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DYNAMICS OF FARMER EXCHANGE RATE: POLICY INTERVENTIONS IN THE FRAMEWORK OF IMPROVING FARMERS' WELFARE IN KUTAI KARTANEGARA DISTRICT

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ABSTRACT

Economic development is a change that occurs continuously through a series of combinations of processes to achieve something better, namely an increase in per capita income that continues in the long term. Agricultural development aims to improve the welfare of farmers and contribute to regional economic development. One indicator that can be used to measure the level of welfare of farmers in Indonesia is the Farmer's Exchange Rate (NTP). The aims of this study are: (1) to analyze the dynamics and influence of GRDP on farmers' exchange rates, and (2) to formulate policies that can intervene to increase farmer exchange rates in KutaiKartanegara Regency. The data collected is in the form of secondary data consisting of (1) Farmer Terms of Trade (NTP) in KutaiKartanegara Regency in 2016-2020; (2) PDRB Data for KutaiKartanegara Regency in 2015-2020; (3) Samarinda Human Development Index (HDI) data for 2015-2020; and (4) Samarinda CPI data for 2016 – 2019. To analyze farmers' exchange rates using descriptive analysis and to analyze factors that affect exchange rates using simple linear regression analysis. Regression analysis is used to determine the relationship (influence) between GRDP and farmer's FTT which includes the correlation coefficient(r), the coefficient of determination (R^2), the F-test, and the t-test. The results of the study show that: (1) The dynamics of farmer exchange rates consist of farmer exchange rates for food, horticulture, plantations, livestock, and fisheries. The largest farmer exchange rate is in the plantation sector with an average exchange rate of 102.40. Furthermore, the food sector (97.36), livestock (95.25), and fisheries (96.43); (2) The results of a simple linear regression study with a significance of less than 0.05, namely 0.027, means that there is a positive influence between the GRDP of KutaiKartanegara and the Farmer Exchange Rates of KutaiKartanegara Regency; and (3) policies that can intervene are subsidized fertilizer policies and control the distribution and price of subsidized fertilizers.

KEYWORDS

Farmer Exchange Rate, Policy Intervention, KutaiKartanegara



INTRODUCTION

Agricultural development aims to improve the welfare of farmers and contribute to regional economic development. The contribution of agricultural sector in Indonesia in various conditions made a positive contribution, where during the Covid-19 pandemic it was still able to contribute 13.70% in 2020, and in 2022 it was 12.40%. Contribution to GDP in 2020 in the agricultural sub-category, namely plantation crops (3.63%), food crops (3.07%), fisheries (2.80%), livestock (1.69%), horticultural crops (1.62%) forestry (0.70%), agricultural services and hunting (0.20%) (Central Bureau of Statistics, 2021). Contribution to GRDP in 2022 in the agricultural sub-category, namely plantation crops (3.76%), food crops (2.32%), fisheries (2.58%), livestock (1.52%), horticultural crops (1.44 %) forestry (0.60%), agricultural services and hunting (0.18%) [1].

One indicator that can be used to measure the level of welfare of farmers in Indonesia is the Farmer's Exchange Rate (NTP). NTP is one indicator of the relative level of farmer welfare [2]. The higher the NTP, the relatively more prosperous the level of the farmer's life. In addition, farmer exchange rates can also show the exchange rate of agricultural products consumed and production costs with goods and services. So that if the exchange rate of farmers is high, then relatively the level of purchasing power of farmers will also be stronger. The average NTP in Indonesia during 2009-2022 has fluctuated but tends to increase. NTP in 2021 at the national level is 104.64 and in 2022 it is 107.33. This means that farmers in Indonesia as a whole experience a surplus because the NTP is above 100.

The increase in NTP is expected to be a real reflection of the increase in the welfare of farmers. However, this NTP can be influenced by various factors that can affect it in the short and long term. Previous studies have shown that NTP is formed from price indexes related to inflation, wherein inflation is also formed from price changes. Inflation has the largest proportion and has a long-term impact on NTP, while Gross Regional Domestic Product (GRDP) affects NTP in the short term [3]. [4] also stated that the GRDI of the agricultural sector has a relationship with NTP due to the large added value of the agricultural sector which has been able to increase the welfare of farmers in Southeast Sulawesi. This added value has an impact on increasing the ability of farmers to pay for their farming inputs related to farmer income. [5] also state that deconcentration fund programs and special allocation funds are likely to have a direct relationship to the factors forming farmer exchange rates. Ideally, government spending in the agricultural sector should support the welfare of farmers. So that both deconcentration funds and special allocations affect farmers' exchange rates.

The Consumer Price Index (CPI) also had a significant negative effect on Farmer Exchange Rates in Indonesia in 2013-2017 [6]. Changes in the CPI (inflation) and the rupiah exchange rate in the fisheries sector are factors that play an important role in determining the dynamics of the price index received and paid by fishing households. So that changes in the CPI affect fishermen's CPT [7]. NTP is also influenced by the economic growth of a region. This is because one of the impacts of economic growth is the growth in output per capita which can be reflected through increased yields of agricultural products. If the yield of agricultural products and the price index received by farmers increases, the NTP will also be high [8].

The agricultural sector in East Kalimantan Province contributed 53,282,041 billion rupiah to the 2020 Gross Regional Domestic Product (GRDP). Data [9] states that the number of workers working in the agricultural sector in 2020 is 346,768 (20.48%) increase compared to 2019 with a total

of 325,013 (19.19%). The percentage of poverty has also increased from 5.91% in 2019 to 6.64% in 2020. NTP in East Kalimantan in 2021 was 122.51.

One of the districts with a vision and mission in the agricultural sector is KutaiKartanegara Regency. This district has the potential to develop the agricultural, forestry, livestock, and fisheries sectors which can absorb labor and provide increased income for farming households. The agriculture, forestry, and fisheries sectors were able to contribute IDR 23,863,131.64 million (13.46%) to the GRDP of IDR 177,318,198.79 million. The development of the agricultural, fisheries, and forestry sectors is expected to provide increased welfare for farmers as business actors in this sector, where these farmers act as food producers as well as consumers [9].

The aims of this study are: (1) to analyze the dynamics and influence of GRDP on farmers' exchange rates, and (2) to formulate policies that can intervene to increase farmer exchange rates in KutaiKartanegara Regency.

RESEARCH METHODS

1. Time and Place of Research

This research was conducted from March to June 2023 in KutaiKartanegara Regency.

2. Data Collection Methods

The data collected is in the form of secondary data consisting of (1) Farmer Terms of Trade (NTP) in KutaiKartanegara Regency in 2016-2020; (2) PDRB Data for KutaiKartanegara Regency in 2015-2020; (3) Samarinda Human Development Index (HDI) data for 2015-2020; and (4) Samarinda CPI data for 2016 – 2019. These data were obtained from local government agencies or agencies such as the Regional Development Planning Agency (BAPPEDA), Central Statistics Agency (BPS) East Kutai, East Kutai Agriculture Service, East Kalimantan BPS, as well as other agencies that can provide data and information to support this research.

In addition to the secondary data obtained, researchers also conducted in-depth discussions and interviews with competent sources such as relevant government officials, agricultural field officers, and other stakeholders to deepen policy interventions that can be carried out to increase farmers' exchange rates.

3. Methods of Data Analysis

To analyze farmer exchange rates using descriptive analysis and to analyze the factors that affect exchange rates using simple linear regression analysis. Regression analysis is used to determine the relationship (influence) between GRDP and farmer's FTT which includes the correlation test (r), the coefficient of determination (R^2), the F-test, and the t-test.

RESULTS AND DISCUSSION

1. Overview of the Research

KutaiKartanegara Regency has an area of 27,263.10 km² and a water area of approximately 4,097 km² which is geographically located between 115°26'28" E - 117°36'43" E and 1° 28'21" N – 1° 08' 06" LS, consisting of 18 districts and 237 villages/wards.

2. Farmer Exchange Rates

KutaiKartanegara Regency has abundant natural resource potential in several sectors, especially in the mining and quarrying sector, which is then followed by the agriculture, livestock, forestry, fishery,

construction, and manufacturing sectors. The four leading sectors make a significant contribution to regional development, even the GRDP of KutaiKartanegara Regency is the largest/ranking first contributor in the formation of GRDP for East Kalimantan Province. The agricultural sector as a business field for the people of KutaiKartanegara absorbs 21 percent of the workforce [10]. Therefore one measuring tool to assess the welfare of farmers is to know the farmer exchange rate (NTP). The formation of NTP developed by the Central Bureau of Statistics (BPS) is as follows:

2.1. Prices received by Farmers

Prices received by farmers consist of components of food crops, horticulture, plantations, and animal husbandry. Food crops, namely rice, and corn; Horticulture consists of vegetables (cabbage, shallots) and fruits (bananas and mangoes). Farmer Exchange Rates in KutaiKartanegara can be seen in Table 1.

Table 1. Average NTP of the KutaiKartanegara Food Crops Sub-Sector in 2016 – 2020*

Description	2016	2017	2018	2019*	2020* **
Index Received by Farmers	105,47	105,23	103,00	101,74	98,87
Farmer Paid Index	104,74	105,41	107,14	108,04	103,05
Farmer Exchange Rates	100,69	99,82	96,15	94,16	95,97

* = Projection figures Based on 2016-2018 data and East Kalimantan FTT; comparison

** = projected figures until September 2020

Source: Farmer Exchange Rate Statistics (NTP) for 18 Districts, 2016-2018

Based on the data in Table 1, shows that the average NTP for the KutaiKartanegara food crop sub-sector in 2016: the price index paid by farmers was 105.47 and the index received by farmers was 104.74, with a NTP value of 100.69. This means that production equals consumption. In 2017: the price index paid was 105.23 and the index received by farmers was 105.41, with a NTP of 99.82. Which means production is less than consumption. In 2018: the price paid index is 103.00 and the index received by farmers is a NTP value of 96.15, which means that production is less than consumption. In 2019: the price paid index is 101.74; the price paid index is 108.34 with an NTP of 94.16; and in 2020: the price index paid is 98.87 and the price index paid is 103.05 with an NTP of 95.97, which means that the production is less than consumption.

Table 2. Average NTP of the KutaiKartanegara Horticultural Crops Sub-Sector in 2016-2020*

Description	2016	2017	2018	2019*	2020* **
Index Received by Farmers	95,84	91,93	93,57	89,09	105,57
Farmer Paid Index	104,24	104,59	106,00	106,58	111,96
Farmer Exchange Rates	91,95	87,89	88,27	83,58	94,28

* = Projection figures Based on 2016-2018 data and East Kalimantan FTT comparison

** = projected figures until September 2020

Source: Farmer Exchange Rate Statistics (NTP) for 18 Districts, 2016-2018

Table 2 above shows that in 2016: the price index paid by farmers was 95.84 and the index received by farmers was 104.24 and NTP was 91.95; Likewise in 2017: the price index paid by farmers is 91.93, and the accepted price index is 104.59 and NTP 87.89. In 2018: the price index paid by farmers is 93.57, and the accepted index is 106.00 and NTP 88.27. In 2019 the price index paid by farmers was 89.09, the price index received by farmers is 106.58, and NTP was 83.58 and in 2020: the price index paid by farmers is 105.57, and the price index received by farmers is 111.96 and NTP 94.28. The situation shows that the NTP from 2016 to 2020 is less than 100, which means that production is less than consumption.

Table 3. Average NTP of the KutaiKartanegara Plantation Sub-Sector in 2016-2020*

Description	2016	2017	2018	2019*	2020**
Index Received by Farmers	114,87	121,79	108,71	98,80	95,44
Farmer Paid Index	103,75	104,29	105,87	106,89	106,88
Farmer Exchange Rates	110,72	116,78	102,74	92,42	89,33

* = Projection figures Based on 2016-2018 data and East Kalimantan FTT comparison

** = projected figures until September 2020

Source: Farmer Exchange Rate Statistics (NTP) for 18 Districts, 2016-2018

Table 3 shows that the NTP values in 2016, 2017, and 2018 were 110.72 respectively; 116.67 and 102.74; the NTP value is greater than 100 which means that production is greater than consumption. Whereas in 2019 and 2020 the NTP is 92.42 and 89.33 the NTP value is less than 100 which means production is smaller than consumption.

Table 4. Average NTP of the KutaiKartanegara Livestock Subsector in 2016-2020*

Description	2016	2017	2018	2019*	2020**
Index Received by Farmers	105,48	102,61	101,94	99,00	95,44
Farmer Paid Index	105,23	106,17	108,69	109,84	121,45
Farmer Exchange Rates	100,25	96,64	93,79	90,12	95,46

* = Projection figures Based on 2016-2018 data and East Kalimantan FTT comparison

** = projected figures until September 2020

Source: Farmer Exchange Rate Statistics (NTP) for 18 Districts, 2016-2018

Table 4 shows that an NTP equal to 100 occurred in 2016, while the NTP value in 2017, 2018, 2019, and 2020 was less than 100. Which means that production is smaller than consumption.

Table 5. Average NTP of the KutaiKartanegara Fisheries Sub-Sector in 2016-2020*

Description	2016	2017	2018	2019*	2020* **
Index Received by Farmers	97,09	99,05	100,2	102,19	102,90
Farmer Paid Index	102,33	102,42	103,91	105,06	106,26
Farmer Exchange Rates	94,88	96,72	96,43	97,26	96,84

* = Projection figures Based on 2016-2018 data and East Kalimantan FTT comparison

** = projected figures until September 2020

Source: Farmer Exchange Rate Statistics (NTP) for 18 Districts, 2016-2018

Table 5 shows that the NTP value for the fisheries sub-sector for 2016, 2017, 2018, 2019 and 2020 is less than 100, namely 94.88; 96.72; 96.43; 97.26, and 96.84. Which means that production is smaller than consumption.

2.2. Human Development Index

According to [11] that the Human Development Index (HDI) is a comparative measure of life expectancy, literacy, education, and standard of living. HDI explains how residents can access development outcomes in obtaining income, health, education, and so on. The HDI value and Gross Regional Domestic Product (GRDP) of KutaiKartanegara Regency are presented in Table 6.

Table 6. Samarinda Human Development Index, GRDP Kukar at Constant Prices, GRDP KabupatenKutaiKsrtanegara at Current Prices

Year	Human Development Index	Category	GRDP at Constant Prices	GRDP at Current Prices
2015	71,78	Currently	10 757 614,40	11,30
2016	72,19	Currently	10 980 440,60	12,70
2017	72,75	Currently	11 624 585,78	12,89
2018	73,15	Currently	12 421 272,32	12,90
2019	73,78	Currently	13 160 984,50	13,41
2020	73,59	Currently	13 240 217,52	14,93
2021	74,06	Currently	13 375 803,96	13,46
2022	74,67	Currently	13 633 689,96	10,72

Source: BPS (Data processed)

Information :

AHH = Life expectancy

HDI = Human Development Index

GRDP at constant prices = GRDP at constant prices in Agriculture, Fisheries, and Forestry (million rupiahs)

GRDP at current prices = GRDP at current prices in agriculture, forestry, and fisheries (percent)

According to [12] that the quality of the population is the ability to fulfill needs such as food, clothing, housing, health, and education. Population quality and the Human Development Index are inseparable parts. and the Human Development Index (HDI) is a comparative measure of life expectancy, literacy, education, and standard of living in a country. HDI shows a benchmark whether the area is a developed or developing area. If the HDI is less than 50 then the HDI is low; If $50 < HDI < 80$ indicates moderate HDI and if $HDI > 80$ indicates high HDI, the table shows HDI numbers increasing from 2015 to 2022, starting in 2015 the HDI figure is 71.78 and in 2022 it is 74,67. The HDI in KutaiKartanegara shows a moderate HDI rate because it is less than 80. GRDP from 2015 to 2022 in KutaiKartanegara Regency is presented in Table 7.

Table 7. GRDP from 2015 to 2022 in KutaiKartanegara at Constant Prices

No	Year	GRDP at Constant Prices	Percentage (%)
1	2015	10 757 614,40	-
2	2016	10 980 440,60	2,07
3	2017	11 624 585,78	5,86
4	2018	12 421 272,32	6,85
5	2019	13 160 984,50	5,95
6	2020	13 240 217,52	0,60
7	2021	13 375 803,96	1,02
8	2022	13 633 689,96	1,92

Source: BPS Kukar 2015 – 2022 (Data processed)

GRDP describes the performance of an economy. GRDP at constant prices is an attempt to calculate the real production of an economy's GRDP for a certain year is determined as the base year [13]. In 2016 with an economic growth rate of 2.07 percent; GRDP in 2017 with an economic growth rate of 5.86 percent; GRDP in 2018 was 6.85 percent; GRDP in 2019 is 5.95 percent; GRDP in 2020 is 0.60 percent; GRDP in 2021 is 1.02 percent; and GRDP in 2022 is 1.92 percent.

To compare the development of the consumer price index in KutaiKartanegara Regency, the consumer price index in Samarinda City is presented in the area closest to KutaiKartanegara Regency in Table 8.

Table 8. Consumer Price Index for Samarinda City from 2020 to 2023

No	2020	2021	2022	2023
1	103,78	104,54	107,40	112,48
2	104,16	104,65	107,18	112,44
3	104,00	104,90	107,61	113,02
4	103,71	105,17	108,74	113,53
5	103,86	105,41	109,44	113,65
6	104,04	105,70	109,90	-
7	104,41	105,69	110,47	-
8	104,24	105,48	110,25	-

9	103,89	105,61	111,17	-
10	103,67	105,64	111,42	-
11	104,04	105,74	111,70	-
12	104,29	106,43	111,99	-

Source : [14]

According to [15] that the consumer price index (CPI) is the average change in the price of a package of goods and services consumed by households in a certain period. Package means forming a collection of goods and services with the highest proportion of household expenditure. The price index serves as a barometer/indicator of general economic conditions, a guideline in setting various state policies and administration, and a deflator, a guideline for purchasing various types of goods. From these data, the consumer price index increased from 2020 at the end of December there was a price increase of 4.29 percent, and in 2021 December it increased to 6.43 percent, and in 2022 it increased to 11.99 percent.

The results of the analysis of the average farmer exchange rate in KutaiKartanegara Regency from 2016 to 2020 are presented in Table 9.

Table 9. Average Results of Farmers' Exchange Rates in KutaiKartanegara Regency, 2016 - 2020

Year	Food Plant	Horticulture	Plantation	Livestock	Fisheries	Total	Average
2016	100.69	91.95	110.72	100.25	94.88	498.49	99.698
2017	99.82	87.89	116.78	96.64	96.72	497.85	99.57
2018	96.15	88.27	102.74	93.79	96.43	477.38	95.476
2019	94.16	83.58	92.42	90.12	97.26	457.54	91.508
2020	95.97	94.28	89.33	95.46	96.84	471.88	94.376

Source: BPS 2021 (Data processed)

Based on Table 9, shows that the average NTP in 2016 for the food, horticulture, plantation and livestock, and fisheries sectors was 99.698, meaning that the NTP was less than 100, meaning that farmers experienced a deficit, meaning that farmers' income was less than farmers' expenditure. Likewise in 2017, 2018, 2019, and 2020.

The results of the analysis using SPSS (Table 10) obtained a linear regression equation, the coefficient of determination (R2) and the correlation coefficient (r) are as follows:

Table 10. Model Summary (Results of the Analysis using SPSS) Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients
		B	Std. Error	Beta
1	(Constant)	11.376	1.683	
	Ln_X1	-.417	.103	-.919

a. Dependent Variable: Ln_Y

ANOVA^a

Model	Sum of Squares	df	Mean Square
1 Regression	.005	1	.005
Residual	.001	3	.000
Total	.005	4	

a. Dependent Variable: Ln_Y

b. Predictors: (Constant), Ln_X1

Model	R	R Square	Adjusted R Square	Std. The error in the Estimate
1	.919 ^a	.845	.794	.01666

a. Predictors: (Constant), Ln_X1

Based on the results of the analysis (Table 10), it shows that the t-count value is greater than the t-table value, which means that there is a positive influence between GRDP and farmer exchange rates. A positive constant value of 11,376 indicates a positive influence of the independent variables. If the independent variable (GRDP) decreases by one unit, then the dependent variable of the farmer's exchange rate will increase by one unit; The coefficient of determination (R^2) is 0.845, which means that the effect of GRDP on farmer exchange rates (NTP) is 84.50%, while 15.50% is influenced by factors other than GRDP; and the value of the correlation coefficient (R) is 0.919, which means there is a strong positive relationship between GRDP and NTP.

Efforts that can be made to make several policies that can intervene in increasing farmer exchange rates are as follows:

1. Subsidized fertilizer policy

ToKartanegara Regent Regulation Number 56 of 2012, namely that fertilizer is a very important commodity to increase productivity in the agricultural sector so that the goal of achieving national food security proclaimed by the government can be fulfilled, subsidized fertilizer is intended for farmers, planters, breeders who cultivate land a maximum of 2 (two) hectares per planting season per farming family, except for fish and/or shrimp cultivators, a maximum of 1 (one) hectare. (2) Subsidized fertilizer as referred to in paragraph (1) is not intended for food crops, horticulture, plantation, livestock, or aquaculture companies.

2. Controlling the distribution and price of subsidized fertilizer, the Government of KutaiKartanegara Regency (Kukar) through the Fertilizer and Pesticide Monitoring Commission (KP3) monitors the distribution of subsidized fertilizer from the government to farmers.

3. Water Use Improvement Acceleration Program, through the P3-TGAI program, a program for rehabilitation, improvement, or construction of Irrigation Networks based on the participation of the farming community which is carried out by the Water-User Farmers Association, the Association of Water-Using Farmers Association or Main Association of Water-User Farmers individually. self-management with the types of activities are rehabilitation of irrigation networks, improvement of irrigation networks, and construction of networks

4. Agricultural infrastructure, especially Farming Roads, is one of many components in the upstream subsystem which is expected to support other subsystems such as the processing and marketing of agricultural products. In KutaiKartanegara this subsystem has not been maximized even though this area is designated as a link in the successful chain of food self-sufficiency in East Kalimantan Province.

5. Absorption of grain (rice) owned by farmers by Bulog refers to the quality standards required by the Minister of Home Affairs Regulation Number 24 of 2020 concerning the Determination of Government Purchasing Prices. As of 2022, the absorption of 225 tons of rice produced by these farmers complements the previous absorption of 400 tons, so currently the total absorption by Bulog is 625 tons.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

1. The dynamics of farmer exchange rates consist of farmer exchange rates for food, horticulture, plantations, livestock, and fisheries. The largest farmer exchange rate is in the plantation sector with an average exchange rate of 102.40. Furthermore, the food sector (97.36), livestock (95.25), and fisheries (96.43).
2. The results of the simple linear regression study have a significance of less than 0.05, namely 0.027, meaning that there is a positive influence between the GRDP of KutaiKartanegaraRegency and the Farmer Exchange Rates of KutaiKartanegara Regency.
3. Policies that can intervene are subsidized fertilizer policies and control the distribution and prices of subsidized fertilizers.

Suggestion

Farmers must further increase agricultural yields by making more use of subsidized fertilizer policies

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