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Analysis Of The Impact Of Rice Imports, Rice Consumption, Productivity, Harvest Area, And Rice Production On The Farmer's Exchange Rate For Food Crops In 2019-2023

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Abstract, *Rice imports have been demonstrated to influence the Farmer's Exchange Rate (NTP) significantly. A reduction in rice imports by 356,286.2 tons in 2020 corresponded with a decline in NTP to 101.65. In contrast, per capita, weekly rice consumption did not exhibit a statistically significant impact on NTP, as evidenced by the lowest consumption in 2019 (1.504 kg), while the NTP remained at 104.46. On the other hand, rice productivity was found to have a notable influence on NTP, with trends in productivity closely mirroring those of the NTP. The harvest area, however, did not present a significant correlation with NTP, as demonstrated in 2019 when an increase in harvest area did not prevent the NTP from remaining at a lower level of 104.46. Lastly, rice production had a significant effect on NTP, with increases in production during 2021 and 2022 leading to subsequent increases in the NTP.*

Keywords: *Rice Imports, Rice Consumption, Rice Productivity, Harvest Area, Rice Production; Farmer's Exchange Rate*

1. INTRODUCTION

The agricultural sector is a crucial element in a country's economy, particularly for developing nations such as Indonesia. Agriculture based on local resources makes a significant contribution to national development. Therefore, a development orientation focused on improving farmer welfare is essential. Evaluating the impact of development on farmer welfare is crucial to providing feedback for subsequent agricultural development policies. One indicator used to measure farmer welfare is the Farmer's Exchange Rate (NTP) (Nirmala, Hanani and Muhaimin, 2016). NTP serves as a relevant tool for assessing farmer welfare because it reflects farmers' ability to maintain their purchasing power through agricultural products.

An increase in NTP indicates an improvement in welfare, while a decrease in NTP may suggest that farmers are struggling to maintain their standard of living. Thus, NTP is not merely a number, but also a reflection of the success or failure of agricultural policies in enhancing farmers' living standards. Improved farmer welfare, as reflected in NTP, will also have a positive impact on national economic development. The Farmer's Exchange Rate (NTP) measures farmers' ability to exchange the agricultural products they sell for the goods and services they need for daily life and production purposes. NTP shows the extent to which agricultural products produced by farmers can meet household consumption needs and other agricultural production needs. Therefore, NTP functions as an indicator of farmer welfare, as

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it reflects whether the income earned from selling agricultural products is sufficient to purchase the goods and services farmers need. When NTP is high, farmers have strong purchasing power, whereas a low NTP indicates farmers are facing difficulties in meeting their living needs. Evaluating NTP is essential for understanding farmers' economic conditions and the effectiveness of agricultural policies in improving their living standards (Pangestika and Prihtanti, 2020).

There are several factors that researchers aim to examine in terms of their impact on NTP, particularly from 2019 to 2023. The factors of interest include rice imports, rice consumption, productivity, harvest area, and rice production. Rice imports are an external factor that can influence NTP. When rice imports increase, domestic rice prices may be pressured, which can reduce farmer income and negatively impact NTP. Meanwhile, rice consumption is an important indicator reflecting domestic demand for rice. High rice consumption is usually followed by more stable prices and better income potential for farmers. Then, rice productivity, measured as the yield per unit land area, is a key factor in determining NTP. This is followed by the harvest area, which affects total production and rice supply in the market. Changes in harvest area can influence rice prices and, ultimately, NTP. Rice production, which includes the total yield from all regions, also plays a role in determining rice prices and farmer income.

2. METHOD

The research method employed for this study is qualitative research, utilizing secondary data from other sources such as the Central Bureau of Statistics (BPS). Consequently, this study also includes research findings regarding the impact of various variables on the Farmer's Exchange Rate (NTP). This approach is consistent with the qualitative method employed. The purpose of this approach is to explain the theories that are relevant to the data obtained. By doing so, the study seeks to connect theoretical frameworks with empirical findings, offering a deeper understanding of how the data supports or challenges existing theories.

3. RESULD AND DISCUSSION

Rice Imports in Indonesia

Importation refers to bringing goods and services from abroad into the domestic market, serving purposes such as consumption, capital investment, or raw materials for local production. Rice, one of Indonesia's staple food commodities, plays a crucial role in maintaining food security. Consequently, activities related to the production, supply, procurement, and distribution of rice are of paramount importance. These activities are directly

linked to efforts to enhance farmers' income and welfare, as well as to ensure stability in societal consumption.

The import process involves the influx of goods and services from other countries into the domestic market, encompassing a variety of objectives, including direct consumption, investment in capital goods, or inputs for domestic industries. Rice importation, in particular, serves to meet the population's food needs that may not be fully satisfied by local production. Ensuring a stable supply of rice at reasonable prices is a critical step in supporting farmer welfare. By maintaining adequate supply and fair pricing, farmers' incomes can be bolstered, thereby positively impacting their livelihoods. Moreover, stability in the rice supply also helps maintain consumption stability within society. It is essential to ensure that all population's segments have access to adequate food, thus supporting food security and overall well-being (Andani, 2008).

Indonesia typically imports rice from some of the world's largest rice-exporting countries, including India, Thailand, Vietnam, Pakistan, Myanmar, Japan, China, and several other nations. The following are rice import data from BPS, sourced directly from these countries: (Badan Pusat Statistik, 2024a)

Table 1. Rice Imports

Year	2019	2020	2021	2022	2023
Rice Import (TON)	444508.8	356286.2	407741.4	429207.3	3062858
Highest	**3062857.6**				
Lowest	**356286.2**				
Average	**940120.2582**				

The table above indicates that the highest value of rice imports occurred in 2023, with a total import volume of 356,286.2 tons. Conversely, the lowest import value was recorded in 2020, at 356,286.2 tons. Additionally, the average value of rice imports from 2019 to 2023 is 940,120.2582 tons.

Rice Consumption in Indonesia

Rice consumption in Indonesia is a critical aspect of the national diet, as rice is the predominant staple food in daily meals. The majority of the Indonesian population relies on rice as a primary source of carbohydrates, and high per capita rice consumption reflects a significant dependence on this commodity. Patterns of rice consumption in Indonesia are influenced by various factors, including culinary traditions, regional dietary patterns, and the general income levels of the population. Furthermore, fluctuations in rice consumption can also

be affected by changes in rice prices, government policies related to imports and production, and overall economic conditions. Monitoring rice consumption at both the national and regional levels is essential for planning and managing food security, ensuring that the rice supply meets the needs of the population. Data on rice consumption also provides insights into dietary patterns and can be utilized to design policies that support farmer welfare and market stability for rice in Indonesia (Nirmala, Hanani and Muhaimin, 2016).

The following data from the Central Bureau of Statistics (BPS) details rice consumption in Indonesia, measured per capita per week over one year. This data encompasses rice consumption from 2019 to 2023. The data is as follows: (Sari, 2014)

Table 2 Rice Comsumption per week

Year	**2019**	**2020**	**2021**	**2022**	**2023**
Per capita rice consumption per week (Kg)	1,504	1,505	1,569	1,560	1,558
Highest	**1,569**				
Lowest	**1,504**				
Average	**1,539**				

The data from BPS indicates that rice consumption experienced a surge from 2020, with a per capita weekly consumption value of 1.505 kg, rising to 1.569 kg in 2021 and showing relative stability with fluctuations until 2023. The highest consumption value was recorded in 2021 at 1.569 kg per capita per week per year, while the lowest value was observed in 2019, with a consumption value of 1.504 kg per capita per week per year. The average rice consumption value from 2019 to 2023 is 1.539 kg per capita per week per year.

Rice Productivity in Indonesia

Productivity is the ratio between output (results) and input (resources). Productivity increases can only be achieved through improvements in efficiency across various aspects such as time, materials, and labor (Badan Pusat Statistik, 2024b). Additionally, enhancements in work systems, production techniques, and labor skills are also crucial for attaining higher productivity. Furthermore, crop yield is a metric that indicates the quantity of product obtained from a specific area of land within a production cycle. Crop yield is measured in terms of weight per unit area, reflecting production efficiency and the quality of the land used. Common units of measurement include kilograms per hectare (kg/ha), quintals per hectare (qu/ha), and

tons per hectare (t/ha), each providing insight into the productivity of the land in terms of harvest output.

The following data presents rice productivity categorized in terms of quintals of dried unhusked rice per hectare (qu/ha) from 2019 to 2023: (Hernalius, Sumardjo, and Hamzah, 2018)

Table 3. Rice Productivity

Year	2019	2020	2021	2022	2023
Rice Productivity (Ku/Ha)	51.14	51.28	52.26	52.38	52.85
Highest	**52.85**				
Lowest	**51.14**				
Average	**51.98**				

The data shows that the value of rice productivity in Indonesia tends to increase, where it can be seen in the table above that the lowest rice productivity value is 25.85Ku/Ha in 2019 and continued with the highest productivity value in 2023 with a value of 52.85Ku/Ha. While the average rice productivity from 2019 to 2023 was at a value of 51.98 Ku/Ha.

Rice Harvest Area in Indonesia

The land area plays a crucial role in the rice harvesting process, as it directly impacts production capacity and the final yield. A larger land area allows farmers to cultivate more rice, which in turn can increase total rice production. With adequate land area, farmers can optimize the use of resources such as seeds, fertilizers, and water, and implement efficient cultivation techniques to maximize harvest outcomes. Additionally, sufficient land area provides space for crop rotation and sustainable farming practices, which are essential for maintaining soil health and enhancing long-term productivity. Therefore, effective land management is critical for achieving optimal harvest results and ensuring food security and farmer welfare (Badan Pusat Statistik, 2024c).

The following data presents the rice harvest area in Indonesia, measured in hectares (Ha), from 2019 to 2023: (Hasan, 2010)

Table 4. Rice Harvest Area

Year	2019	2020	2021	2022	2023
Rice Harvest Area (Ha)	10,680,000.52	10,660,000.31	10,411,801.22	10,452,672.00	10,213,705.17

Largest	**10,680,000.52**
Smallest	**10,213,705.17**
Average	**10,483,635.84**

The table above shows data on the area of rice harvests tends to experience a downward trend where the largest area of land for harvesting rice was in 2019, which had a rice harvest area of 10.68 million hectares. The smallest area for harvesting rice was in 2023, with a land area of only 10.23 million hectares. In addition, the average area of land used for harvesting rice from 2019 to 2023 was 10.43 million hectares.

Rice Production in Indonesia

Rice production plays a crucial role in the agricultural sector and food security, particularly in countries with a high dependence on rice as a staple food, such as Indonesia. Adequate rice production not only ensures a sufficient food supply for the population but also contributes to price stability and farmer income. An increase in rice production enables farmers to achieve better yields from their managed lands, which positively impacts their welfare and the local economy (Badan Pusat Statistik, 2024d).

The following data presents rice production figures, measured in tons, from 2019 to 2023: (Zaeroni and Rustariyuni, 2016)

Table 5. Rice Production (in TONS)

Year	2019	2020	2021	2022	2023
Rice Production (TONS)	31.313.034	31.334.497	31.356.017	31.540.522	31.101.285
Highest	**31.540.522**				
Lowest	**31.101.285**				
Average	**31.329.071**				

The data on rice production reveals that the highest production value was recorded in 2022, with a total of 31,540,522 tons. Conversely, the lowest production occurred in 2023, with 31,101,285 tons. Meanwhile, the average rice production in Indonesia from 2019 to 2023 stands at 31,329,071 tons.

Farmer Exchange Rate in Indonesia

The Farmer's Exchange Rate (NTP) is a function of the index of prices received by farmers compared to the index of prices they pay. The NTP measures the balance between the prices received by farmers for their agricultural products and the costs incurred for production inputs. The price index received reflects the market prices obtained by farmers when selling their harvest, while the price index paid represents the costs associated with purchasing goods and services required in the production process, such as fertilizers, seeds, and labor (Badan Pusat Statistik, 2024e).

The NTP is a crucial indicator that reflects the purchasing power and welfare of farmers. A high NTP indicates that farmers are receiving favorable prices for their harvest relative to production costs, thereby increasing their income. Conversely, a low NTP suggests that production costs may be excessively high compared to the selling prices, which can reduce farmers' income and affect their welfare. Therefore, regularly monitoring the NTP is essential to identify the challenges faced by farmers and to design policies that can enhance their well-being.

Based on the above explanation, the researcher has obtained NTP data from 2019 to 2023. The following data presents the NTP from 2019 to 2023: (Riyadh, 2015)

Table 6. Farmer Exchange Rates

Year	2019	2020	2021	2022	2023
Farmer Exchange Rate (NTP)	104.46	101.65	104.64	107.33	114.14
Highest	**114.14**				
Lowest	**101.65**				
Average	**106.44**				

The data presented in the table indicates that the highest Farmer's Exchange Rate (NTP) occurred in 2023, with a value of 114.14. Conversely, the NTP was at its lowest in 2020, with a value of 101.65. The average NTP from 2019 to 2023 is 106.44.

Analysis of the Influence of Rice Imports, Rice Consumption, Productivity, Harvest Area and Rice Production on the Exchange Rate of Food Crop Farmers

From the explanations above, the researcher will combine several independent variables, namely (Rice Imports, Rice Consumption, Productivity, Harvest Area, and Rice Production) to the dependent variable, namely the Farmer Exchange Rate (NTP). The following is a combined table of the data above to see its influence directly: (Badan Pusat Statistik, 2024f)

Table 7. Exchange Rate of Food Crop Farmers

Year	**2019**	**2020**	**2021**	**2022**	**2023**
Rice Import (TON)	444508.8	356286.2	407741.423	429207.268	3062857.6
Rice Consumption Per Capita per Week (Kg)	1,504	1,505	1,569	1,560	1,558
Rice Productivity (Ku/Ha)	51.14	51.28	52.26	52.38	52.85
Rice Harvest Area (Ha)	10,680,000.52	10,660,000.31	10,411,801.22	10,452,672.00	10,213,705.17
Rice Production (TON)	31.313.034	31.334.497	31.356.017	31.540.522	31.101.285
Farmer Exchange Rate (NTP)	**104.46**	**101.65**	**104.64**	**107.33**	**114.14**

4. KESIMPULAN

According to the data in the combined table of rice imports, rice consumption, productivity, harvest area, and rice production, as well as the Farmer's Exchange Rate (NTP), it is evident that rice imports influence the NTP. For example, in 2020, there was a substantial decrease in rice imports to 356,286.2 tons, which corresponded with a drop in the NTP to 101.65. In contrast, per capita weekly rice consumption appears to have no significant impact on the NTP. Despite the consumption being at its lowest in 2019 at 1.504 kg, the NTP did not show a significant effect, remaining at 104.46. The third variable, rice productivity, demonstrates an influence on the NTP, as the trends in rice productivity closely mirror those of the NTP. The fourth variable, harvest area, shows no significant impact on the NTP. For instance, although the harvest area increased significantly in 2019, the NTP remained relatively low at 104.46. Finally, rice production has a notable impact on the NTP. For example, the increase in rice production in 2021 and 2022 was accompanied by a rise in the NTP, indicating that rice production significantly affects the NTP.

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