted Index (It) than a decline in the Farmer Paid Index (Ib).

Macroeconomics is the study of the economy as a whole – including income growth, price changes, and unemployment rates (Mankiw, 2003). In this study, further research will be conducted on the relationship between macroeconomic indicators such as economic growth, inflation, interest rates, average grain prices, and the unemployment rate with the Farmer Exchange Rate (NTP). These factors are suspected to have an effect on NTP in the short and or long term. According to most macroeconomists, the model with flexible prices explains prices in the long term and is rigid in providing a better explanation of the economy in the short term (Mankiw, 2003). With a deeper understanding of these dynamics, it is hoped that we can make a better contribution in formulating policies and strategies that support sustainable growth in the agricultural sector and the welfare of farmers, especially in increasing NTP. The study was

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limited to only five macroeconomic indicators related to prices and were available from official sources and within a certain time frame that were relevant to the research objectives and focused on the South Kalimantan region.

The first objective of this study is to analyze the development of macroeconomic indicators: inflation, interest rates, economic growth, average grain prices, Open Unemployment Rate (TPT), and also the Farmer Exchange Rate (NTP) in South Kalimantan Province during 2010 to 2023. The second purpose of this study is to analyze the influence of these macroeconomic indicators and the Farmer Exchange Rate in the previous period on the Farmer Exchange Rate in South Kalimantan Province during 2010 to 2023 both in the short and long term.

2. MATERIALS AND METHODS

2.1 Time and Place

This research will be carried out in 2024. The location taken in this study is the province of South Kalimantan.

2.2 Types and Data Sources

This study uses secondary data sourced from the Central Statistics Agency (BPS) of South Kalimantan Province and Bank Indonesia (BI) in the period from 2010 to 2023. Secondary data collected includes monthly Farmer Exchange Rate (NTP) data, monthly and y-on-y inflation, Bank Indonesia interest rate (BI Rate), economic growth, average GKP grain prices, and Open Unemployment Rate (TPT) in February and August from 2010 to 2023. The data used in the analysis is rearranged into a monthly or quarterly 3 (three) data series. GKP's average grain price data is only available starting in 2013, so to complete the data series, backcasting is carried out with ARIMA auto. Likewise, economic growth in 2010 could not be compared due to the difference in the base year, backcasting was also carried out with auto ARIMA.

2.3 Data Analysis

The data analysis method used to analyze the first goal is the descriptive statistical method. Descriptive analysis is used to describe the condition and development of the Farmer Exchange Rate (NTP), inflation, interest rates, economic growth, average grain prices, and the Open Unemployment Rate (TPT) in South Kalimantan during the period from 2010 to 2023.

The second objective is to determine the influence of these macroeconomic indicators and the Farmer Exchange Rate in the previous period in Kalimantan Province on the Farmer Exchange Rate in South Kalimantan Province during 2010 to 2023 both in the short and long term. the Autoregressive Distributed Lag (ARDL) analysis method is used, with the following equation:

$$\Delta NTP_t = \beta_0 + \beta_1 \Delta INF_t + \beta_2 \Delta GROWTH_t + \beta_3 \Delta BIRATE_t + \beta_4 GBH_t + \beta_5 TPT_t + \sum_{i=1}^{p} \delta_i \Delta NTP_{t-i} + \sum_{j=1}^{q_1} \theta_j \Delta INF_{t-j} + \sum_{k=1}^{q_2} \gamma_k \Delta BIRATE_{t-k} + \sum_{m=1}^{q_3} \mu_l \Delta GROWTH_{t-l} + \sum_{l=1}^{q_5} \lambda_m \Delta GBH_{t-m} + \sum_{l=1}^{q_5} \zeta_n \Delta TPT_{t-n} + \varepsilon_i$$

Information:

- ΔNTP_t : Farmer Exchange Rate
- β_0 : Constant
- $\beta_1, \dots, \beta_4$: Long-term coefficients
- $\delta_i, \theta_j, \gamma_k, \mu_{l_n}, \lambda_n, \zeta_n$: Short-term coefficients

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- NTP : Farmer Exchange Rate (percent)
- INF : Inflation (percent)
- BIRATE : BI Interest Rate (percent)
- GROWTH : Economic Growth (percent)
- GBH : Average GKP Grain Price (Rp/Kg)
- TPT : Open Unemployment Rate (Percent)
- ε_i : *error*

2.3.1 Data Stationary Test

Before the analysis, there are several stages of statistical tests used, namely the stationery test to analyze the data used by the stationary.

2.3.2 Delayed Order Selection

The optimal lag order analysis for the ARDL model is through the use of the Akaike Information (AIC) criterion as the main guideline in selecting the most suitable model.

2.3.3 Cointegration Test

The cointegration test is used to analyze the long-term relationship between two or more variables that may be economically interrelated. The cointegration test is an important step after verifying that the variables observed are stationary, either at the level or after differentencing, because the cointegration is only relevant in the context of stationary data.

2.3.4 ARDL Model Estimation

The estimation stage of the ARDL model is the core of the analysis that reveals the empirical relationship between the selected variables.

2.3.5 ARDL Model Assumption Test

After the ARDL model is formed, assumption tests are carried out to see the residual tests, including: Homoskedasticity test and Autocorrelation test with the Breusch-Pagan-Godfrey LM Test. Non-Autocorrelation test, normality using Jarque-Bera statistical values, as well as parameter stability with CUSUM and CUSUM Q.

3. RESULTS AND DISCUSSION

3.1 Development of South Kalimantan NTP for the Period of 2010-2023

The South Kalimantan Farmer Exchange Rate (NTP) for the period 2010-2023 shows fluctuations in value. In the period 2011-2012 it increased and continued to decline until 2020 and again increased until 2023.

The exchange rate of South Kalimantan farmers during the period ranged from 94.02-113.16 percent. The lowest NTP value occurred in July in 2018, while the highest NTP occurred in December in 2023 The increase in the NTP value of South Kalimantan shows that the price level received by farmers is growing faster than what farmers pay

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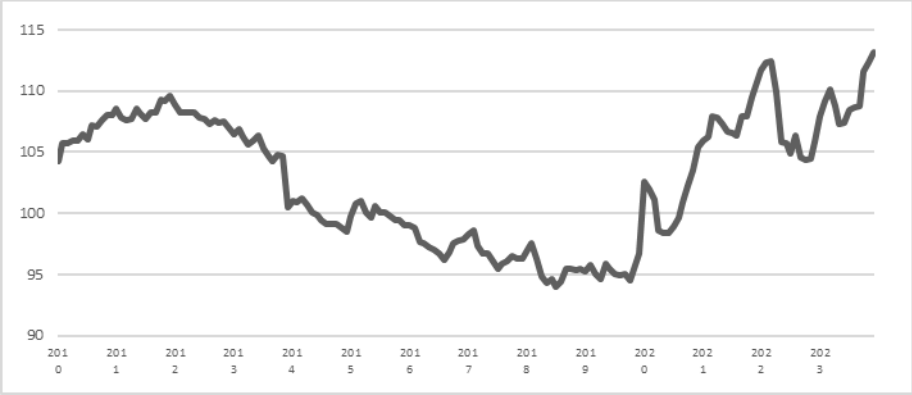

Figure 1. South Kalimantan Month to Month Farmer Exchange Rate for the Period of 2010-2023

Furthermore, South Kalimantan's NTP which is <100 percent occurred in some months in 2014, 2015, and 2020. Meanwhile, in 2016-2018 throughout the year it was <100 percent, in other words that the amount of increase in farmers' income is smaller when compared to the increase in expenditure that they have to spend on production costs and meet their consumption needs.

Figure 2. Monthly Farmer Accepted Index (It) and the Farmer Paid Index (Ib) in South Kalimantan 2010 – 2023

3.2 Inflation Development in South Kalimantan for the Period of 2010 - 2023

The development of inflation in South Kalimantan during the period 2010-2023 fluctuated. In 2010 South Kalimantan inflation had reached 9.06 percent, then fell in 2011 by 3.98 percent. From 2012 to 2014, the inflation rate continued to increase until it reached 7.16 percent in 2014. Then the inflation rate is decreasing until 2020. The lowest inflation rate occurred in 2020 at 1.68 percent. It increased again in 2021 to 2022, and decreased again in 2023.

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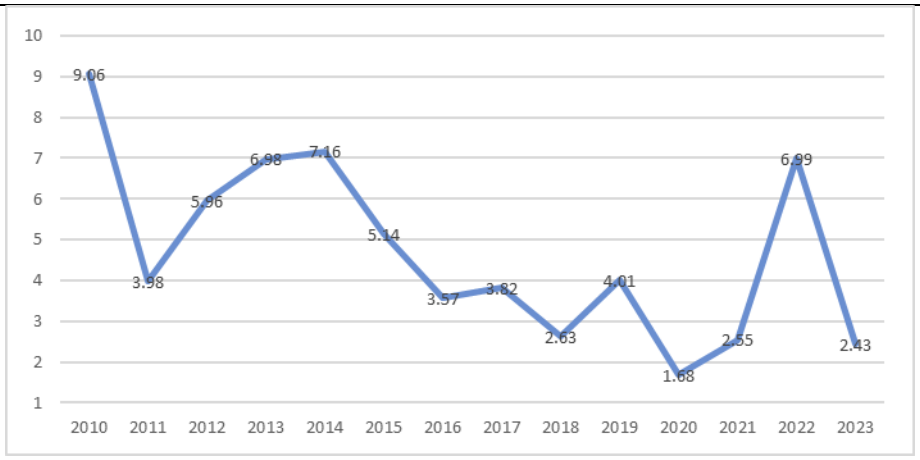

Figure 3. Inflation Development y on y in South Kalimantan in 2010 – 2023

3.3 Interest Rate Development in South Kalimantan for the Period of 2010 - 2023

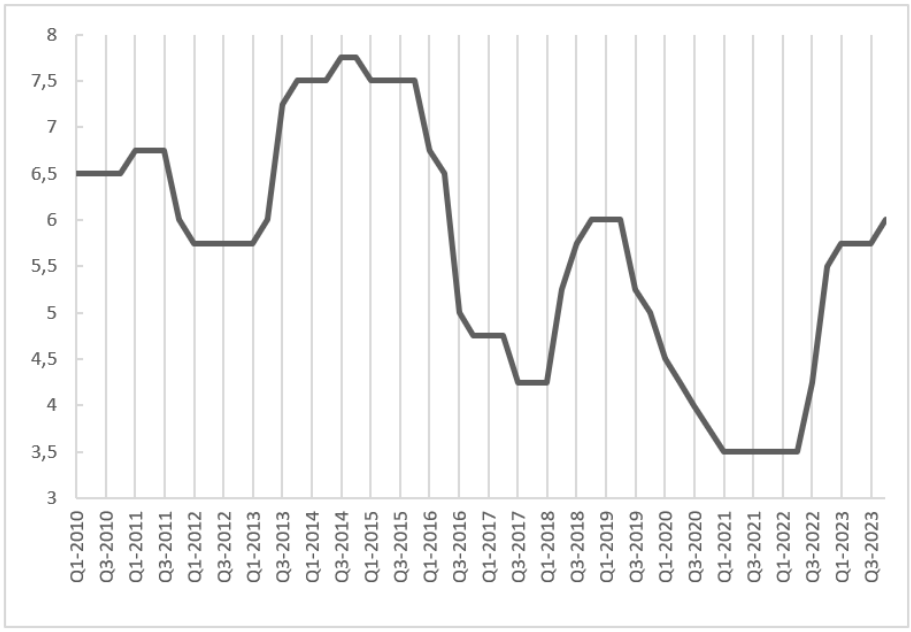

Figure 4. Development of Interest Rate (BI Rate) (percent), Q1 2010 – Q4 2023

The Bank Indonesia Interest Rate (BI Rate) is released every month after the Bank Indonesia Board of Governors meeting. During 2010-2023, there were 42 (forty-two) adjustments to the BI Rate. One of the adjustments to the BI Rate is to encourage economic activity.

In the graph, it can be seen that the Bank Indonesia interest rate (BI Rate) does not always change every period, there is a fixed tendency for some time and then changes at a certain point.

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During 2010 to 2023, there were 42 (forty-two) adjustments to the BI Rate. One of the adjustments to the BI Rate is to encourage economic activity.

3.4 Development of Economic Growth in South Kalimantan for the Period of 2010-2023

South Kalimantan's economic growth during the 2010-2023 period also fluctuated. Economic growth reached the highest figure, namely in the 3rd (three) quarter of 2010, which was 8.1 percent. Since the period 2012-2020, it has tended to slow down. And in 2020 it has a negative value as a result of the Covid-19 pandemic that occurred globally. In 2022, it grew again at a high level as a result of various economic recovery efforts, but in the 1st quarter it slowed down due to the global issue of the Ukraine-Russia war which had a global impact, especially on world oil prices. However, in 2023, economic growth is able to grow positively but experience a slowdown compared to 2022.

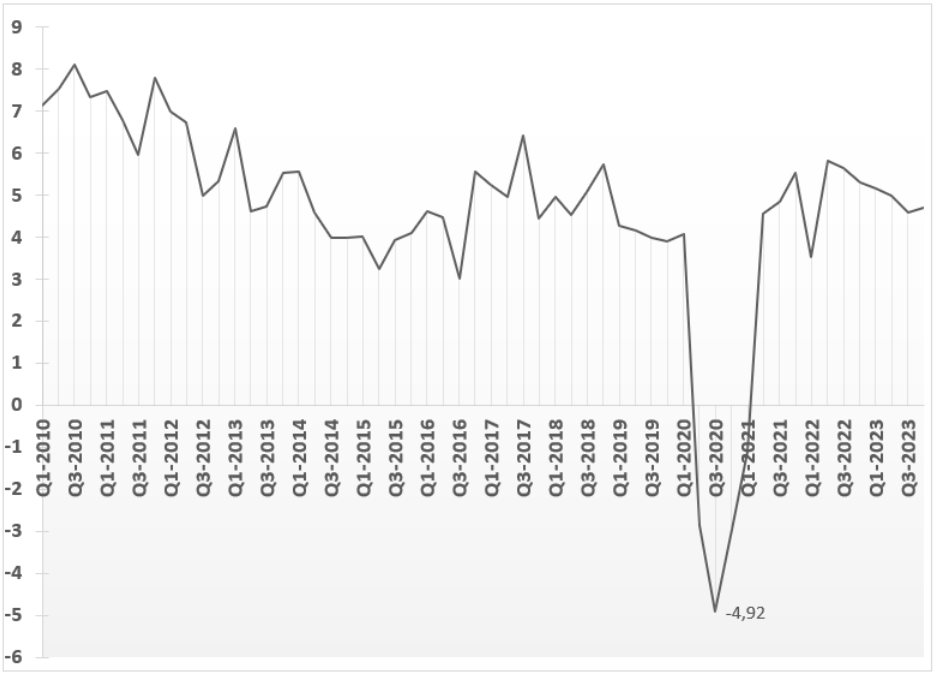

Figure 5. Economic Growth Development y on y South Kalimantan Q1-2010 – Q4-2023

3.5 Development of Grain Prices in South Kalimantan for the Period of 2010 – 2023

The average development of dry grain harvest prices in South Kalimantan, 2010-2023 fluctuates,. The largest increase in the average price of grain occurred in 2023 compared to 2010 by 97.59 percent. Then the average grain price decreased again to reach a price of 4,761.9 (Rp/Kg) in the 2nd (two) quarter of 2017. The average price of grain in the following year until the 4th (fourth) quarter of 2019 increased again to reach an average price of 6015.04 (Rp/Kg) in the 4th (fourth) quarter of 2019. In the 3rd (third) quarter of 2021, the average grain price decreased again to reach a price of 4,969.3 (Rp/Kg). From 2022 to 2023, the average grain price continues to increase until it reaches a value of 9,457.18 (Rp/Kg) as shown in Figure 6.

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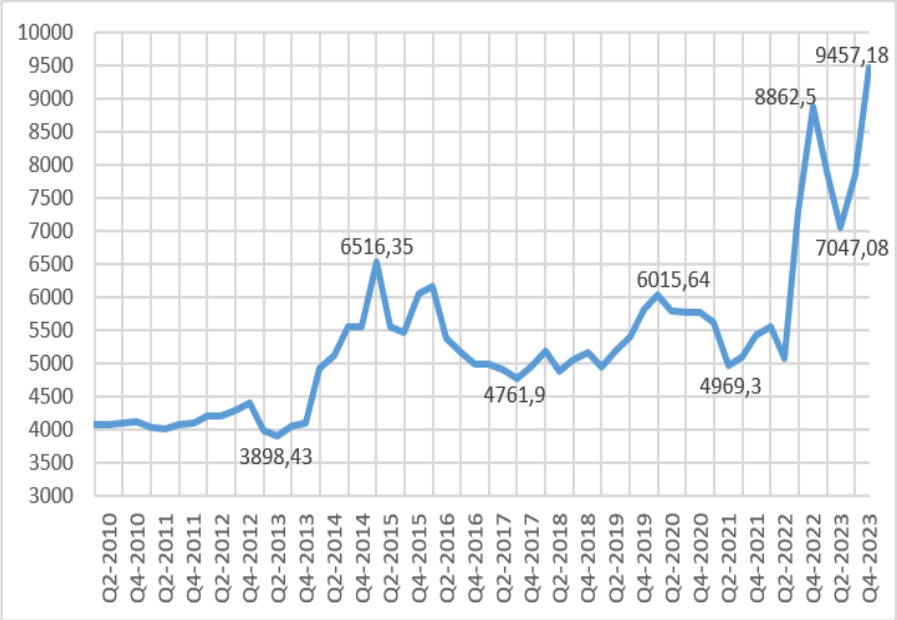

Figure 6. Average GKP Grain Prices in South Kalimantan (Rp/Kg), 2010-2023

*data processed

3.6 Development of the Open Unemployment Rate (TPT) in South Kalimantan for the Period of 2010 - 2023

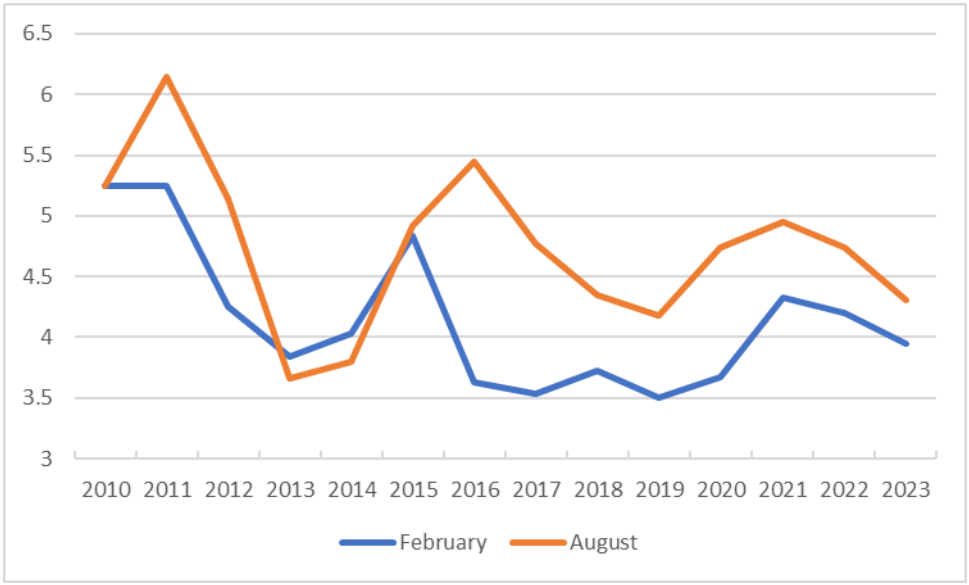

Figure 7. Development of the Open Unemployment Rate (TPT), February and August in South Kalimantan (percent), 2010 – 2023

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The development of open unemployment during the period of 2010-2013 tends to decrease. The highest Open Unemployment Rate (TPT) occurred in 2011 and the lowest in 2019. During other periods it tends to fluctuate Figure 7.

3.7 The Influence of Macroeconomic Indicators on the Farmer Exchange Rate (NTP) of South Kalimantan

3.7.1 Short-Term Equation Model

Analysis of macroeconomic indicators, in this case the inflation rate, bank interest rates, open unemployment rate, economic growth rate and grain prices against the farmer exchange rate, ARDL (Autoregressive Distributed Lag) analysis was used with a short-term equation model as follows:

$$\Delta NTP_t = -0{,}190467 + 0{,}0289\Delta NTP_{t-1} - 0{,}1173\Delta NTP_{t-2} + 0{,}1159\Delta NTP_{t-3} + 0{,}6768\Delta NTP_{t-4} - 2{,}3472\Delta INF_t - 2{,}0991\Delta INF_{t-1} - 2{,}5403\Delta INF_{t-2} - 2{,}7422\Delta INF_{t-3} - 0{,}2419\Delta BIRATE_t - 0{,}8095\Delta BIRATE_{t-1} + 0{,}1513\Delta GROWTH_t - 0{,}1287\Delta GROWTH_{t-1} - 0{,}1873\Delta GROWTH_{t-2} + 0{,}1955, \Delta GROWTH_{t-3} - 0{,}2195\Delta GROWTH_{t-4} + 0{,}0013\Delta GBH_t + 0{,}00008\Delta GBH_{t-1} + 0{,}0019\Delta GBH_{t-2} + 0{,}5681\Delta TPT_t + 0{,}2406\Delta TPT_{t-1} + 1{,}0142\Delta TPT_{t-2} + \varepsilon_i$$

Where:

ΔNTP_{t-i} : Change from NTP to lag i (i = 0, 1, 2, 3, 4).

ΔINF_{t-i} : Change from INF to lag i (i = 0, 1, 2, 3).

$\Delta BIRATE_{t-i}$: Change from BIRATE to lag i (i = 0, 1).

$\Delta GROWTH_{t-i}$: Change from GROWTH to lag i (i = 0, 1, 2, 3, 4).

ΔGBH_{t-i} : Change from GBH to lag i (i = 0.1, 2).

ΔTPT_{t-i} : Change from TPT to lag i (i = 0, 1, 2).

ε_i : Error

Before the model is used to estimate the coefficient of the analysis results, several stages of testing are first carried out in the following description.

3.7.1.1 Data Stationary Testing

The test results show that the levels, NTP variables, inflation, Bank Indonesia interest rates, economic growth, and average grain prices, and the Open Unemployment Rate (TPT), do not meet the stationery criteria with a significant p-value above the required threshold value.

However, at the first difference, all of these variables show strong stationery, marked by a p-value that is close to zero. These results indicate that the variables in this analysis, show a certain trend or pattern at their level, but are stationary after the first difference transformation.

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3.7.1.2 Delayed Order Selection

The selection of the Order of Lag criteria for Akaike Information (AIC) is the main guideline in choosing the most suitable model. The calculation of the values of the optimal lag criteria can be seen in the appendix. Based on its AIC value, the best model obtained is ARDL(4,3,1,4,2,2).

3.7.1.3 Cointegration Testing

The results of the Bound Test test in Table 5 show that the value of the F calculation is greater than the F of the table at all levels of significance. Therefore, it can be stated that there is a cointegration or long-term relationship between the independent variable and the dependent variable.

3.7.1.4 Model Specifications

Based on the estimates that have been made, it is found that the best model is the ARDL model (4,3,1,4,2,2). After testing the significance of the results of the parameter estimation obtained using the t test, as follows:

Based on the table, the p-value of each variable formed in the best ARDL model at the test level of 5%, there are only 2 variables that significantly affect the change in the NTP value in the short term, namely the NTP in the same quarter in the previous year and economic growth in the same quarter in the previous year.

Table 8. Results of ARDL Model Coefficient Estimation

Variable	Coefficient Estimation	*Standar Error*	Statistik t	p-*value*
ΔNTP_{t-1}	0,0289	0,1419	0,2037	0,8400
ΔNTP_{t-2}	-0,1173	0,1510	-0,7768	0,4436
ΔNTP_{t-3}	0,1159	0,1552	0,7470	0,4611
ΔNTP_{t-4}	0,6768	0,1501	4,5098	0,0001
ΔINF_t	-2,3472	0,6509	-3,6062	0,0012
ΔINF_{t-1}	-2,0991	0,7761	-2,7046	0,0113
ΔINF_{t-2}	-2,5403	0,7748	-3,2787	0,0027
ΔINF_{t-3}	-2,7422	0,6192	-4,4288	0,0001
$\Delta BIRATE_t$	-0,2419	0,5803	-0,4169	0,6798
$\Delta BIRATE_{t-1}$	-0,8095	0,5984	-1,3526	0,1866
$\Delta GROWTH_t$	0,1513	0,1554	0,9733	0,3384
$\Delta GROWTH_{t-1}$	-0,1287	0,1435	-0,8972	0,3770
$\Delta GROWTH_{t-2}$	-0,1873	0,1372	-1,3658	0,1825

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Variable	Coefficient Estimation	*Standar Error*	Statistik t	p-*value*
$\Delta GROWTH_{t-3}$	0,1955	0,1451	1,3478	0,1882
$\Delta GROWTH_{t-4}$	-0,2195	0,1554	-1,4129	0,1683
ΔGBH_t	0,0013	0,0006	2,1124	0,0434
ΔGBH_{t-1}	7,88E-05	0,0007	0,1148	0,9094
ΔGBH_{t-2}	0,0019	0,0006	3,0878	0,0044
ΔTPT_t	0,5681	0,5092	1,1156	0,2738
ΔTPT_{t-1}	0,2406	0,3798	0,6333	0,5315
ΔTPT_{t-2}	1,0142	0,5233	1,9378	0,0624

3.7.1.5 ARDL Model Assumption Test

The Homoskedasticity assumption, using the Breusch-Pagan-Godfrey Test (BPG) on the ARDL(4,3,1,4,2,2) model, shows that the statistical value of LM is 20.02103 with a p-value of 0.99999. With a p-value greater than the commonly used significance level of 0.05, the decision was taken not to reject the null hypothesis (H0) that the residual of the model had homoscedasticity.

Non-Autocorrelation Assumptions. The results of the Breusch-Godfrey (BG) test in the ARDL(4,3,1,4,2,2) model showed a statistical value of LM of 0.003769 with a p-value of 0.9981. With a p-value greater than the commonly used significance level (0.05), the decision was taken not to reject the null hypothesis (H_0) that the residual of the model did not contain significant autocorrelation. This indicates that the model can be considered to meet the assumption about the absence of autocorrelation in its residuals.

Assumption of normality. The results of the normality test using the Jarque-Bera method showed a statistical value of 0.727576 with a p-value of 0.695039. Based on these results, there is not enough statistically significant evidence to refute the null() hypothesis that the residual has a normal distribution. H_0

Parameter stability. As other information, in addition to the classic assumption test or the test of the remnant of the model, it is also necessary to look at the stability of the model used. CUSUM is a technique for observing the cumulative deviation of a sequential dataset or regression model. CUSUM is used to identify subtle changes or trends that may not be visible through conventional monitoring techniques, while CUSUM Q is used to look at structural changes or stability in a model. The Cummulative Sum of Recursive (CUSUM) and Cummulative Sum of Squares of Recursive Residuals (CUSUM Q) show that the model is stable to use because both curves do not cross the upper and lower limits of significance of 5 (five) percent.

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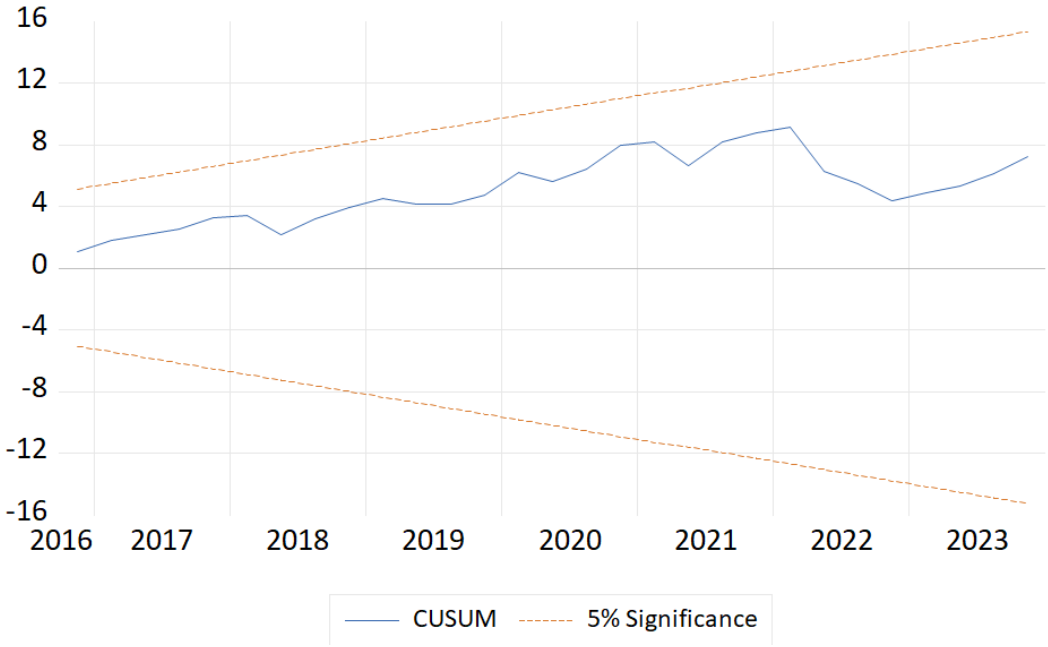

Figure 8. CUSUM Parameter Stability Test

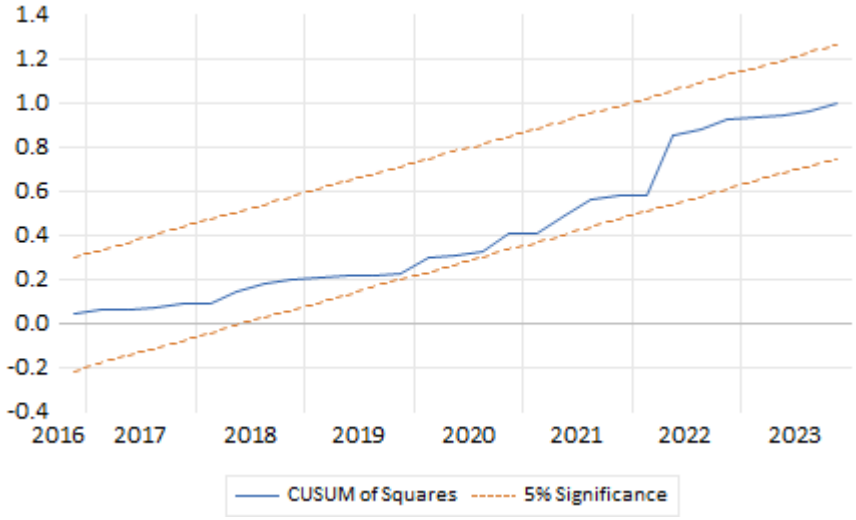

Figure 9. CUSUM of Square Parameter Stability Test

3.7.1.6 NTP Impact Analysis

The results of the analysis showed that it only had a significant effect on NTP at a significance level of 5%. A positive regression coefficient of 0.0289 indicates that an increase in NTP in the same quarter in the previous year has a positive impact on the current NTP value. This can be interpreted as a short-term influence between NTP and dependent variables. The findings in this study are in line with what is stated (Fink et al., 2018) that agricultural production in the previous year has a significant influence on the amount of inputs and capital used by farmers today. Where rice farmers in South Kalimantan are mostly still planting annual rice or harvesting once a

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year. The previous Farmer Exchange Rate (NTP) affected the current Farmer Exchange Rate is also in accordance with the findings of Ramadhanu (2021).ΔNTP_{t-4}

3.7.1.7 Inflation Effect Analysis

ΔINF_t, which represents changes in the inflation rate, shows a significant influence on the dependent variable. This shows that fluctuations in the inflation rate have a significant effect on the Farmer Exchange Rate (NTP) variable. This is in line with the research of Rahman & Sangeran, (2022), inflation has a negative and significant effect on the Farmer Exchange Rate (NTP).

3.7.1.8 Analysis of the Impact of BI Interest Rates

$\Delta(BIRATE)$, which represents a change in the BI interest rate, does not show a significant influence on the dependent variable. This can be interpreted that monetary policy through BI interest rates has no significant short-term effect on the farmer exchange rate (NTP). This result is different from the research conducted by Smith et al. (2019), which found that interest rates have a significant influence on economic indicators in a similar model, indicating differences in the context or period of analysis.

3.7.1.9 Analysis of the Influence of Economic Growth

The variables to represent changes in the economic growth rate in 4 periods, there is not enough evidence to show that economic growth has a significant effect on the Farmer Exchange Rate in South Kalimantan. Economic growth in South Kalimantan has no significant effect in the short term on the Farmer Exchange Rate (NTP) in Kalimantan. This is in line with research (Rahman & Sangeran, 2022) that economic growth does not significantly affect the Farmer Exchange Rate in South Sulawesi. $\Delta GROWTH_t$ $\Delta GROWTH_{t-4}$

3.7.1.10 Analysis of the Influence of Grain Prices

Changes in grain prices have a significant effect on the Farmer Exchange Rate (NTP) variable in South Kalimantan at a significance level of 5%, in that period and in the previous 2 (two) periods. This is in line with research conducted by Akbar et al., (2019) and Faillah (2022) that grain prices have a significant effect on the Farmer Exchange Rate (NTP). The average price of GKP grain, which is the main agricultural commodity in South Kalimantan, has also increased the Farmer Exchange Rate (NTP) in South Kalimantan.

3.7.1.11 Analysis of the Effect of the Open Unemployment Rate (TPT)

The variable Open Unemployment Rate (TPT) at this time), and in the previous 1 (one) period and , did not show a significant influence on the dependent variable, while the Open Unemployment Rate (TPT) and in the previous 2 (two) periods, showed a significant influence on the dependent variable. These findings are in line with research by Lee and Chang (2018), which showed that the unemployment variable has a significant effect in several econometric models, depending on the economic conditions and lag times analyzed. ($\Delta TPT_t \Delta TPT_{t-1} \Delta TPT_{t-2}$). This is also in line with the Philips Curve theory that is constructed, that inflation is inversely proportional to unemployment. Inflation that occurs at the Farmer Exchange Rate (NTP) has more effect on the value of the Price Index Paid by Farmers (Ib), especially on the household

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consumption component. This condition causes the greater Ib will reduce the NTP value if the value of the Price Index Received by Farmers (It) remains or decreases. The results of this study are in line with the results with the Philips Curve theory, in other words that the Philips curve phenomenon occurs in South Kalimantan. This is in accordance with the results of research conducted by Murjani (2022).

3.7.2 Long-Term Equations

The long-term model of the ARDL equation is as shown in the following equation:

$$\Delta NTP = -0{,}6440 - 32{,}8961\Delta INF - 3{,}5553\Delta BIRATE - 0{,}6345\Delta GROWTH + 0{,}0114\Delta GBH + 6{,}1635\Delta TPT + \varepsilon$$

Dimana:
ΔNTP : Changes in Farmers' Exchange Rate (percent)
ΔINF : Change in inflation (percent)
ΔBIRATE : BI interest rate change (percent)
ΔGROWTH : Changes in economic growth (percent)
ΔGBH : Change in average grain price GKP (Rp/Kg)
ΔTPT : Changes in the Open Unemployment Rate
ε : Error

Table 9. Estimation Results of the ARDL NTP Model

Variable	Coefficient Estimation	Error Standards	Statistics t	*p-value*
$\Delta BIRATE_t$	-32,8961	29,9122	-1,0998	0,2805
$\Delta GABAH_t$	-3,5553	3,5679	-0,9965	0,3273
$\Delta GROWTH_t$	-0,6345	1,3999	-0,4561	0,6517
ΔINF_t	0,0114	0,0113	1,0056	0,3229
ΔTPT_t	6,1635	5,8823	1,0478	0,3034
C	-0,6440	1,0089	-0,6384	0,5283
ECT	-0,2957	0,0418	-7,0783	0,0000

Based on the results of the model, all variables used have no significant effect on the farmer exchange rate (NTP) in the long term. This suggests that there is not enough evidence to conclude that statistically the independent variable has a significant effect. This suggests that in the long run, variables such as interest rates, grain prices, economic growth, and inflation do not have a significant impact on the NTP.

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4. CONCLUSION AND SUGGESTION

4.1 Conclusion

1. The development of the Farmer Exchange Rate, Inflation, Interest Rates, Economic Growth, Average Rice Prices in South Kalimantan can be described as follows, overall relatively fluctuating in line with the phenomena that occurred in that period.
2. In the short term, macroeconomic variables in the form of NTP in the same quarter of the previous year, the average price of GKP grain at the moment and at the time of the past six months, current inflation, inflation three months, six months, and nine months ago, and the Open Unemployment Rate (TPT) six months ago, which had a significant effect with a significance level of 5% and 10%. In the long run, all macroeconomic variables have no effect singifically.

4.2 Suggestion

1. It is important for the government to keep the Farmer Exchange Rate not below 100 percent, which means that farmers experience a deficit in trade. Among others, through: subsidies for farmers' agricultural production inputs, especially during the planting season, direct purchases by the government if necessary, especially when prices fall so that farmers do not lose further, increasing financial literacy and financial access, with subsidies or smaller interest for farmers, so that for business capital farmers do not only rely on capital from the results obtained during harvest. Increasing efforts for more inclusive economic growth with the support of a growing and sustainable agricultural sector. In addition, it is also very important to optimize coordination in controlling regional inflation to continue to be carried out, to control the prices of goods and services consumed by the community which are also felt by farmers, so that inflation does not erode farmers' incomes in South Kalimantan. In addition, it is also necessary to pay attention to the trade-off between unemployment and inflation in South Kalimantan, so that in the policy of reducing unemployment and inflation, it is necessary to consider the flexibility of the job market, especially for farmers or farmer families, so that especially structural unemployment in the agricultural sector can enter the job market, besides that education and training also need to continue to be carried out in an effort to achieve sustainable agriculture.
2. Acceleration in the improvement in the methodology of calculating the Farmer Exchange Rate in the future, by incorporating changes in quantity in production and consumption that are more dynamic, so that the Farmer Exchange Rate can provide a better picture of the welfare of farmers. This is in line with the critical analysis (Ruslan, 2023): The Farmer Exchange Rate (NTP) has several weaknesses in accurately describing the development of farmers' welfare. Therefore, adjustments are needed to this indicator so that it can be more accurately represented as a representation of farmers' welfare, such as by integrating it with production components derived from Gross Domestic Product (GDP) or Gross Regional Domestic Product (GDP).
3. Further research can add other variables that directly affect the Farmer Exchange Rate (NTP) in South Kalimantan, such as production, provincial, land area of agricultural commodities in South Kalimantan, or other variables. The addition of the post-Covid-19 pandemic time period also needs to be considered so that long-term significance can be seen.

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