International Journal of Sustainable Development and Planning
Vol. 19, No. 10, October, 2024, pp. 4093-4099
Journal homepage: http://iieta.org/journals/ijsdp

Does Indonesia Need to Import Rice?

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https://doi.org/10.18280/ijsdp.191037

Received: 22 January 2024
Revised: 31 August 2024
Accepted: 9 October 2024
Available online: 30 October 2024

Keywords:
rice import, import policy, vector error correction model analysis, retail price, wholesale price

ABSTRACT

The issue of economic growth in Indonesia has become more urgent. Indonesian government always attempts to maintain a reasonably low price for rice to guarantee that all segments of society have access to their primary staple food. The rice import policy has been debated. This study investigates whether or not the current Indonesian rice sector needs to import rice. For that purpose, we investigate the producers, consumers, middlemen, and the influence of rice import policy towards price stabilization at the consumer level. This study uses primary and secondary data. Primary data comes from observation and survey activities. The areas of study belong to West Java, Central Java, Special Region of Yogyakarta, and East Java Province. Secondary data is sourced from the Ministry of Trade, Statistics Indonesia, and FAO, as well as from the official websites of several related agencies. The results indicate that Indonesia does not need to import rice based on the investigation of farmers, traders, and consumers. However, the results of the Vector Error Correction Model show that the rice import policy affects stabilization prices at the consumer level. Rice imports can reduce the retail and wholesale prices of rice.

1. INTRODUCTION

The issue of economic growth in Indonesia has become more urgent due to the prolonged economic crisis exacerbated by the pandemic and more violent geopolitical confrontations. Under such conditions, achieving sustainable economic growth becomes an important and ambitious task, the effectiveness of which depends on the economic potential and contribution of regions [1]. The effect of economic growth is due to the introduction of technological innovations that ensure the growth of efficiency and productivity, the attraction of investment and job creation, the development of competition, the expansion of commodity supply, and the diversity of business and trade formats, et cetera [2].

According to Khakim et al. [3], the agricultural sector provides raw materials for industries and plays an important role, particularly when food prices rise. In other words, the agricultural sector is still the primary source of food for Indonesian people. Among the agricultural commodities in Indonesia, which can be seen in Figure 1, rice was the most produced commodity in the country, followed by palm oil, maize, and cassava [4, 5]. The amount of rice production in sequence each year was 55.3 million tons (2017), 59.2 million tons (2018), 54.6 million tons (2019), 54.6 million tons (2020), 54.4 million tons (2021), 54.7 million tons (2022), and 53.6 million tons (2023). Indonesia's rice production fluctuates yearly, unlike palm oil, which shows an increasing trend between 2017 and 2023. Meanwhile, coconut production tended to decrease yearly.

The growth pattern in the national production of plantation commodities from 2017 to 2023 varied. The decline in production of some of the commodities was caused by climate anomalies, reduced acreage, lower productivity, and less favorable prices [6-8]. The increase in production of several commodities was caused by profitable prices, guarantee of prices, and market certainty that encouraged farmers to maintain good crops. Furthermore, government intervention through various activities, the expansion of the plantation area, and the use of high-quality seeds affected the increase in production [9].

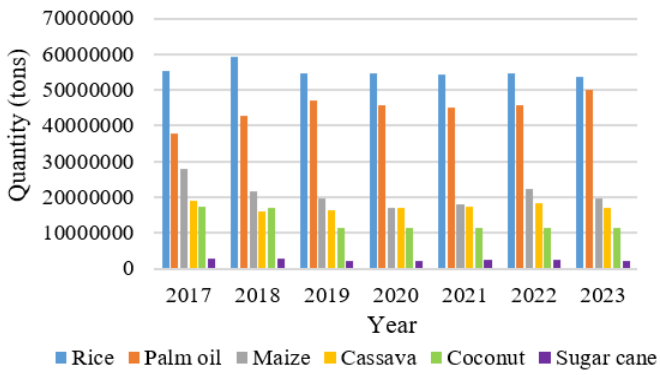

Figure 1. Top commodities: availability for consumption in Indonesia, 2017-2023

Table 1. Average per capita weekly consumption of several essential food ingredients

Commodity	Unit	Year						
		2017	2018	2019	2020	2021	2022	2023
Domestic rice/glutinous rice	Kg	1.57	1.55	1.50	1.51	1.57	1.56	1.56
Wet maize with skin	Kg	0.03	0.03	0.04	0.05	0.03	0.03	0.04
Cassava	Kg	0.12	0.09	0.08	0.09	0.12	0.11	0.11
Soybean	Kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Shallot	Ounce	0.49	0.53	0.54	0.52	0.56	0.58	0.55
Garlic	Ounce	0.31	0.33	0.35	0.32	0.36	0.39	0.38
Red chilli	Ounce	0.03	0.03	0.04	0.03	0.03	0.04	0.04
Cayenne pepper	Ounce	0.03	0.04	0.04	0.03	0.04	0.04	0.04
Coconut/maize/other oil	Liter	0.22	0.23	0.23	0.23	0.25	0.24	0.25
Coconut	Piece	0.10	0.09	0.09	0.09	0.09	0.08	0.08
Sugar cane	Ounce	1.33	1.31	1.27	1.25	1.28	1.21	1.11

Source: Statistics Indonesia, 2023 [10]

Statistics Indonesia lists a gross rice consumption of 56.92 and 58.54 million tons in 2019 and 2020, respectively. Rice consumption per capita has increased from 78.43 kilograms in 2019 to 80.91 kilograms in 2020 [5]. Table 1 also shows that rice was the most consumed weekly from 2017 to 2023. Furthermore, Indonesia ranked third globally in the consumption of rice calories per capita [11]. Although the demand for rice fluctuates annually, rice consumption per capita was still the highest and most conspicuous of all commodities.

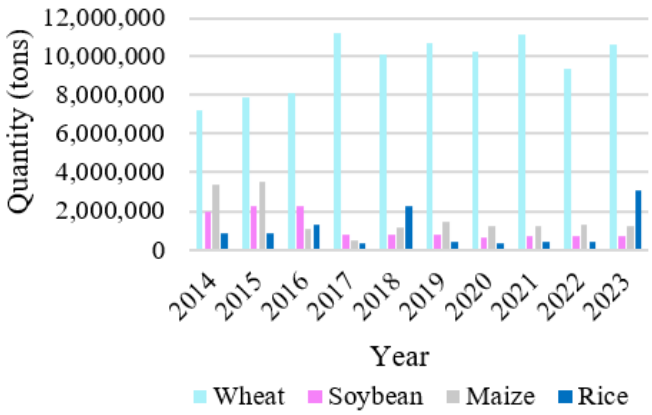

Figure 2. Imports of primary food crop commodities in Indonesia

To fulfill the people's demand for rice, Indonesia relied on local rice cultivation and imported from other countries. Rice is among other food crops that dominate Indonesia's import performance [12]. Other primary import commodities were wheat, maize, and soybean. Figure 2 illustrates the import of primary agricultural commodities in agriculture using data from Statistics Indonesia [13-16]. Based on that figure, the number of rice imports was deficient from 2019 to 2022; this condition was due to the government's policy to ban rice imports. Meanwhile, in 2023, the number increased rapidly because the Indonesian president instructed rice importation to stabilize the supply and price. This decision was made due to the effect of El Nino (warmer global temperature) and to avoid a risk of rice deficit [17, 18].

The ban on rice imports is still not fully enforceable. However, Indonesia used to stop importing rice three decades ago—around 1984–1985—and in 2008 when the country declared the achievement of self-sufficiency in rice production. Other than those years, it has been necessary for Indonesia to import rice from other countries, such as Thailand and Vietnam, despite its known status as an agricultural country. The issue of food security is essential in Indonesia. The government attaches importance to food security and plans to achieve self-sufficiency in rice production by utilizing a strengthened rice policy, an input subsidy program, price stabilization, government procurement and reserve, and *Raskin* distribution. Self-sufficiency in rice production has become non-negotiable for every cabinet of the Indonesian Government [19].

In addition, to alleviate the impact of the high domestic price on people experiencing poverty, the Indonesian government has implemented a cheap rice distribution program (*Raskin*), which was started in the era of President Megawati. The Indonesia Logistics Bureau (BULOG) was ordered as the sole rice supplier for the poor program *(Raskin)* to stabilize the domestic rice price. Mustofa et al. [19] stated that 15,530,897 poor households received *Raskin*, totaling 2,795,561 tons. The effect of food commodities on poverty is much more significant than non-food commodities, and rice is the primary food commodity influencing poverty. Warr [20] pointed out that increasing rice prices increases poverty.

An appropriate rice policy is needed to achieve food security and alleviate poverty. When the Indonesian Government removed the price stabilization mechanisms by imposing a rice import ban, rice prices drastically increased between 2004 and 2008 [21, 22]. The government implemented an import ban to protect domestic farmers. However, the rice import ban policy was the main factor that increased the rice price, resulting in a more considerable difference between the world price and the domestic price in 2004–2006. During this period, the poverty index also increased.

Furthermore, Dodge and Gemessa [21] found that the rice price increase resulted in food insecurity outcomes. Under the policy of total rice trade and trade within the band, the calorie outcomes and overall household food security improved dramatically. This policy reflects the mistaken claim advanced by supporters of rice industry protection (particularly in the Ministry of Agriculture) that restricting rice imports reduces poverty.

Fane and Warr [23] emphasized that the rice policy influenced the success of achieving poverty alleviation. Implementing a policy restricting imports increases poverty significantly because of the poverty-increasing effects of an increased price of rice. Because the price of rice acts as a price barometer in the Indonesian economy, the government always attempts to maintain a reasonably low price for rice to guarantee that all segments of society have access to their primary staple food while producers enjoy adequate

production incentives. However, this price policy does not encourage farmers to plant rice. Indonesian rice farmers always face the problem of lower prices and higher production costs. This condition meant that farmers were unable to compete with cheap imported rice.

The Indonesian government delegates BULOG to manage price stabilization, procurement, and reserve. BULOG undertakes this task by using trade policy, domestic market purchases, and stockholding to set and enforce the floor and ceiling prices. Rice may be procured if domestic rice is not sufficiently available for rice stock and reserve or to maintain the stability of the domestic rice price. During harvest, BULOG purchases rice produced by farmers to build rice stocks and protect farmers from declining rice prices. When rice production was low, BULOG sold the rice stock to the market to protect consumers from high rice prices [24, 25]. Rice procurement (including import) was undertaken only by BULOG. Thus, the domestic market became isolated and had no direct link to the international rice market. Dodge and Gemessa [21] and Natawidjaja and Rum [26] concluded that this current rice policy has resulted in more stable but much higher rice prices than the international price.

Policy discourse on importing rice then resurfaced and has been debated. Indonesian Government claimed that the objectives of the food import policy are to protect farmers and consumers, achieve food security, increase the rice industry's competitiveness, and stabilize prices. Natawidjaja and Rum [26] and Hadi and Wiryono [27] supported the implementation of protection policies because the policies positively impact improving the competitiveness and profitability of rice farming. On the other hand, international organizations and Western economists supported the rice import policy but criticized the protection policy packages, including import ban, rice procurement and stock reserve by BULOG, input subsidy program, and *Raskin* program [20, 28, 29]. They suggested that the liberalization of rice positively impacts the welfare of people experiencing poverty and that in the absence of trade liberalization, the self-sufficiency ratio of rice will decline. Moreover, a preferable strategy for achieving self-sufficiency under trade liberalization will promote productivity in the rice sector [20].

The rice import policy is highly complicated as an economic, social, and political commodity. Rice is also the key to the rural economy; thus, farmers ask for protection, and the certainty of rice prices is high. On the other hand, high prices will harm consumers, poor farmers, and traders. The proportion of rice consumption is 5% of the total consumption of poor households. The implication is that if rice prices rise by 10%, the poverty rate rises by 1.3% [30].

Following Widarjono [31], rice imports were analyzed based on Indonesia's main rice import partners, which include Vietnam, Thailand, the US, and other countries—using the demand system method with the Almost Ideal Demand System (AIDS). The study results show that rice import prices from Vietnam and Thailand are not elastic, while import prices from other countries are elastic. Another study by Octastefani and Kusuma [32] showed that the government was forced to rely on rice imports to maintain rice production. The results of this research are solutions to the government's dependence on rice imports. There is a research gap in this literature, where this study reviews import policies from the point of view of farmers, traders, and consumers, as well as the price of rice using Vector Error Correction Model (VECM) analysis.

The Agency for the Study and Development of the Ministry of Trade [33] stated that around 80 percent of Indonesia's population are rice consumers. However, Statistics Indonesia reported that in 2018, West Java, DKI Jakarta, North Sumatra, Riau, and Banten were regions experiencing a rice deficit [34]. Therefore, it is critical to conduct this study to investigate whether or not the current Indonesian rice sector must import rice. For that purpose, we assess producers', consumers', and middlemen's perspectives and the influence of rice import policies towards stabilizing prices at the consumer level.

2. METHODOLOGY

This study was conducted using purposive sampling. Purposive shows that this method is used to achieve specific goals [35]. The areas of study belong to West Java, Central Java, Special Region of Yogyakarta, and East Java Province in Java Island. The consideration of determining the research location was that those four provinces were food barns that still had enough rice fields to produce and meet the needs of the local population. The rice productivity was also higher than in other provinces outside Java Island. However, these provinces experience fluctuations in food product prices and locations adjacent to import ports.

Primary and secondary data were collected in this study. Primary data came from observation and survey activities in Focus Group Discussion (FGD), limited discussion, and interviews to identify the knowledge and perception of farmers, retailed rice traders, and consumers about the rice import policy. About 125 rice farmers, 40 traders, and 400 consumers were selected for interviews through the random sampling method. The number of samples taken cannot exceed that due to resource limitations. However, the number of samples in this study is considerably large. Following Andrade [36], the research results can be more accurate because a larger sample size reflects the population.

Secondary data (time series) at the national and international levels was used to analyze the influence of rice import policy towards price stabilization at the consumer level. Examples of secondary data taken were data on food crop production and imports. Secondary data was sourced from Indonesia's Ministry of Agriculture, Ministry of Trade, Statistics Indonesia, Food and Agriculture Organization (FAO), and several related agencies' official websites.

Descriptive analysis investigates the knowledge and perception of farmers, retailed rice traders, and consumers. At the same time, the Vector Error Correction Model (VECM) is used to analyze the influence of rice import policy towards stabilization of price at the consumer level, followed by the impulse response method and variance decomposition. The variables used were the volume of rice imports, world rice prices, retail rice prices, and wholesale prices.

VECM is a model vector autoregression (VAR) model by adding error correction variables. Error correction variables are added when there is co-integration in the model. If two variables, X and Y, are co-integrated, then the first difference of X_t and Y_t can be written as the VAR equation and added by entering the variables $Y_{t-1} - \theta X_{t-1}$ [37].

$$\Delta Y_t = \beta_{10} + \beta_{11}\Delta Y_{t-1} + \cdots \beta_{1p}\Delta Y_{t-p} + \gamma_{11}\Delta X_{t-1} + \gamma_{1p}\Delta X_{t-p} + \alpha_1(\Delta Y_{t-1} - \theta X_{t-1}) + u_{1t}) \quad (1)$$

$$\Delta X_t = \beta_{20} + \beta_{21}\Delta Y_{t-1} + \cdots \beta_{2p}\Delta Y_{t-p} + \gamma_{21}\Delta X_{t-1} + \gamma_{2p}\Delta X_{t-p} + \alpha_2(\Delta Y_{t-1} - \theta X_{t-1}) + u_{2t}) \quad (2)$$

3. RESULT AND DISCUSSION

3.1 Results

To answer the first objective of this study, rice farmers, traders, and consumers were asked whether import is needed in Indonesia. Based on Table 2, we can see a difference in knowledge of rice imports between them. All farmers know about the rice import policy through village extension workers and the local agricultural service. Therefore, when there is a notice that the government is importing rice, the farmers feel anxious and begin to anticipate the decline in rice prices. Imported rice at a lower price can cause farmers' rice prices to fall, which in turn causes farmers' income to fall. The small thing that farmers can do in dealing with the influx of imported rice is only limited to adjusting the intensity of sales of the grain they have, whether to sell it all immediately when the price is seen to have not fallen or sell it in stages according to the fluctuations in the selling price, or even the grain is used as food storage for food needs—future consumption.

While at the merchant level, only 40% of traders know about the rice import policy. Most traders say that rice imports do not affect changes in rice prices and stocks on the market. Traders did not know about the existence of an import policy because they felt that imported rice had never entered their area, and so far, people's demand for local rice had always been fulfilled. In contrast, 51.5% of consumers claimed to know about rice imports to reduce and stabilize rice prices. Most consumers know about rice imports from television or newspapers.

However, only 25.25% of consumers feel that rice imports are beneficial, especially in stabilizing prices and guaranteeing rice supply in the market. Likewise, with traders, only 15% of traders feel the benefits of rice imports. According to most traders, the rice stock in the market is abundant, so there is no difference in rice prices before and after rice imports. Of course, imported rice is detrimental for farmers because it reduces the price of rice.

Based on preference for rice types, all farmers preferred local rice, and 92.5% of traders also chose local rice because the type of rice most sold and favored by consumers was domestic rice. Around 66% of consumers also prefer local rice because it tastes better and suits their taste. Determining the selling price of rice has a significant role for farmers, traders, and consumers. The prices expected by farmers, traders, and consumers can be seen in Table 2. It shows that each party has a desire not to be disadvantaged. The existing Government Purchase Price is a benchmark because farmers can estimate the selling price of their production, and farmers also have an open choice to choose the market. This open choice will allow farmers to have better bargaining power. In addition, a benchmark price from the government can help consumers monitor the current price of rice.

Table 2. Knowledge and perception of rice import

Description	Farmer	Trader	Consumer
Know about rice import (%)	100	40	51.5
Feel the benefit of rice import (%)	0	15	25.25
Prefer local rice (%)	100	92.5	66
Expected price of rice (IDR)	> 5000 (unhusked paddy)	9013-11415	9488-12634

Table 3. Lag test optimum

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-67.656	NA	0.004608	5.971378	6.167721	6.023468
1	2.9205	111.75	5.00e-05*	1.423291*	2.405003*	1.683740*
2	17.177	17.821	6.58e-05	1.568573	3.335653	2.037380
3	34.687	16.051	8.35e-05	1.442671	3.995121	2.119837

Table 4. Estimated vector error correction model

	LNRetailprice	LNWholesale	LNImportvalue	LNWorldprice
LNRetailprice (-1)	0.792214***	0.046403	4.056121	-0.624824
	(0.36340)	(0.68144)	(3.08903)	(0.57120)
LNWholesale (-1)	0.375549***	0.910023***	1.439007	0.237260
	(0.14708)	(0.27580)	(1.25023)	(0.23118)
LNImportvalue (-1)	-0.049235*	-0.017900	0.103204	0.031238
	(0.02614)	(0.04901)	(0.22218)	(0.04108)
LNWorldprice (-1)	-0.047992	-0.013992	-0.011732	0.976851***
	(0.14277)	(0.26771)	(1.21358)	(0.22441)
R-squared	0.989376	0.989376	0.502766	0.845120
F-statistic	186.2446	59.99677	2.022252	10.91324
Log likelihood	23.38800	7.670770	-30.11445	12.08222

Table 5. Unrestricted Co-integration Rank Test

Hypothesized No.of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None*	0.722060	48.98507	47.85613	0.0390
At most 1	0.416265	18.25666	29.79707	0.5471
At most 2	0.183766	5.337271	15.49471	0.7720
At most 3	0.019147	0.463975	3.841466	0.4958

Although most rice farmers, traders, and consumers agreed that import was unnecessary, an evaluation of import policy affecting the rice price stabilization using VECM is still needed. The first step of VECM is to test the optimum lag. The results in Table 3 show that almost all asterisks are in lag 1. Thus, lag 1 is the optimum lag used at all stages in the subsequent VAR analysis.

Then, according to Table 4, it is depicted that the variable of retail prices is significantly positively affected by the previous year's retail price at a 95% significance level. The variable of wholesale price in the previous year is positively significant to the retail price at $\alpha = 5\%$. The previous year's import value negatively affects the retail price at $\alpha = 10\%$. This condition indicates that increased import value in the past year led to a decline in retail price.

The variable of wholesale prices was significantly positively affected by the previous year's wholesale price at a 99% significance level. The variable price of world rice is also significantly positively influenced by the previous year's world rice price at a 99% significance level.

Furthermore, the VECM model that has been obtained must be tested with a model feasibility test (Portmanteau residual test) [37]. The processing results show no residual autocorrelation, so the model is feasible. The next stage is testing the co-integration using the Johansen Co-integration test, which also shows the estimated long-run relationship [38]. The result of the trace test in Table 5 indicates one co-integrating equation at the 0.05 level; this also means that import value and world price have at least one co-integration relationship with retail price and wholesale price of rice at the 5% level.

3.2 Discussion

The various perspectives of rice import policy are a hot topic and continue to be conducted to discover the latest developments. Based on the results above, farmers' ignorance of the rice import policy made farmers think that rice imports are an ineffective and detrimental policy. In principle, the rice import policy was accepted by consumers because consumers have no other choice in the policy; even though the public accepts the policy, the public expects the government to implement proper regulations.

The government aims to implement a dichotomous import policy to protect consumers and producers [33]. The government needs to regulate rice imports assessed by farmers, traders, and consumers so that the government carries out these imports following predetermined rules but must be adjusted to needs based on data analysis so that rice imports do not harm various parties, especially farmers. The government may carry out rice imports with clear objectives, namely when farmers' production cannot meet domestic demand and threatens the stability of national food reserves.

This study looks at rice import policy from the retail price, wholesale price, import value, and world price. The results of the VECM analysis show that the current retail rice price variable was positively influenced by the retail price and wholesale price of rice in the previous year. If the value of the two variables increases, the current retail price increases. Meanwhile, the value of imports in the previous year negatively affects retail prices. If the number of imports in the previous year increases, the domestic retail price will decrease, and vice versa.

According to Suryadi et al. [39], import regulations implemented by the government are necessary so that import prices do not continue to distort local rice prices. A decrease in rice prices can make it difficult for producers and middlemen to make a profit, and producers and middlemen often lose money due to not getting a surplus from sales [40]. However, increasing rice prices decreases consumer demand due to high prices; this aligns with Antriyandarti et al. [41], who stated that a slight price change would significantly impact how households buy food. Meanwhile, at the nation's level, rice price movements can affect food security, stability, and economic growth [42]. Farmers as producers and the public as consumers need stable prices. The government, through BULOG, plays a role in maintaining the stability of national rice prices and stocks [43]; government intervention is needed to ensure the availability of rice so that national rice stocks are secure.

Increasing the productivity of domestic rice can be one way to maintain the stability of retail and wholesale prices of domestic rice. Domestic rice price stability can respond to price shocks if an imbalance occurs for a long time [44]. A stable price is also expected to compete with rice prices in the international market. The government's policy of banning rice imports is a step that needs to be supported and maintained for the sake of achieving self-sufficiency in food [45]. Food self-sufficiency with local products is the basis for strengthening Indonesia's food security.

4. CONCLUSION

From the results of our studies, we can conclude and make some policy recommendations. To achieve food security, one of the critical strategic policies under the pressure of trade liberalization, the Indonesian government must reform the current protective rice policies. In general, the recommendations focus on the import rice policy. From the point of view of farmers, traders, and consumers, Indonesia does not need to import rice. However, the results of the VECM analysis show that the rice import policy affects stabilization prices at the consumer level. Rice imports can reduce the retail and wholesale prices of rice. Therefore, the government needs to determine policies to improve the domestic rice sector so that Indonesian rice can compete in the international market. As a result, this policy can improve both consumers' and producers' welfare.

ACKNOWLEDGMENT

This article was prepared with the full support of Universitas Sebelas Maret (Grant No.: 516/UN27.21/PP/2019 and 452/UN27.21/PN/2020).

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