International Journal of Economic Literature (INJOLE) e-ISSN: 3026-0221
Vol. 2 No. 8 2025, page., 843-859

THE INFLUENCE OF RICE PRODUCTION, INTERNATIONAL RICE PRICES, POPULATION, AND GROSS DOMESTIC PRODUCT (GDP) ON INDONESIA'S RICE IMPORTS

Sydney Zaneta
Development Economics, Faculty of Economics and Business, Udayana University, Denpasar
sydneyzaneta02@gmail.com

Anak Agung Ketut Ayuningsasi
Development Economics, Faculty of Economics and Business, Udayana University, Denpasar

Abstract

Trade plays a crucial role in a country's economic activities. The intensity of a country's trade activities serves as an indicator of its people's prosperity and as a benchmark for its economic level. Through trade, a country can establish diplomatic relations with neighboring countries. Indonesia's import activities are part of the government's policy in the field of international trade. The discrepancy between production levels and societal demand is one of the primary reasons for implementing an import trade policy. This study aims to analyze the influence of rice production, international rice prices, population, and GDP on rice imports in Indonesia from 1993 to 2023. This research employs a quantitative approach using time-series data spanning 31 years. The data used in this study is secondary time-series data analyzed through multiple linear regression (OLS) and the Error Correction Model (ECM). The Vector Error Correction Model (VECM) method is applied because the data is stationary at the first difference level and exhibits cointegration. The findings indicate that, based on ECM estimates, all variables under study tend to move toward equilibrium (cointegrated) in the long run. In both the short and long term, rice production, international rice prices, population, and GDP collectively influence rice imports in Indonesia. However, in the short term, these variables do not significantly affect rice imports. The long-term partial estimation results show that rice production and international rice prices have a statistically significant positive effect on Indonesia's rice imports. Meanwhile, population has a positive but statistically insignificant effect, and GDP has a negative but statistically insignificant effect on Indonesia's rice imports from 1993 to 2023.

Keywords: Rice imports, production, international rice prices, population, Gross Domestic Product (GDP).

INTRODUCTION

The rise and fall of rice imports in Indonesia are influenced by various interrelated factors, especially trade policies that support or limit imports, such as tariffs, quotas, and other regulations that greatly affect the amount of rice imports. Then,Fluctuations in rice prices in the international market can affect the decision to import, and cheaper prices in the international market can encourage increased imports. Then, when local rice prices are higher, there is a tendency to import cheaper rice to maintain domestic price stability (Rosmeli, 2020).

Table 1. Rice Imports by Main Country of Origin*2019-2023 (Thousand Tons)*

No	Country of origin	2019	2020	2021	2022	2023
1	Thailand	53,278.00	88,593.1	69,360.0	80,182.5	1,381,921.2
2	Vietnamese	33,133.10	88,716.4	65,692.9	81,828.0	1,147,705.3
3	Pakistan	182,564.90	110,516.5	52,479.0	84,407.0	309,309.7
4	Myanmar	166,700.60	57,841.4	3,790.0	3,830.0	141,204.0
5	India	7,973.30	10,594.4	215,386.5	178,533.6	69,715.7
6	Japan	90.00	0.3	230.3	56.1	61.5
7	China	24.30	23.8	42.6	6.0	7.0
8	Other	744.60	0.3	760.1	364.1	12,933.3
	Total	444,508.80	356,286.2	407,741.4	429,207.3	3,062,857.6

Source: Central Bureau of Statistics, 2024

Table 1 shows rice imports by main country of origin in 2019-2023. Rice imports from main countries of origin fluctuated in 2019-2023. Rice imports from India decreased significantly in 2023. However, rice imports increased significantly in Vietnam, Thailand, Pakistan, Myanmar, Japan, China, and others in 2023. These data show that Indonesia still depends on rice imports from several developing countries. In 2023, the largest amount of rice came from Thailand, with a volume of 1,381,921.2 thousand tons, accounting for 45.12 percent of total rice imports that year.

Table 2. Data on the World's Five Largest Rice Producers in 2023 (Million Tons)

No	Country	Rice Production
1	China	145.9
2	India	132.0
3	Bangladesh	36.3
4	Indonesia	34.0
5	Vietnamese	27.0

Source: United States Department of Agriculture (USDA), 2024

Table 2 is data on the world's five largest rice producers in 2023. In Table 2**,**rice conditions in Indonesia compared to other countriesIn terms of rice production, Indonesia is one of the five largest rice producers in the world in 2023 after China and India. Rice production has increased from year to year. This increase in production is estimated to occur due to an increase in the harvest area.

There are several factors that determine the existence of rice imports in Indonesia such as production, international rice prices, population, and Gross Domestic Product (GDP). The first factor that determines the existence of rice imports in Indonesia is production. Almost 97 percent of the Indonesian population consumes rice as a staple food. This shows that Indonesia is very dependent on rice and one of the causes of rice imports from Indonesia is its rice production.(Pamungkas et al., 2023).

Table 3.Rice Production in Indonesia 1993 – 2023 (Million Tons)

No	Year	Rice Production
1	1993	44.70
2	1994	45.10
3	1995	45.30
4	1996	31.70
5	1997	56.54
6	1998	49.23
7	1999	50.86
8	2000	51.88
9	2001	50.46
10	2002	51.49
11	2003	52.13
12	2004	54.09
13	2005	54.15
14	2006	54.45
15	2007	57.15
16	2008	59.32
17	2009	64.39
18	2010	66.46
19	2011	65.75
20	2012	69.05
21	2013	71.29
22	2014	70.83
23	2015	75.40
24	2016	79.14
25	2017	81.38
26	2018	59.20
27	2019	54.60
28	2020	54.64
29	2021	54.41
30	2022	54.74
31	2023	53.98

Source: Central Bureau of Statistics 1993–2023

Domestic rice production has decreased, causing rice prices to potentially rise due to rising imports. Low production has resulted in reduced agricultural land ((Puspitasari et al., 2018). The meaning of this statement is that one of the causes of the rice stock shortage is because production in the region is decreasing. This is caused by the lack of paddy field area, due to the conversion of agricultural land to build housing, offices, and large companies (Azzahra et al, 2021). The amount of rice production has continued to increase and decrease in the last five years, making Indonesia need to import rice from neighboring countries.(Anggraini et al., 2021).

Not only rice production and consumption affect rice imports in Indonesia, but there is also a government policy on minimum rice reserves that can affect imports if rice reserves do not reach the minimum amount. It should be noted that Indonesia's

minimum rice stock is 20 percent of national rice needs.(Arifin, 2021). The second factor that determines the existence of rice imports in Indonesia is the international price of rice.

Table 4. International Rice Prices 1993 – 2023 (USD/Ton)

No	Year	Rice Price
1	1993	270.74
2	1994	260.88
3	1995	300.00
4	1996	340.62
5	1997	252.50
6	1998	127.00
7	1999	228.00
8	2000	262.20
9	2001	296.28
10	2002	302.20
11	2003	302.32
12	2004	330.58
13	2005	363.63
14	2006	450.00
15	2007	489.00
16	2008	575.00
17	2009	580.00
18	2010	568.80
19	2011	516.80
20	2012	542.00
21	2013	564.20
22	2014	450.00
23	2015	420.00
24	2016	369.00
25	2017	377.00
26	2018	421.00
27	2019	432.00
28	2020	450.00
29	2021	451.00
30	2022	620.00
31	2023	644.00

Source: Central Bureau of Statistics 1993–2023

Population of Indonesia in 1993-2023. In 1993-2023, BPS noted that the population increased significantly each year.The increase in population each year is due to several main factors. The first factor is a high birth rate, which is when the number of births exceeds the number of deaths. This is due to advances in health, nutrition, sanitation, and access to medical care, which have resulted in reduced mortality rates, especially infant and child mortality. This has contributed to increased life expectancy and population growth. Improvements in living standards, including health, nutrition,

and working conditions, have resulted in increased life expectancy. As a result, opeople live longer, which will eventually increase the population (Akasumbawa and Wibowo, 2021). The second factor is in-migration (immigration) which can increase the population in a country or region. People move to areas that offer better economic opportunities, security, or better living conditions.(Suartha and Murjana Yasa, 2017).

Although population growth will increase demand for rice, increased domestic productivity will not meet demand.(Sari, 2014). Economic, social, and political instability can occur if the amount of rice available is less than needed. The very large role of rice in the Indonesian economy makes government intervention in the economy very important.(Suandari and Ayuningsasi, 2017). Therefore, Indonesia must import rice from other rice producing countries.

Domestic rice production itself is very important to avoid the high risk of price instability and rice supply from the world market, and Indonesia continues to strive to increase domestic rice production and manage rice stocks to stabilize prices.(Anggraini et al., 2021). However, it is also not recommended for the government to continue importing rice. Innovation is needed to solve the problem of domestic food needs (Sariagi, 2021).

The next factor that determines the existence of rice imports in Indonesia is Gross Domestic Product (GDP). The size of rice production will affect the contribution of the agricultural sector to GDP. The greater the production, the greater the contribution of the agricultural sector. If Indonesia's GDP increases, economic growth will also increase, this is because economic growth can be seen from constant price GDP.

Table 5. GDP in Indonesia 1993 – 2023 (Trillion Rupiah)

No	Year	GDP	Rice Imports
1	1993	959.8	24,317,000
2	1994	1,116.1	633,048,000
3	1995	1,243.7	1,807,875,000
4	1996	1,408.8	2,149,758,000
5	1997	1,605.3	34,509
6	1998	1,110.1	2,894,658
7	1999	1,352.2	4,741,860
8	2000	1,656.5	1,375,498
9	2001	1,711.4	69,488
10	2002	1,610.0	1,811,988
11	2003	1,786.7	1,437,757
12	2004	2,303.0	246,256
13	2005	2,729.7	189,617
14	2006	3,338.2	438,109
15	2007	3,957.4	1,396,447
16	2008	4,200.0	289,689
17	2009	5,613.4	250,473
18	2010	6,422.9	687,581,500
19	2011	6,840.3	2,750,460
20	2012	8,241.9	1,810,370

21	2013	9,084.0	472,660
22	2014	10,542.7	844,160
23	2015	11,540.8	861,600
24	2016	12,406.8	1,283,180
25	2017	13,588.8	305,270
26	2018	14,837.4	2,253,820
27	2019	15,833.9	444,510
28	2020	15,432.2	356,290
29	2021	16,970.8	407,740
30	2022	19,588.4	429,210
31	2023	20,892.4	3,062,860

Source: Central Bureau of Statistics 1993–2023

Along with GDP growth, if observed in 2018Indonesia imports quite a lot of rice, amounting to 2,253.82 thousand tons. This is to overcome the shortage of supply and stabilize prices in the market, but it also affects the results of local farmers due to the high import of rice in 2018. However, the positive side is that it can help stabilize prices and reduce the scarcity of rice production, which may face price competition with imported rice. Then, in 2019, there was a fairly extreme decline in rice imports in Indonesia, namely to 444.51 thousand tons. This decline was caused by several factors, including good domestic harvests and government policies to increase local production and reduce dependence on imports. The Indonesian government is also trying to achieve food self-sufficiency, especially in the rice sector, so that the country does not rely too much on imports from abroad (Ariska, 2021).

Therefore, the problem in this study is, actually Indonesia is an agricultural country rich in nature, which almost all sectors in Indonesia are agricultural sectors, so the need for rice production in Indonesia should be sufficient and does not require rice imports. However, every year the government continues to import rice from abroad. After observing, even though production in Indonesia is small or large, the government will continue to import rice from abroad to meet rice reserves.

Basically, rice imports are influenced by several factors such as rice production, international rice prices, population, GDP, and others. Seeing the large volume of Indonesian rice imports and Indonesia's status as an agricultural country which is a staple food requirement for the Indonesian people, researchers are interested in observing further the "Effect of Rice Production, International Rice Prices, Population, and GDP on Rice Imports in Indonesia".

RESEARCH METHODS

This study uses a quantitative descriptive method. This method is in accordance with the title chosen by the researcher, namely the influence of rice production, international rice prices, population, Gross Domestic Product (GDP) on rice imports from 1993 to 2023 in Indonesia. The research location proposed by the researcher is located in Indonesia. This study focuses on analyzing how rice production, international rice prices, population, Gross Domestic Product (GDP) in Indonesia affect the volume of rice imports to the region during the period 1993 to 2023.

The data used in this study is time series data with a sample size of 31 years. The data in this study is secondary data. The type of data used in this study is secondary data of time series annually with multiple linear regression analysis techniques (OLS) and Error Correction Model (ECM). This study uses the VECM method because the data in this study is stationary at the first difference level and there is cointegration.

DATA AND DISCUSSION OF RESEARCH RESULTS

Research Results and Discussion

Descriptive Statistical Analysis

Table 6. Descriptive Statistics

Variables	N	Mean	Minimum	Maximum	Std. Deviation
Rice Import (Y)	31	6.69	3.19	13.44	1.79
Rice Production (X1)	31	4.03	3.45	4.39	0.19
International Rice Price (X2)	31	5.94	4.84	6.46	0.36
Population (X3)	31	19.27	19.07	19.44	0.11
GDP (X4)	31	8.39	6.86	9.94	1.03

Source: Appendix 2 in the author's thesis

Stationarity Test Results

1) ResultsUnit Root Test

Table 7.MarkUnit Root Test with ADF Method at Level Level

Variable (LN)	ADF test	Mackinnon 5%	Probability	Decision
Rice Import (Y)	-5.71	-3.56	0.00	Stationary
Rice Production (X1)	-2.52	-3.56	0.31	Not Stationary
International Rice Price (X2)	-2.30	-3.56	0.41	Not Stationary
Population (X3)	-1.75	-3.56	0.70	Not Stationary
GDP (X4)	-3.38	-3.62	0.07	Not Stationary

Source: Appendix 3 in the author's thesis

2) Degree of Integration Test Results

Table 8.MarkDegree of Integration Test with ADF Test on First Difference

Variable (LN)	ADF test	Mackinnon 5%	Probability	Decision
Rice Import (Y)	-6.65	-2,976	0.00	Stationary
Rice Production (X1)	-8.23	-2,967	0.00	Stationary
International Rice Price (X2)	-5.43	-2,967	0.00	Stationary
Population (X3)	-4.63	-2,967	0.00	Stationary
GDP (X4)	-5.54	-2,967	0.00	Stationary

Source: Appendix 4 in the author's thesis

Cointegration Test Results

Table 9.Long-Term Model Regression Results with Multiple Linear Regression

Variables	Coefficient	Std. Error	t-stat	Prob.	t-table	Decision
C	-185.43	325.74	2.14	0.01		Significant
Rice Production	0.37	2.33	3.34	0.00	2.05	Significant
International Rice Prices	0.97	1.62	2.44	0.00	2.05	Significant
Total population	10.10	17.58	1.02	0.44	2.05 2.05 2.05	Not Significant
GDP	-1.17	2.18	1.50	0.14		Not Significant
R-Squared	0.76	Mean Dep. Var		6.69		
Adj. R Squared	0.55	SD Dep. Var		0.79		
F-Statistic	7.44	Black Criterion		4.49		
Prob (F-statistic)	0.00	Durbin Watson		2.00		

Source: Appendix 5 in the author's thesis

Variables	Critical ValueADF			ADF	Probability	Decision
	1%	5%	10%			
ECT (-1)	-4.32	-3.58	-3.22	-6.23	0.0001	Cointegrated

Table 10. Results of Cointegration Test at Level Level

Source: Appendix 6

Short Term Model (ECM)

Table 11. ECM Model Estimation

Variable (D)	Coefficient	Std. Error	t-stat	Prob.	t-table	Decision
C	-0.36	0.74	-0.49	0.62	2.05	Not Significant
Rice Production	-3.94	2.46	-1.5	0.12	2.05	Not Significant
International Rice Prices	0.04	2.11	0.02	0.98	2.05	Not Significant
Total population	45.95	40.54	1.13	0.26	2.05	Not Significant
GDP	-0.50	3.87	-0.12	0.89	2.05	Not Significant
ECT (-1)	-1.00	0.18	-5.40	0.00	2.05	Significant
R-Squared	0.61	Mean Dep. Var		0.16		
Adj. R Squared	0.53	SD Dep. Var		2.52		
F-Statistic	7.56	Black Criterion		4.39		

Prob (F-statistic)	0.00	Durbin Watson	2.00

Source: Appendix 7 in the author's thesis

Classical Assumption Test

1) Normality Test

Table 12.Normality Test Results

Test	*Jarque-Bera*	Probability	Information
Normality	2.45	0.29	Normal

Source: Appendix 8 in the author's thesis

2) Autocorrelation Test

Table 13.ResultsAutocorrelation Test

F-statistic	96.31	Prob. F(2,1)	0.07
R-squared	26.86	Prob.Chi-Square(2)	0.06

Source: Appendix 9 in the author's thesis

3) Multicollinearity Test

Table 14.Multicollinearity Test Results

Variable (D)	Coefficient Variance	VIF Uncentered	VIF Centralized
C	0.55	5.51	NA
Rice Production	6.09	1.25	1.25
International Rice Prices	4.45	1.89	1.86
Total population	1643.72	3.61	1.04
GDP	14.99	3.53	1.95
ECT(-1)	0.03	1.07	1.07

Source: Appendix 10 in the author's thesis

4) Heteroscedasticity Test

Table 15.Heteroscedasticity Test Results

F-statistic	0.29	Prob. F(23.3)	0.96
Obs*R-Squared	18.64	Chi-Square Prob.(23)	0.72
Scaled explained SS	0.20	Chi-Square Prob.(23)	1.00

Source: Appendix 11 in the author's thesis

Statistical Test

Coefficient of Determination R2

Table 16.Determination Coefficient Value

Connection	R-Squared Value
Long-term	0.76

	Short-term	0.61

Source: Appendix 12 in the author's thesis

From Table 16 the following information can be obtained.

1. In the long-term model, the R-squared value of 0.76 indicates that about 76 percent of the variation in rice imports can be explained by independent variables such as domestic rice production, international rice prices, population, and GDP. This value indicates that the long-term model has very good predictive ability, where most of the variation in the data can be explained by the variables used. The remaining 24 percent of the variation not explained by the model may come from other factors outside the independent variables used, such as rice trade policies, weather factors, or other international market dynamics.
2. In contrast, in the short-term model, the R-squared value was recorded at 0.61, which means that around 61 percent of the variation in rice imports can be explained by the independent variables in the short term. Although this value is lower than the long-term model, the figure of 61 percent still shows that this model is quite capable of explaining fluctuations in rice imports in the short term. However, there is 39 percent of unexplained variation, which may reflect the influence of short-term fluctuations that are not captured by the independent variables in the model.

F-Test of the Effect of Domestic Rice Production (X1), International Rice Prices (X2), Population (X3), GDP (X4) on Rice Imports (Y)

Table 17.Determination Coefficient Value

Connection	F-Statistic Prob. Value	Alpha Value	F-value count	F-table value	Decision
Long-term	0.00	0.05	7.44	2.74	H1 accepted
Short-term	0.00	0.05	7.56	2.74	H1 accepted

Source: Appendix 13 in the author's thesis

The results of the simultaneous influence test for the analysis of long-term and short-term relationships between dependent variables and independent variables are as follows.

1. The Influence of Domestic Rice Production (X1), International Rice Prices (X2), Population (X3), GDP (X4) on Rice Imports (Y) in the Long Term

Based on the results of the F-test statistics for the long-term model, the F-count value was obtained at 7.44> F-table of 2.74, with a probability value (p-value) of 0.00 <0.05. Therefore, the decision taken is that H0 is rejected and H1 is accepted. This shows that together, the independent variables consisting of Domestic Rice Production (X1), International Rice Prices (X2), Population (X3), and GDP (X4) have a significant influence on the dependent variable, namely Rice Imports (Y) in the long term.

2. The Influence of Domestic Rice Production (X1), International Rice Prices (X2), Population (X3), GDP (X4) on Rice Imports (Y) in the Short Term

Based on the results of the F-test statistics for the short-term model, the F-count value was obtained at 7.56 > F-table of 2.74, with a probability value (p-value) of 0.00 <0.05. Therefore, the decision taken is that H0 is rejected and H1 is accepted. These results indicate that together, the independent variables, namely D (X1) (Domestic Rice Production), D (X2) (International Rice Price), D (X3) (Population), D (X4) (GDP), and ECT

(-1), have a significant influence on the dependent variable, namely D (Y) (Rice Imports) in the short term.

Testing the t-test of the effect of domestic rice production (X1), international rice prices (X2), population (X3), GDP (X4) on rice imports (Y)

Table 18.Long-Term Partial Effect Test

Variable (Ln)	Coefficient	T-value count	T-table value	Prob.	Alpha Value
C	-185.43	2.14	2.05	0.01	0.05
Rice Production	0.37	3.34	2.05	0.00	0.05
International Rice Prices	0.97	2.44	2.05	0.00	0.05
Total population	10.10	1.02	2.05	0.44	0.05
GDP	-1.17	1.05	2.05	0.14	0.05

Source: Appendix 14 in the author's thesis

Based on Table 18, the partial influence of independent variables on dependent variables in the long term can be explained as follows:

1. Testing the influence of rice production on rice imports in the long term

The t-test results show that the Rice Production variable (X1) has a coefficient value of 0.37 with a t-count of 3.34> t-table of 2.05. In addition, the probability value (p-value) is 0.00 <0.05. Thus, the decision taken is that H0 is rejected and H1 is accepted, which means that Domestic Rice Production has a significant effect on Rice Imports in the long term. The positive coefficient value indicates that an increase in rice production can paradoxically encourage an increase in rice imports, possibly due to the complex relationship between production, consumption, and national stock needs.

2. Testing the influence of international rice prices on rice imports in the long term

The International Rice Price variable (X2) has a coefficient value of 0.97, with a t-count of 2.44> t-table of 2.05. The probability value (p-value) of 0.00 is also <0.05. The decision taken is that H0 is rejected and H1 is accepted, which means that the International Rice Price has a significant effect on Rice Imports in the long term. The positive coefficient value indicates that the increase in international rice prices is directly proportional to the increase in Rice Imports, which reflects Indonesia's dependence on the global rice market to meet domestic needs, especially in conditions of limited domestic supply.

3. Testing the influence of population size on rice imports in the long term

In the Population variable (X3), the t-test results show a coefficient value of 10.10, with a t-count of 1.02 <t-table of 2.05. In addition, the probability value (p-value) of 0.44> 0.05. Thus, the decision taken is that H0 is accepted and H1 is rejected, which means that Population does not have a significant effect on Rice Imports in the long term. These results indicate that although the population is increasing, this factor is not strong enough to affect the volume of rice imports, perhaps because food needs have mostly been met through domestic production or food consumption diversification policies.

4. Testing the effect of GDP on rice imports in the long term

Table 19.Short-Term Partial Effect Test

Variable (Ln)	Coefficient	T-value count	T-table value	Prob.	Alpha Value
C	-0.36	-0.49	2.05	0.62	0.05
Rice Production	-3.94	-1.59	2.05	0.12	0.05
International Rice Prices	0.04	0.02	2.05	0.98	0.05
Total population	45.95	1.13	2.05	0.26	0.05
GDP	-0.50	-0.12	2.05	0.89	0.05
Domestic Rice Production	-1.00	-5.40	2.05	0.00	0.05

Source: Appendix 15 in the author's thesis

Based on Table 19, the partial influence of independent variables on dependent variables in the short term can be explained as follows:

1. Testing the influence of rice production on rice imports in the short term

The t-test results show that the Rice Production variable (X1) has a coefficient value of -3.94, with a t-count of -1.5 <t-table of 2.05. In addition, the probability value (p-value) of 0.12> 0.05, which is not significant, so the decision taken is that H0 is accepted and H1 is rejected. This means that Rice Production does not have a significant effect on Rice Imports in the short term. The negative coefficient indicates that production can theoretically reduce rice imports, but the insignificant results indicate that the impact is not strong enough to affect import volumes in the short term.

2. Testing the influence of international rice prices on rice imports in the short term

In the International Rice Price variable (X2), the coefficient value is 0.04, with a t-count of 0.02 <t-table value of 2.05. Probability value (p-value) of 0.98 > 0.05, also indicates that this variable is not significant at the 95 percent confidence level. Thus, the decision taken is H0 is accepted and H1 is rejected, which means that International Rice Prices do not have a significant effect on Rice Imports in the short term. This very small and insignificant coefficient indicates that international price fluctuations do not directly affect import volumes in the short term, possibly due to price adjustment policies or reserve rice stocks.

3. Testing the influence of population size on rice imports in the short term

The Population Variable (X3) has a coefficient value of 45.95, with a t-count of 1.13 <t-table of 2.05. In addition, the probability value (p-value) of 0.26> 0.05, also shows that this variable is not significant at the 95 percent confidence level. Therefore, the decision taken is that H0 is accepted and H1 is rejected, which means that Population does not have a significant effect on rice imports in the short term. These results indicate that although the population continues to increase, its impact on Rice Imports in the short term is not strong enough, possibly due to other factors such as consumption levels or domestic stock availability that are more dominant.

4. Testing the effect of GDP on rice imports in the short term

In the GDP variable (X4), the coefficient value is -0.50, with a t-count of -0.12 <t-table of 2.05. In addition, the probability value (p-value) of 0.89> 0.05, indicates that this variable is not significant. Thus, the decision taken is that H0 is accepted and H1 is

rejected, which means that GDP does not have a significant effect on Rice Imports in the short term. The negative coefficient indicates a potential inverse relationship between GDP and rice imports, where an increase in GDP can theoretically reduce imports. However, this insignificant result indicates that the effect is not strong enough to be seen in the short term.

Discussion of Research Results

1) The Impact of Domestic Rice Production on Rice Imports

Based on the test results in sub-chapters 4.3.3 and 4.3.4, it is known that rice production in the long term has a coefficient of 0.37 with a significant value of 0.00, which means a positive coefficient indicates that an increase in rice production can actually encourage an increase in imports. The coefficient of the rice production variable shows a positive sign that has a statistically significant effect on rice imports at a probability of 0.00 <α = 5 percent. If the rice production variable increases by 1 percent, rice imports will increase by 0.37 percent. In the short term, the analysis results show that rice production does not have a significant effect on rice imports. This reflects that changes in rice production in a short time have not been enough to influence import decisions. The coefficient of the rice production variable shows a negative sign that does not have a statistically significant effect on changes in rice imports at a probability of 0.12> α = 5 percent. In the short term, the rice production variable has a coefficient of -3.94 with a significant value of 0.12, which means that if there is an increase in rice production on rice imports by 1 percent, it will cause a decrease in rice imports by -3.94 percent.

2) The Impact of International Rice Prices on Rice Imports

Based on the test results in sub-chapters 4.3.3 and 4.3.4, it is known that the international rice price in the long term has a coefficient of 0.97 with a significant value of 0.00, which means that a positive coefficient indicates that an increase in the international rice price can actually encourage an increase in imports. The coefficient of the international rice price variable shows a positive sign that has a statistically significant effect on rice imports at a probability of 0.00 <α = 5 percent. If the international rice price variable increases by 1 percent, rice imports will increase by 0.97 percent. In the short term, the analysis results show that the international rice price does not have a significant effect on rice imports. This reflects that changes in the international rice price in a short period of time have not been enough to influence import decisions. The coefficient of the international rice price variable shows a positive sign that does not have a statistically significant effect on changes in rice imports at a probability of 0.98> α = 5 percent. In the short term, the international rice price variable has a coefficient of 0.04 with a significant value of 0.98, which means that if there is an increase in the international rice price on rice imports of 1 percent, it will cause an increase in rice imports of 0.04 percent.

3) The Influence of Population on Rice Imports

Based on the test results in sub-chapters 4.3.3 and 4.3.4, it is known that the population in the long term has a coefficient of 10.10 with a significant value of 0.44, which means that a positive coefficient indicates that an increase in population actually reduces import demand. The coefficient of the population variable shows a positive sign

that does not have a statistically significant effect on rice imports at a probability of 0.44> α = 5 percent. If the population variable increases by 1 percent, rice imports will increase by 10.10 percent. In the short term, the analysis results show that the population does not have a significant effect on rice imports. This reflects that changes in population in a short period of time have not been enough to influence import decisions. The coefficient of the population variable shows a positive sign that does not have a statistically significant effect on changes in rice imports at a probability of 0.26> α = 5 percent. In the short term, the population variable has a coefficient of 45.95 with a significant value of 0.26, which means that if there is an increase in the population on rice imports of 1 percent, it will cause an increase in rice imports of 45.95 percent.

4) The Impact of GDP on Rice Imports

Based on the test results in sub-chapters 4.3.3 and 4.3.4, it is known that GDP in the long term has a coefficient of -1.17 with a significant value of 0.14, which means that a negative coefficient indicates that an increase in GDP actually reduces import demand. The coefficient of the GDP variable shows a negative sign that does not have a statistically significant effect on rice imports at a probability of 0.14> α = 5 percent. If the population variable increases by 1 percent, rice imports will decrease by -1.17 percent. In the short term, the analysis results show that GDP does not have a significant effect on rice imports. This reflects that changes in GDP in a short period of time have not been enough to influence import decisions. The coefficient of the GDP variable shows a negative sign that does not have a statistically significant effect on changes in rice imports at a probability of 0.89> α = 5 percent. In the short term, the GDP variable has a coefficient of -0.50 with a significant value of 0.89, which means that if there is an increase in the population on rice imports by 1 percent, it will cause a decrease in rice imports by -0.50 percent.

CONCLUSION

Based on the results of the analysis and discussion, the following conclusions can be drawn:

1) The results of the study show that in the long and short term, the variables of rice production, international rice prices, population, GDP, have a simultaneous effect on rice imports in Indonesia.
2) The results of the study show that each variable of production and international rice prices partially have a significant effect in the long term on rice imports in Indonesia. While the population partially has a positive and insignificant effect in the long term, then GDP has a negative and insignificant effect in the long term on rice imports in Indonesia in 1993-2023.

REFERENCES

Abbas , S. Waheed , A. (2017). Trade competitiveness of Pakistan: evidence from the revealed comparative advantage approach. *Competitiveness Review: An International Business Journal*, 27(5), 462-475.

Adiningar, Radix. (2010). Analisis Faktor-faktor Yang Mempengaruhi Impor Beras Di Jawa Timur. *Skripsi*. Universitas Pembangunan Nasional.

Ayu Ratnita. (2019). Perspektif Generasi Muda Terhadap Wirausaha Pertanian di Kecamatan Galang Kabupaten Deli Serdang Provinsi Sumatera Utara. *Skripsi*. Politeinik Pembangunan Pertanian Medan.

Indriani & Purwito, A. (2016). *Ekspor, Impor, Sistem Harmonisasi, Nilai Pabean, dan Pajak dalam Kepabeanan*. Yogjakarta: Mitra Wacana Media.

Kementerian Keuangan Republik Indonesia. (2023). *Strategi Kebijakan Ekspor-Impor Dalam Mengamankan Rantai Pasokan Pangan*. Diakses di https://www.kemenkeu.go.id/single-page/apbn-2018/ tanggal 13 Maret pukul 09:30 WIB

Kementerian Pertanian. (2023). *Analisis Kinerja Perdagangan Beras*. Jakarta: Pusat Data dan Sistem Informasi Pertanian Kementerian Pertanian.

Kementerian Pertanian. (2024). *Analisis Kinerja Perdagangan Beras*. Jakarta:Pusat Data dan Sistem Informasi Pertanian Kementerian Pertanian.

Kesumajaya, W. W., & Dwipayana, I. K. A. (2014). Pengaruh Harga, Cadangan Devisa, Dan Jumlah Penduduk Terhadap Impor Beras Indonesia. *E-Jurnal EP Unud*, 3(4), 164-172.

Khotimah, A.K. (2018). Analisis Faktor-Faktor Yang Mempengaruhi Impor Beras Di Indonesia Tahun 1980 – 2016. *Skripsi*. Universitas Muhammadiyah Surakarta.

Khrisna Nanda, P. G., & Rustariyuni, S. D. (2015). Pengaruh Jumlah Penduduk, Produksi, dan Kurs Dollar Amerika Serikat Terhadap Impor Cabe Indonesia. *E-Jurnal EP Unud*, 7(3), 476–501.

Kurniyawan, H. (2013). Faktor – Faktor Yang Mempengaruhi Impor Beras Di Indonesia Tahun 1980-2009. *Economics Development Analysis Journal*, Universitas Negeri Semarang, 2(1), 1-10.

Kwanmas, Wirman. (2010). The Analysis Of Affecting Imports Of Rice Indonesia. IEU Global Network International. *Journal of Bussiness*, 3(1).

Mahendra, A. I., Nasution, I. A., Naufal, M. F., & Wikansari, R. (2023). Dampak Pandemi Covid-19 Terhadap Volume Ekspor Dan Impor Beras di Indonesia. *Jurnal Ilmu Ekonomi (JIE)*, 2(3), 11–18.

Mantra, Ida Bagus. (2003). *Demografi Umum* (Edisi kedua). Yogyakarta: Pustaka Pelajar.

Purwandari, R.E., Adhitya, B., Fatmawati, A. (2024). Analisis Faktor-Faktor Yang Mempengaruhi Impor Beras Di Indonesia. *Prosiding Seminar Nasional Ilmu Ekonomi dan Akuntansi*, 1(2), 72-89.

Purwowidodo. (1983). *Teknologi Mulsa*. Jakarta: Dewaruci Press.

Puspitasari, N., Indrawati, L. R., & Sarfiah, S. N. (2018). Analisis Pengaruh Harga Beras, Cadangan Devisa, dan Rata-rata Konsumsi Beras per Kapita Seminggu Terhadap Impor Beras di Indonesia Tahun 2008 - 2017. *DINAMIC : Directory Journal of Economic,* 1(1), 55-67.

Putra, M. S., Adiyadnya. (2013). Analisis Pengaruh Inflasi, Kurs Dollar Amerika, Suku Bunga Kredit dan Utang Luar Negeri Terhadap Cadangan Devisa Indonesia Tahun 1996-2015. *Jurnal Riset Akuntansi*, 7(1).

Putri, K. Z. (2021). Analisis Faktor Yang Mempengaruhi Impor Beras Di Indonesia Tahun 2000–2019, *Jurnal Ekonomi dan Manajemen,* 19(2), 195-204.

Putri, N. A., Roro, R., Putri, A., Internasional, P., Asean, W., Politeknik, R. R. T., & App, N. (2024). Dampak Pemberhetian Ekspor Beras Dari Negara-Negara Pengekspor Utama Terhadap Ketahanan Pangan Indonesia. *Jurnal Amik Veteran*, 4(1), 107-114.

Qolby, Syifa'ul, A. Analisis Pengaruh Produksi, Konsumsi,Harga Beras, Jumlah Penduduk Dan Produk Domestik Bruto Terhadap Impor Beras Di Indonesia Tahun 1985-2017. *Skripsi*. Universitas Muhammadiyah Yogyakarta.

Rachman, H.P.S., Suryani E. (2010). Dampak Krisis Pangan-Energi-Finansial (PEF) Terhadap Kinerja Ketahanan Pangan Nasional. *Forum Penelitian Agro Ekonomi*, 28(2), 107-121.

Rahmi, F. K. (2016). Analisis Faktor-Faktor Yang Mempengaruhi Impor Beras Indonesia Tahun 1993-2013. *Jurnal Publikasi Universitas Islam Indonesia*.

Renita, S. (2019). Pengaruh Produksi Beras, Harga Beras, Tingkat Konsumsi Beras Terhadap Impor Beras Di Indonesia Tahun 2011-2017 (*Doctoral Dissertation*, Universitas Islam Indonesia).

Rokhaniyah, H., Dini, S., Rahayu, N., Rizka, A., & Saputro, M. I. (2023). The Impact of The World Trade Organization (WTO) Import Quota Policy on Indonesian Rice Import from Thailand in 2015-2020. *Dauliyah: Journal of Islamic and International Affairs*, 08(1), 19–33.

Ruvananda, A. R., & Taufiq, M. (2022). Analisis faktor-faktor yang mempengaruhi impor beras di Indonesia. *Kinerja: Jurnal Ekonomi dan Manajemen*, 19(2), 195–204.

Saefudin. (2023). Strategi perencanaan menghadapi krisis pangan dan el nino. *Warta BSIP Perkebunan*, 1(3), 21–30.

Saharuddin Didu & Ferri Fauzi. (2016). Pengaruh Jumlah Penduduk, Pendidikan Dan Pertumbuhan Ekonomi Terhadap Kemiskinan Di Kabupaten Lebak. *Jurnal Ekonomi-Qu*, 6(1), 100-114.

Sahputra, E., Hasanuddin, Sari, R.R., Eviatun, E. (2021). Dampak Covid-19 Terhadap Volume Ekspor dan Impor Beras di Indonesia. *Jurnal Ilmiah Manajemen Kesatuan*, 9(3), 701-706.

Salvatore, Dominick. (2006). *Ekonomi Internasional* (Edisi ke 5). Bandung: PT Gelora Aksara Pratama.

Sani, Y., Hodijah, S., & Rosmeli, R. (2020). Analisis impor beras Indonesia. *E-Journal Perdagangan Industri Dan Moneter*, 8(2), 89-98.

Santoso, Singgih. (2012). *Panduan Lengkap SPSS Versi 20*. Jakarta: PT Elex Media Komputindo.

Sari, R. K. S. (2014). Analisis Impor Beras di Indonesia. *EDAJ*, 3(2).

Sariagi. (2021). Ini Penyebab Produksi Beras Cenderung Rendah Diawal Musim Penghujan. Diakses Melalui: *https://sariagri.id/article/amp/68011/ini-penyebab-produksi-beras-cenderung-rendah-di-awal-musim-penghujan*

Saviya, C. G. (2015). Analisis Faktor-Faktor Yang Mempengaruhi Impor Beras Di Indonesia Tahun 1985. (*Doctoral dissertation*, UII Yogyakarta).

Schumacher, Reinhard. (2013). Deconstructing The Theory of Comparative Advantage. World Economics Review, 2, pp. 83-105.

Sihono, T. (2009). Dampak Krisis Finansial Amerika Serikat Terhadap Perekonomian Asia. *Jurnal Ekonomi & Pendidikan*, 6(1), 01-20.

Silaban, J., Indriani, S., & Pasaribu, R. (2023). Analysis of the Influence of Rice Commodity Prices and Inflation on Mark Import Province Sumatra North, *International Journal of Business and Applied Economics*, 2(1), pp. 21-28.

Silalahi, H. (2022). Analisis Pengaruh Produksi, Harga, Konsumsi Dan Pdb Terhadap

Impor Beras Indonesia Tahun 1997-2019. *Skripsi*. Universitas HKBP Nomensen.
Singgih, Vita Agustarita & Sudirman, I Wayan.(2015). Pengaruh Produksi, Jumlah Penduduk, DPD Dan Kurs Dollar Terhadap Impor Jagung Indonesia. *E-Jurnal EP Unud.* 4(2), 71- 79.
Siregar, R.F. (2022). Analisis Faktor-Faktor Yang Mempengaruhi Impor Beras Di Indonesia Tahun 1998-2020. Jurnal Universitas Islam Indonesia, 20(1), 11-20.
Siringo, H.B., Daulay, M. (2014). Analisis Keterkaitan Produktivitas Pertanian dan Impor Beras di Indonesia. *Jurnal Ekonomi dan Keuangan*, 2(8), 488-499.
Siyoto, S. & Sodik, A. (2015). *Dasar Metodologi Penelitian*. Yogyakarta: Literasi Media.
Stern, P. J., & Wennerlind, C. (2014). Mercantilism Reimagined: Political Economy in Early Modern Britain and Its Empire. *Cambridge University Press*.
Suandari, N. W. A., & Ayuningsasi, A. A. K. (2017). Pengaruh Jumlah Penduduk, Inflasi, dan Cadangan Devisa Terhadap Impor Beras di Indonesia Periode Tahun 1099 - 2017. *E-Journal EP Unud*, 10(4), 1360-1391.
Suartha Nyoman, I. Gst Wayan Murjana Yasa. (2017). Pengaruh Pertumbuhan Ekonomi, Migrasi Masuk terhadap Pertumbuhan Penduduk dan Alih Fungsi Bangunan Penduduk Asli Kota. *E-Journal EP Unud*, 10(1), 95-107.
_____. (2014). *Makro Ekonomi, Teori Pengantar.* Jakarta: PT. Raja Grafindo Persada.
Sumodiningrat. (2001). *Pengantar Statistika*. Jakarta: Penerbit Andi