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THE IMPACT OF IMPORT LIBERALIZATION POLICY ON INDONESIAN SOYBEAN IMPORTS

Adhisty Puri Damayanti[1], Dwidjono Hadi Darwanto[2] & Masyhuri[2]
[1,2]Department of Agricultural Socio-Economics, Faculty of Agriculture, Universitas Gadjah Mada
Corresponding Author: adhisty.puri@mail.ugm.ac.id

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ABSTRACT

Indonesian soybean consumption is on the rise, meanwhile soybean production is decreasing, leading to a continuous increase in imports to meet the growing demand. This study aims to (1) assess the trend of soybean imports in Indonesia and (2) identify the factors influencing soybean imports in the country. The research relies on secondary data in the form of time series data spanning from 1991 to 2020. The fundamental methodology employed in this study is quantitative descriptive analysis. The analytical approach adopted is ordinary least squares (OLS), utilizing simple linear regression to discern the trend in soybean imports and multiple linear regression to pinpoint the factors impacting soybean imports. The findings reveal that Indonesian soybean imports exhibit an average annual increase of 72,628.82 tons. Partially, GDP demonstrates a positive and significant influence on the volume of Indonesia's soybean imports. The volume of soybean imports in Indonesia posts the implementation of the import liberalization policy in 1998 surpassed pre-policy levels. Conversely, the exchange rate of the United States Dollar against the Indonesian Rupiah has a negative and significant impact. Additionally, soybean productivity and US soybean producer prices have an insignificant effect on the volume of Indonesian soybean imports.

Keywords: import, soybean, trend, factors, liberalization

INTRODUCTION

Soybean consumption in Indonesia is projected to continue to increase (Aldillah, 2015). However, the projected increase in demand is not accompanied by a balanced increase in domestic soybean production. This encourages imports so that domestic needs can be met. Import Dependency Ratio (IDR) value illustrate the level of import dependency to meet the domestic availability of a commodity. In 2015-2019, the average IDR value was 78.44%. It means that the availability of Indonesian soybeans that is sourced from imported soybeans was 78.44%. Ranked from the largest, soybean exporting countries to Indonesia are the United States, Canada, Argentina, Brazil, Malaysia, France, and India.

According to Sawit (1999), factors that affect import demand include population, exchange rates, and prices of substitute commodities of an imported commodity. Imports can also be affected by various policies implemented by the government such as tariff and non-tariff policies. One of the government policies, namely the import liberalization policy in 1998, is considered to have an impact on the condition of soybean trade in Indonesia. Import liberalization in Indonesia was marked by the approval of Indonesia's Letter of Intent (LoI) to the International Monetary Fund (IMF).

METHOD

This study employs quantitative descriptive approach, utilizing secondary data in the form of time series data spanning from 1991 to 2020. The data sources include the Food and Agriculture Organization of the United Nations (FAO), World Bank, and International Monetary Fund (IMF). An analysis of the import trend was conducted using a simple linear regression analysis model, employing the Ordinary Least Square (OLS) estimation method. However, due to the limitation of the simple linear regression method in accommodating only two variables, it proves insufficient for analyzing the factors influencing soybean import volume. Consequently, a linear regression analysis model with the Ordinary Least Square (OLS) estimation method is deemed necessary.

Before applying the linear regression model, it is imperative to subject it to tests for normality and classical assumptions. If the assumptions of the linear regression model are satisfied, the Ordinary Least Square (OLS) estimator of the regression coefficient becomes linear, unbiased, and attains minimum variance, commonly referred to as the Best Linear Unbiased Estimator (BLUE) (Gujarati, 1978). The assumed model for determining the factors affecting the

volume of Indonesian soybean imports in this study is as follows.

$$lnY = \beta_0 + \beta_1 lnX_1 + \beta_2 lnX_2 + \beta_3 lnX_3 + \beta_4 lnX_4 + \alpha_1 D_1 + u$$

…….…. (1)

Where:

ln$Y$	= Indonesian soybean import volume (tons/year)
β_0	= Intercept
$\alpha_1, \beta_1, \ldots, \beta_4$	= Regression coefficient
lnX_1	= Natural logarithm of US Dollar to Rupiah exchange rate (IDR/USD/year)
lnX_2	= Natural logarithm of Gross Domestic Product (GDP) (IDR/year)
lnX_3	= Natural logarithm of Indonesian soybean productivity (hg/ha/year)
lnX_4	= Natural logarithm of US soybean producer prices (USD/tons/year)
D_1	= *Dummy* for the implementation of import liberalization policy
D_1	= 0, before the enactment of import liberalization policy
D_1	= 1, after the enactment of import liberalization policy
u	= Stochastic error factor

RESULTS AND DISCUSSION

Trend of Soybean Imports in Indonesia

Based on the trend analysis of Indonesian soybean import volume using simple regression analysis, the following equation can be obtained.

$$Y = -1{,}44E + 08 + 72628{,}82X + u$$

…….…. (2)

Where:

Y	= Indonesian soybean import volume (tons/year)
X	= Year
u	= Stochastic error factor

The equation has a positive slope which illustrates that the relationship between year and volume of Indonesian soybean imports is positive. In Figure 1, the year (X) is depicted on the horizontal axis while the volume of Indonesian soybean imports (Y) is depicted on the vertical axis. The figure explains the positive relationship between year and import volume. The regression coefficient of variable X is 72628.82 so that the volume of Indonesian soybean imports will increase by 72,628.82 tons every year. The increase in volume is due to the rapid increase in soybean demand while soybean production is growing slowly.

The volume of soybean imports in the period 1991 to 2020 fluctuated and experienced the highest increase in 1998 to 1999 and in 2006 to 2007. The surge in imports in 1998 was triggered by the 1998 economic crisis. The crisis prompted the government to use a loan facility from the International Monetary Fund (IMF). The conditions that the government had to fulfill when signing the Letter of Intent (LoI) for the loan were 1) the implementation of the food commodity import tariff policy to zero percent; 2) the prohibition of providing liquidity credit for the Badan Urusan Logistik (Bulog); 3) limiting the role of Bulog and revoking Bulog's role as an import monopoly by Bulog. These three conditions marked the beginning of food import liberalization. The liberalization of food trade and the weakening of the government's role as a policy-making institution triggered soaring imports and further worsened the fate of domestic soybean by local farmers.

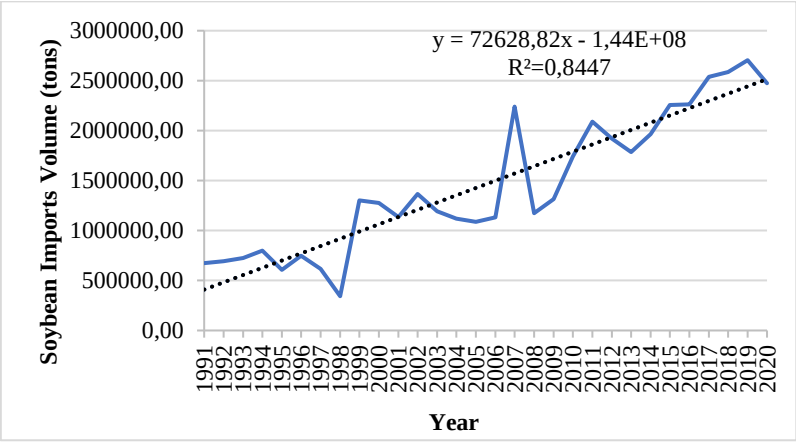

Figure 1. Trend of Soybean Import in Indonesia 1991-2020

Source: Secondary Data Analysis, 2023

Indonesia's reliance on imported soybeans is on the rise, evident from the fluctuations in soybean import volumes. In 2006, there was a notable surge in imports, followed by a sharp decline in 2007. The significant reduction in soybean imports can be attributed to a decreased global supply of soybeans. This shortage was primarily a result of diminished soybean production in the United States, the world's leading soybean exporter. The shift in focus by American soybean farmers towards cultivating corn as a raw material for biodiesel production contributed to the reduced soybean availability. Consequently, soybean prices doubled from Rp3,450/kg to Rp7,500/kg (Supadi, 2009). This scenario underscores Indonesia's significant dependency on imported soybean resources.

Factors Affecting Indonesian Soybean Import

Based on the normality test and classical assumption test (multicollinearity detection, heteroscedasticity test, and autocorrelation test), it can be concluded that the regression coefficients produced in this study are linear, unbiased, and have minimum variance or called the Best Linear Unbiased Estimator (BLUE). The regression estimation results can be trusted for accuracy. The multiple linear regression equation that has been formulated can explain the factors that influence Indonesian soybean imports.

Multiple linear regression analysis in this study is used to estimate the relationship between five independent variables and the dependent variable. The purpose of this analysis is to determine the factors that significantly affect the volume of Indonesian soybean imports from 1991 to 2020. The data and models have passed the normality test and fulfill the classical assumptions so that the influence of the independent variables on the dependent variable can be tested. Influence testing is done with the coefficient of determination test, F-test, and t-test. The error rates used are 1%, 5%, and 10%. Testing the influence of the results of regression analysis of factors affecting the volume of Indonesian soybean imports in 1991-2020 is as follows.

Table 1. Regression Analysis Results of Factors Affecting Indonesian Soybean Imports Volume 1991-2020

Variable	Expected Sign	Coefficient	t-statistics	Prob.
Constanta		-24,234***	-3,583	0,0015
US Dollar to Rupiah exchange rate ($\text{Ln}X_1$)	-	-0,545***	-4,141	0,0004
Gross Domestic Product ($\text{Ln}X_2$)	+	1,241***	5,452	0,0000
Soybean productivity ($\text{Ln}X_3$)	-	-0,176 ns	-0,209	0,8362
US Soybean producer price ($\text{Ln}X_4$)	-	-0,176 ns	-1,008	0,3237
Dummy of import liberalization policy in 1998 (D_1)	+	1,069***	6,811	0,0000
R^2				0,918
Adjusted R^2				0,901
F-statistic				54,043***
Prob. F-statistic				0,0000

Source: Secondary Data Analysis, 2023

Where:

(***) : significant at a 1% level of significance (α=0,01)

(**) : significant at a 5% level of significance (α=0,05)

(*) : significant at a 10% level of significance (α=0,10)

(ns) : not significant

The dependent variable used is the volume of Indonesian soybean imports. The independent variables used are variables that are thought to affect the volume of imports, including the exchange rate of the IDR against the USD, Indonesia's GDP, Indonesia's soybean productivity, the producer price of US soybeans, and the implementation of the import liberalization policy in 1998.The regression model of the volume of Indonesian soybean imports can be written systematically as follows.

$$lnY = -24{,}234 - 0{,}545\ lnX_1 + 1{,}241\ lnX_2 - 0{,}176\ lnX_3 - 0{,}176\ lnX_4 + 1{,}069\ D_1 + u \quad \ldots\ldots (3)$$

Where:

ln$Y$ = Indonesian soybean import volume (tons/year)

β_0 = Intercept
$\alpha_1, \beta_1, \ldots, \beta_4$ = Regression coefficient
$\ln X_1$ = Natural logarithm of US Dollar to Rupiah exchange rate (IDR/USD/year)
$\ln X_2$ = Natural logarithm of Gross Domestic Product (GDP) (IDR/year)
$\ln X_3$ = Natural logarithm of Indonesian soybean productivity (hg/ha/year)
$\ln X_4$ = Natural logarithm of US soybean producer prices (USD/tons/year)
D_1 = *Dummy* for the implementation import liberalization policy
D_1 = 0, before the enactment of import liberalization policy
D_1 = 1, after the enactment of import liberalization policy
u = Stochastic error factor

US Dollar to Rupiah Exchange Rate

The regression coefficient for the exchange rate of the rupiah against the US dollar is -0.545, indicating that a 1 percent increase in the rupiah exchange rate against the US dollar leads to a significant 0.545 percent decrease in the volume of Indonesian soybean imports. This aligns with the anticipated outcomes. The rise in the rupiah exchange rate signifies a depreciation of the rupiah against the dollar, primarily caused by a decline in the purchasing power of the rupiah on the international market. Exchange rate depreciation results in increased costs for imported goods and decreased costs for domestic goods. Consequently, people's purchasing power for imported goods decreases, leading to a decline in import volumes (Murianda, 2008). The depreciation of the rupiah against the dollar also contributes to increased raw material prices, resulting in a surge in the prices of imported goods and a subsequent significant drop in imports. Moreover, the weakened rupiah poses challenges in import financing, as foreign banks often refuse financing, impeding import activities (Puri & Amaliah, 2021).

The significant relationship between import volume and the exchange rate of the rupiah against the US dollar indicates that Indonesia is still dependent on US soybean supplies. Indonesia still imports an average of 97.06% of soybeans from the United States (Pusdatin Kementan, 2020). Fluctuations in the rupiah exchange rate have an impact on price fluctuations and ultimately affect national soybean stocks. Therefore, the Indonesian government should start to diversify soybean supplier countries. Indonesia needs to open cooperation with other soybean exporting countries such as Brazil, Argentina, Paraguay, or Canada which are also the largest soybean exporting countries in the world. Diversification of soybean supply countries is expected to reduce the risk of price fluctuations due to fluctuations in the exchange rate of the rupiah against the US dollar.

Gross Domestic Product

One approach to delineating a nation's overall income is using Gross Domestic Product (GDP). The Gross Domestic Product (GDP) of Indonesia significantly influences the volume of soybean imports in the country. The GDP regression coefficient is 1.241, indicating that a 1 percent rise in GDP results in a 1.241 percent increase in soybean imports, aligning with the anticipated direction. Assuming constant prices and interest rates, a surge in income is expected to boost imports, as stated by Nopirin (2014). This relationship is articulated in the import function M = mY or M = Mo + mY, where M represents imports, Mo is autonomous import unaffected by national income, Y is national income or GDP, and m is the marginal propensity to import (MPM). A growth in national income corresponds to an escalation in purchasing power, fostering increased demand. If domestic supply cannot meet this demand, imports become necessary to satisfy it, as emphasized by Agus and Ayuningsasi (2016).

National income is formulated as Y = C + I + G + (X - M). National income (Y) is the sum of expenditure on consumption (C), investment (I), government expenditure (G), exports (X), and is reduced by imports (M). Based on this equation, national income will decrease if imports are higher. If imports are higher, even exceeding exports, then this situation will reduce national income. Therefore, increasing domestic soybean production and productivity so that the increase in GDP can be allocated to finance imports of other goods that are more difficult for Indonesia to produce, namely capital-intensive commodities or commodities that require high technology. Indonesia's soybean production can be increased by expanding agricultural land for soybeans and increasing farmers' willingness to plant soybeans. Therefore, the government needs to guarantee the minimum price of soybeans and provide various incentives for farmers to be willing to plant soybeans.

Indonesia’s Soybean Productivity

Indonesia’s soybean productivity does not significantly affect the volume of soybean imports. An increase or decrease in productivity does not cause a change in the volume of Indonesian soybean imports. Soybeans are the main raw material for various processed foods that are in great demand by the Indonesian people such as tempeh, tofu, soy sauce, and oncom, so the

demand tends to increase. However, soybean productivity from 1991 to 2020 tended to stagnate. According to Rifa'I (2010), productivity affects the total supply. The increase in soybean productivity has an impact on the increase in soybean supply so that the demand for soybeans can be met more. However, according to FAO data (2023), Indonesia's soybean productivity only increased by an average of 1.19 percent. Productivity growth is still stagnant so that soybean supply is also stagnant. This stagnation is the reason that productivity does not significantly affect the volume of Indonesian soybean imports.

The government needs to significantly increase soybean productivity so that the national soybean supply increases and import demand can be reduced. To increase productivity, the government can promote the use of renewable technology. The United States and Brazil have succeeded in increasing their productivity with the use of agricultural equipment that can be controlled autopilot by GPS to detect fertilizer use. The use of this technology has succeeded in increasing the world productivity growth rate by 2.25% (Pusdatin Kementan, 2020). The use of technology by farmers requires large costs that cannot be borne by farmers. Therefore, the government can subsidize inputs directly for soybean farmers. As China did, in 2006 the country abolished agricultural taxes, imposed a minimum price policy, and provided direct income subsidies. China also provides special subsidies for the agricultural sector, namely input subsidies in the form of agricultural machinery, fertilizers, and superior quality seeds (Zaki, 2018). Indonesia can adopt various policies implemented by other countries that have successfully increased soybean productivity and production.

US Soybean Producer Price

The US soybean producer price does not significantly affect the volume of soybean imports. According to Anjani (2015), the price elasticity of soybean demand in Indonesia is 0.22 so that it falls into the inelastic category. Changes in soybean prices have little effect on changes in the quantity of soybeans demanded. Domestic demand must be balanced with sufficient supply to create price stability. The current fact is that soybean production is inadequate so that imports are needed to avoid price instability. This causes Indonesia's dependence on soybean imports so that the price does not affect the volume of soybean import demand. Whatever the price of imported soybeans, especially the price of US soybeans, Indonesia will still buy imported soybeans.

The price of Indonesian soybeans is still less competitive than the price of US soybeans. US soybeans are sold at a lower price even though they have a higher quality, causing Indonesian soybeans to not be in demand. Indonesia cannot continue to rely on imported soybeans. Indonesia must improve the quality. Improving quality is a major challenge for Indonesian farmers. This is because improving quality will increase marginal costs and thus reduce supply at the producer level. As a result, soybean prices will rise, and demand will fall. Therefore, quality improvement needs to be balanced with productivity improvement. Increased productivity will lower marginal costs. An increase in quality followed by an increase in productivity can lead to a decrease in marketing margins so that efficiency can increase. Increased efficiency can increase the competitiveness of Indonesian soybean commodities. Therefore, the government needs to synergistically improve both the quality and productivity of soybeans.

Import Liberalization Policy in 1998

Indonesia experienced a monetary crisis in 1998. The financial difficulties of that year forced Indonesia to use a loan facility from the International Monetary Fund (IMF). Because of this, Indonesia had to agree to a letter of intent. The agreement brought various consequences for Indonesia in terms of international trade. Indonesia became more liberal in conducting international trade, especially imports. The Letter of Intent (LoI) agreed on 13 November 1998 marked the beginning of import liberalization in Indonesia. There were 27 items that had to be agreed by Indonesia and were divided into five broad lines: macroeconomic framework and policies, privatization and audit of state enterprises, banking sector reform, corporate restructuring and bankruptcy reform, and foreign exchange monitoring system (IMF, 1998). Some of the agreement points related to food imports included, 1) the implementation of a zero percent import tariff policy for food commodities; 2) the prohibition of providing liquidity credit for the Badan Urusan Logistik (Bulog); 3) limiting the role of Bulog and revoking Bulog's role as an import monopoly by Bulog.

The dummy for the implementation of the import liberalization policy in 1998 significantly influences the volume of Indonesian soybean imports. Indonesian soybeans import volume after the implementation of the import liberalization policy in 1998 was 0.000000000087 tons higher than before the policy was implemented.

The implementation of a zero percent import tariff is basically detrimental to domestic farmers. The low price of imported soybeans can be lower than the cost of soybean production by domestic farmers so that farmers will lose money if they sell at a price lower than the price of imported soybeans. Domestic farmers will lose the

producer surplus. Producer surplus is the profit that producers make when they can sell goods for more than the lowest price, they are willing to offer. Farmers will lose producer surplus because they cannot sell soybeans at a higher price because consumers tend to choose cheaper imported soybeans (Widyawati et al., 2014).

Furthermore, the lifting of Bulog's role as import monopoly has had a major impact. Bulog is no longer the sole importer so all soybean importers in Indonesia, individuals, and wholesalers, can easily import. This has led to uncontrolled import volumes. The Letter of Intent (LoI) also prohibited the provision of liquidity credit for the Badan Urusan Logistik (Bulog). Liquidity credit is credit provided by Bank Indonesia to support government programs. With the prohibition of liquidity credit, Bulog would find it difficult to finance imports. These three things encourage the liberalization of soybean imports in Indonesia.

The increase in import volume due to the implementation of the import liberalization policy has caused local soybean prices to compete with imported soybeans. The government can intervene by keeping prices lower than the cost of soybean production by local farmers. What can be done is to increase the demand for soybeans so that soybean prices will increase or can be called demand pull inflation. Demand that exceeds stock supply will force a price increase. To increase demand, the government can provide output subsidies in the form of direct payments for soybean processing industries such as tofu and tempeh makers. Output subsidies are given to the tempeh and tofu industries as a substitute for part of the price spent to buy raw materials, namely soybeans.

CONCLUSIONS

In the period from 1991 to 2020, Indonesia's soybean import volume experienced a positive trend. The volume of soybean imports increased every year. The exchange rate of the rupiah against the US dollar has a significant negative effect on the volume of soybean imports. In addition, Indonesia's gross domestic product (GDP) has a significant positive effect on the volume of soybean imports. Then, the volume of Indonesian soybean imports after the implementation of the import liberalization policy in 1998 was higher than before the implementation of the policy. Meanwhile, soybean productivity and US soybean producer prices do not significantly affect the volume of soybean imports.

Indonesia is still highly dependent on imported soybeans, especially from the United States. To prevent stock fluctuations due to fluctuations in the exchange rate of the rupiah against the US dollar, the Indonesian government needs to diversify soybean supplier countries. The volume of soybean imports always increases every year. The government needs to play a role in increasing soybean production and productivity through policies that promote the use of superior seeds, provide agricultural machinery technology, and increase soybean planting areas. The government can provide direct input subsidies for soybean farmers and guarantee minimum prices to increase farmers' willingness to plant soybeans. The price of local soybeans is still less competitive than the price of imported soybeans, so the supply is still low. Therefore, the government can provide output subsidies in the form of direct payments for soybean processing industries so that soybean prices can increase so that local soybean prices can compete.

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