



Factors Affecting Rice Prices in Indonesia (Production, Consumption, Imports, International Prices, Crop Damage)

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Abstract. Rice prices in Indonesia have experienced significant fluctuations from 2019 to 2023, influenced by factors such as production, consumption, imports, international prices, and crop damage. The highest rice production was recorded in 2022 at 31,540,522 tons, while the lowest production occurred in 2023 at 31,101,285 tons. The highest rice consumption was in 2023 at 30,616,081 tons, and the lowest was in 2019 at 28,930,000 tons. The highest rice imports were in 2023 at 2,715,854 tons, and the lowest was in 2019 at 6,197 tons. Global rice prices also fluctuated, ranging from Rp. 6,674/kg in 2019 to Rp. 8,667/kg in 2023. Crop damage was lowest in 2022 at 470,131 hectares and highest in 2019 at 819,444 hectares. It's important to note that the fluctuations in rice prices are intensely influenced by several factors that highlight the need for effective price stabilization policies to guarantee the accessibility and affordability of rice for the public.

Keywords: Rice Price Fluctuations; Rice Production and Consumption, Imports; Crop Damage

1. INTRODUCTION

Rice prices are a critical indicator in the economy, especially in countries that rely on rice as a staple food, such as Indonesia. Fluctuating rice prices can affect economic stability, societal welfare, and government policies.[1] Therefore, understanding the factors that influence rice prices is essential for developing effective price control strategies. Rice prices fall into fluctuating prices that can rise and fall quickly because they are influenced by many factors, leading to instability. This study will examine several factors, including Production, Consumption, Imports, International Prices, and Crop Damage.[2]

Rice prices in Indonesia often experience sharp fluctuations, especially before harvest seasons and during lean periods. These fluctuations can be caused by imbalances between supply and demand.[3] Additionally, factors such as unstable weather, changes in planting patterns, and government policies also play a crucial role in determining rice prices. Therefore, understanding and managing these factors is important for creating better rice price stability. Furthermore, climate also affects production levels. Intensifying climate change has led to unstable weather, affecting the growth process of rice plants. Natural disasters such as floods and droughts can devastate rice fields, causing significant losses for farmers. Additionally, pest and disease attacks, such as caterpillar pests and Fusarium disease, can reduce harvest yields.[4]

Rice prices are also influenced by other factors, such as government policies on exports and imports. Rice export-import policies have a significant impact on price fluctuations in the market. When the government implements an import policy to meet domestic supply shortages,

rice prices usually fall due to increased supply. Conversely, export policies aimed at increasing state revenue can reduce supply in the market, causing rice prices to rise.[5] Furthermore, these policies are often influenced by external factors such as climate conditions, changes in global trade policies, and international market dynamics that also affect rice price stability domestically.[6] Uncertainty in the implementation of rice export-import policies can also add to price volatility, as market participants may react to speculation or sudden changes in these policies. As a result, rice consumers and producers must face price uncertainty that can affect their economic well-being.[7]

Inadequate infrastructure and logistical disruptions significantly impact rice prices in the market. Damaged roads, unfit bridges, and inefficient transportation systems can hinder rice distribution from production areas to consumer markets. Consequently, transportation costs increase, ultimately burdening the final price of rice. Moreover, logistical disruptions such as delivery delays, lack of adequate storage facilities, and coordination problems within the supply chain can also cause price fluctuations. When rice distribution is disrupted, market supply becomes unstable, creating shortages that drive up prices. This condition not only disadvantages consumers, who have to pay more for their basic needs, but also farmers, who may not receive fair prices for their harvests due to additional costs incurred during distribution. Therefore, improving infrastructure and logistics systems is crucial to ensuring stable and affordable rice prices.[8]

Increases in agricultural input prices, such as fertilizers, pesticides, and labor costs, directly raise the production costs of rice. Fertilizers and pesticides are essential components in rice cultivation, serving to enhance yield and protect crops from pests and diseases. When the prices of these components rise, farmers must spend more capital to acquire them. On the other hand, labor costs also play a crucial role in the rice production process, from planting, and maintenance, to harvesting. Although rising labor wages positively impact workers' welfare, they add to the cost burden for farmers. The consequence of rising input prices is an overall increase in production costs, ultimately driving up the market selling price of rice. As production costs rise, farmers may be forced to increase selling prices to cover their expenses, which then affects consumers who have to pay more for rice. Thus, increases in agricultural input prices significantly contribute to higher rice prices in the market.

Global climate change has a significant impact on crop yields and rice prices. Phenomena such as changing rainfall patterns, rising temperatures, and the frequency of extreme weather events like floods, droughts, and storms can disrupt agricultural cycles and reduce rice productivity. When planting seasons are disrupted by uncertain weather conditions,

rice crops may not grow optimally, resulting in lower yields. Prolonged drought can reduce the availability of irrigation water, while floods can damage already planted crops. This yield reduction leads to decreased rice supply, ultimately driving up prices due to the imbalance between supply and demand. Additionally, farmers face additional challenges, such as increased costs to adapt farming practices to changing climate conditions, for example, through investments in irrigation technology or weather-resistant rice varieties. The impact of global climate change is felt not only by farmers but also by consumers who have to pay higher prices for rice due to production and price fluctuations.[9]

Speculation and hoarding practices by large traders or distributors can lead to unwarranted increases in rice prices. When large traders or distributors intentionally withhold rice stocks to create artificial shortages in the market, they manipulate supply to appear lower than actual demand. This tactic is usually employed to significantly raise rice prices, allowing them to sell hoarded stocks at much higher prices, thus gaining substantial profits.[10] Speculation about future price increases encourages traders to withhold rice longer, worsening market shortages. As a result, consumers are forced to pay higher prices for their basic needs, while price instability also disadvantages small farmers who may lack strong bargaining power. These practices disrupt market balance and negatively impact economic stability, as unwarranted price fluctuations create uncertainty and reduce purchasing power. Therefore, strict monitoring and regulation are necessary to prevent rice speculation and hoarding, ensuring fair and stable prices for all parties.

This study is proposed to identify and analyze various factors influencing rice prices. By examining aspects such as export-import policies, infrastructure and logistics, agricultural input prices, climate change, and speculative and hoarding practices, this study aims to provide a deep understanding of the dynamics influencing rice prices in Indonesia. This study also aims to uncover how the interaction between these factors can cause price fluctuations and their impact on consumers and farmers. With this comprehensive understanding, the research results are expected to serve as a basis for formulating effective policies to maintain rice price stability and ensure affordable and sustainable rice availability for the public.

2. METHOD

a. Method

The research method used for this study is the Mix Method, combining both quantitative and qualitative approaches. Therefore, this research includes quantitative results as well as descriptive explanations of the findings obtained.

b. Approach

The methodology employed in this study uses the Mixed Methods approach. The quantitative component is used to analyze the computed data, producing numerical findings. Meanwhile, the qualitative aspect aims to explain theories relevant to the computed results.

3. RESULT AND DISCUSSION

Factors Affecting Rice Prices

Rice prices can be influenced by several factors, including import-export policies, infrastructure and logistics, prices of agricultural inputs such as fertilizers and pesticides, climate change, and speculative and hoarding practices by wholesalers or distributors.

The first factor is the rice production factor which also affects rice prices. Rice production in Indonesia often experiences significant fluctuations, which ultimately affect rice prices in the markets. One of the main causes of this fluctuation is increasingly intense climate change. Unstable weather, such as excessive rainy or long dry seasons, can affect the growth process of rice plants. This can lead to decreased yields and trigger increased rice prices. In addition to climate change, natural disasters such as floods and droughts are major threats to rice production. These disasters can destroy rice fields and cause huge losses for farmers. For example, widespread flooding can inundate rice fields and cause rice plants to die, while drought can reduce soil fertility and inhibit plant growth. Both of these disasters can have a significant impact on rice production and ultimately affect prices.

Pest and plant disease attacks are also other factors that affect rice production. Pests such as caterpillars and rats can damage rice crops, while diseases such as fusarium can cause extensive damage. These diseases can spread quickly and affect crop yields significantly. Therefore, farmers need to use more advanced agricultural technology and sustainable agricultural practices to reduce the impact of pests and diseases. In facing these challenges, the government and the community must work together to improve the quality and quantity of rice production. This can be done by improving agricultural technology, promoting sustainable agricultural practices, and providing support to farmers through supportive programs.

The theory of supply and demand determines the price of rice through the balance between the amount of rice supplied and demanded. The price of rice will decrease if the supply increases, for example, due to a bumper harvest or imports, because the supply exceeds demand. Conversely, the price will increase if the supply decreases due to crop failure or distribution disruptions, while demand remains the same or increases. In addition, changes in

consumer preferences, income, and the prices of substitute goods also affect the demand for rice, which has an impact on price fluctuations. Understanding these dynamics is important to maintain the stability of rice prices in the market.

Government export and import policies can significantly affect rice prices, often causing price instability. When the government implements a tight export policy, reducing the volume of rice sold to the international market, market supply can increase. However, rice prices may be unstable if domestic rice production is insufficient. Conversely, a loose import policy can increase rice supply in the market, if it is too dependent on imports, global price fluctuations and changes in international policies can affect market prices. In addition, several import compositions are divided into 3 groups, namely:

1. Consumer Goods Imports

These imports are carried out to meet the shortage of materials that are not yet sufficient and to meet the additional demand for production.

2. Raw Material Imports

These include industrial raw materials, fuel, spare parts, and equipment.

3. Capital Goods Imports

These include capital goods other than transport equipment, cars, and so on.

Logistics costs also have a significant impact on rice prices in Indonesia. High logistics costs can increase the production, and distribution costs of rice, causing rice prices in the market to rise. There are three types of costs related to logistics shipping costs, namely:

1. Transportation Costs

2. Storage Costs

3. Administrative Costs

Not only are logistics costs expensive, but logistical disruptions such as a shortage of ships or trains, delivery delays, and unstable shipping costs can worsen this situation. Additionally, logistical disruptions can delay rice shipments to places in need, causing rice shortages and price increases. Therefore, the government and the logistics industry need to improve the efficiency and reliability of the logistics network to ensure stable rice prices and meet community needs.

The use of fertilizers, pesticides, and other chemicals in rice farming has a significant impact on rice prices. Rising fertilizer costs can increase rice production costs, causing market prices of rice to rise. Additionally, high pesticide costs can also increase production costs, as farmers need to use more expensive chemicals to protect rice plants from pests and diseases. Disruptions in the supply of these chemicals can worsen this situation, making rice prices tend

to rise. Therefore, farmers and the government need to improve the efficiency of chemical usage and promote sustainable farming practices to reduce production costs and ensure stable rice prices. Supporting materials for rice farming are closely related to its price because they have a significant influence on it.

The impact of global climate on rising rice prices is a complex phenomenon with a significant effect on rice price stability. Climate change is characterized by higher temperatures and decreased and uncertain rainfall. Since the industrial revolution in 1750, global air temperatures have increased by about 0.7°C, and climate experts predict that a temperature rise between 1°C and 1.5°C is inevitable. Therefore, the government and society need to work together to improve the quality and quantity of rice production, as well as to develop more strategic policies in managing rice imports and exports to ensure price stability and the welfare of farmers.

The final factor causing unstable and rising rice prices is rice hoarders. This hoarding prevents rice from reaching the market, causing a shortage and driving up prices. This is regulated in Article 53 of Law No. 18 of 2012 concerning Food, which states, "Food Business Actors are prohibited from hoarding or storing staple food exceeding the maximum amount as referred to in Article 52." However, if this regulation is violated, the sanctions for rice hoarders are written in Article 133 of Law No. 18 of 2012, which states, "Food Business Actors who intentionally hoard or store exceeding the maximum amount as referred to in Article 53 with the intent to obtain profit resulting in high or soaring staple food prices shall be subject to a maximum imprisonment of 7 (seven) years or a maximum fine of Rp100,000,000,000.00 (one hundred billion rupiahs)."

4. RESULT

The first result of this study is data in the form of a table which will then be described below the table. The following is a table of Average Rice Prices, Rice Production, Rice Consumption, Rice Imports, World Rice Prices, and Area of Rice Plant Damage in 2019-2023:

Table 1. Data Processing Results (Processed)

Year	Average Price of Rice (Rp/Kg)	Rice Production (Ton)	Rice Consumption (Ton)	Rice Imports (Ton)	World Rice Prices (Rp/Kg)	Extent of Damage to Rice Plants
2019	12,091	31,313,034	28,930,000	6,197	6,674	819,444
2020	12,261	31,334,497	29,370,000	17,018	7,836	761,598
2021	10,395	31,356,017	30,040,000	32,702	7,290	714,274
2022	10,656	31,540,522	30,198,212	64,895	6,987	470,131
2023	12,466	31,101,285	30,616,081	2,715,854	8,667	543,891
The Lowest	10,395	31,101,285	28,930,000	6,197	6,674	470,131
The Highest	12,466	31,540,522	30,616,081	2,715,854	8,667	819,444
Average	11,574	31,329,071	29,830,859	567,333	7,491	661,868

The table above shows data such as Average Rice Price, Rice Production, Rice Consumption, Rice Imports, World Rice Prices, and Area of Damage to Rice Plants. The data also shows the data range from 2019 to 2023. According to the results above, the lowest average rice price was in 2021 at IDR 10,395/Kg. While the highest price was in 2023 at IDR 12,466/Kg. The average rice price from 2019 to 2023 was in the range of IDR 11,574/Kg. In the rice production section, the lowest rice production value was obtained in 2023 with a production of 31,101,285 tons, while the highest rice production was in 2022 with a production of 31,540,522 tons. The average rice production in Indonesia is 31,329,071 tons. Next, in the rice consumption section in 2019 was the lowest point with a value of 28,930,000 tons. The highest rice consumption was in 2023 with a value of 30,616,081 tons. The average value of rice consumption in Indonesia is 29,830,859 tons.

Next is the value of rice imports which was at its lowest point in 2019 with an import value of only 6,197 tons. The highest value of rice imports was in 2023 with an import value of 2,715,854 tons. The average rice import from 2019-2023 in Indonesia was 567,333 tons.

Next is the world rice price which reached its lowest price in 2019 for IDR 6,674 / kg. However, the world rice price reached its highest point in 2023 at IDR 8,667 / kg. Meanwhile, the average world rice price from 2019-2023 is Rp. 7,491/Kg. The last is data on rice plant damage which is at the lowest level, and a rice plant damage area of 470,131 hectares in 2022. while the highest rice plant damage area was in 2019, with a damage area of 819,444 hectares.

The analysis revealed that production has the most significant impact on rice prices. When production decreases due to factors such as crop damage, natural disasters, or climate change, the supply of rice in the market becomes limited, resulting in price increases. Although

rice consumption, imports, international prices, and crop damage also play a role in influencing rice prices, production is the primary factor as it directly affects the availability of rice in the market.

5. CONCLUSION

From the analysis of data from 2019 to 2023, it can be concluded that rice prices in Indonesia showed an upward trend, with the lowest price being Rp.10,395/Kg in 2021 and the highest being Rp.12,466/Kg in 2023, with an average of Rp.11,574/Kg. The highest rice production occurred in 2022 at 31,540,522 tons, and the lowest in 2023 at 31,101,285 tons, with an average of 31,329,071 tons. The highest rice consumption reached 30,616,081 tons in 2023, and the lowest was 28,930,000 tons in 2019, with an average of 29,830,859 tons. The lowest rice imports were recorded in 2019 at 6,197 tons, and the highest in 2023 at 2,715,854 tons, with an average of 567,333 tons. World rice prices ranged from Rp.6,674/Kg in 2019 to Rp.8,667/Kg in 2023, with an average of Rp.7,491/Kg. The lowest level of crop damage occurred in 2022 at 470,131 hectares, while the highest was in 2019 at 819,444 hectares. This data shows that production, consumption, imports, international prices, and crop damage all contribute to fluctuations in rice prices in Indonesia. Additionally, rice prices are heavily influenced by rice production because the production directly affects the stock available in the market, thereby also affecting the price.

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