

THE EFFECT OF SOYBEAN PRICES AND CHICKEN MEAT PRICES ON SOYBEAN IMPORTS WITH SOYBEAN CONSUMPTION AS AN INTERVENING VARIABLE 2002-2023

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Abstract

As the main raw material for various processed products such as tempeh and tofu, soybean is one of the strategic commodities in the national food industry. However, domestic price fluctuations and investment losses are still major issues affecting price and stock stability. In addition, the price of other commodities, such as chicken meat, also has a negative impact on public consumption. The purpose of this study is to analyze the impact of chicken meat and soybean prices on soybean value using soybean consumption as an intervening variable. This study uses time series data from 2002 to 2023, with variables analyzed including domestic soybean prices, chicken prices, soybean consumption, and soybean imports. The analysis technique used is Structural Equation Modeling (SEM), which is based on path analysis and conducted using R software with lavaan package. Prior to analysis, the data were subjected to multivariate normality test using the Mardia Test to ensure a good SEM model. The findings of this study show that soybean prices and chicken meat prices have a significant impact on soybean consumption. In conclusion, soybean consumption has a significant impact on the value of soybeans. The indirect effect of soybean prices on soybean imports is 0.18 units through soybean consumption, while the indirect effect of chicken meat prices is 0.19 units. The model is said to be fit with a CFI value of 0.99, RMSEA of 0.03 and SRMR of 0.02. The implication of this study is that the stability of soybean and chicken meat prices can indirectly affect soybean volume through changes in domestic consumption patterns. Therefore, more integrated price and production policies are needed in the country to reduce import dependence and maintain soybean based food security.

Keywords: Soybean Price, Chicken Meat Price, Soybean Consumption, Soybean Import, Path Analysis

INTRODUCTION

Soybean as the main raw material for various processed products such as tempeh and tofu is a strategic commodity in the national food industry. However, fluctuations in soybean domestic prices and investment losses are still major issues affecting price and stock stability. In addition, the price of other commodities, such as chicken meat, also has a negative impact on public consumption. This study aims to analyze the effect of chicken meat price and soybean price on soybean value with soybean consumption as an intervening variable. The scope of the study covers the analysis of the period from 2002 to 2023 related to domestic soybean prices, chicken prices, soybean consumption, and soybean imports.

LITERATURE REVIEW AND HYPOTHESIS FORMULATION

This study draws on the literature on the effect of price variables on consumption patterns and commodity imports, particularly soybeans and chicken meat. Relevant theory and previous research are used to develop hypotheses on the effect of chicken prices and soybean prices on soybean consumption and soybean value. The main hypotheses of this study are:

H1: The higher the local soybean price, the lower the soybean consumption.

H2: The higher the price of chicken, the more soybean consumption tends to increase (e.g. due to protein source substitution).

H3: The higher the price of local soybeans, the higher soybean imports. **H4:** The higher the price of chicken, the higher soybean imports.

H5: The higher the soybean consumption, the higher the soybean imports.

H6: The effect of local soybean prices on soybean imports is mediated by soybean consumption. **H7:** The effect of chicken price on soybean imports is mediated by soybean consumption.

RESEARCH METHODS

This study uses time series data from 2002 to 2023. The variables analyzed include domestic soybean prices, chicken prices, soybean consumption, and soybean imports. The analysis technique used is Structural Equation Modeling (SEM) based on path analysis, which is processed using R software with the lavaan package. Prior to the analysis, a multivariate normality test was conducted using the Mardia Test to ensure the suitability of the SEM model.

RESULTS AND DISCUSSION

The results show that soybean prices and chicken meat prices have a significant effect on soybean consumption. Soybean consumption also has a significant impact on the value of soybeans. The indirect effect of soybean prices on soybean imports through soybean consumption is 0.18 units, while the indirect effect of chicken meat prices is 0.19 units. The SEM model meets the model fit criteria with a CFI value of 0.99, RMSEA of 0.03, and SRMR of 0.02. The findings explain that changes in the prices of these two commodities affect the volume of soybean imports indirectly through domestic consumption patterns.

CONCLUSION

1. Domestic soybean prices have a positive and significant impact on soybean consumption, the price of domestic soybeans does not greatly affect the quantity of soybean demand where soybeans are the main raw material in processed products such as tofu, tempeh, soy sauce and other preparations that are widely consumed by the public.
2. Domestic chicken meat prices have a significant positive effect on soybean consumption. This occurs because of consumer preferences in consuming vegetable protein such as tofu and tempeh because the price is more affordable when chicken prices rise.
3. Domestic soybean prices have a positive effect on soybean imports. An increase in domestic soybean prices will increase the demand for imported soybeans which can be attributed to the high price of local soybeans.
4. Domestic chicken meat price has a positive effect on soybean imports indirectly Soybean Price through Soybean Consumption has a greater effect on Soybean Imports than Chicken Meat Price. This suggests that Soybean Consumption (Z) plays a stronger role in mediating the effect of Soybean Price on Soybean Imports.
5. Soybean consumption has a positive and significant effect on the volume of soybeans, if an item increases while -
6. Domestic soybean prices have a positive effect on soybean imports through soybean consumption, when domestic soybean prices increase, soybean consumption should decrease but soybeans as a basic need of the community have a high level of demand and will indirectly increase the volume of soybean imports.
7. When the price of chicken meat rises, consumers tend to look for other alternative protein sources, which will affect the level of soybean imports in Indonesia.

Equation

Analysis Path

$$Z = \frac{ab}{\sqrt{(b^2 SE^2 a) + (a^2 SE^2 b)}}$$

Description:

SEa = standard error of estimation of the effect of the independent variable on the mediating variable

SEb = standard error of estimation of the effect of the mediating variable on the dependent variable

B = mediating variable coefficient

a = independent variable coefficient

Figures and Tables

In this research study on the effect of soybean prices, and chicken meat prices, on soybean imports in Indonesia with soybean consumption as an intervening variable, it is important to understand the interconnected dynamics that contribute to national food security policy. Domestic soybean prices play a direct role in soybean consumption. An increase in domestic soybean prices may reduce soybean demand, as consumers' purchasing power for soybean raw materials is limited.

Conversely, an increase in chicken meat prices may trigger consumers to switch to other protein alternatives, including soybeans (Rahmadani et al., 2018). The availability of soybean prices and quantity in the market affects the extent of food consumption. Changes in people's purchasing power can alter consumption patterns, which can then impact the decision to import soybeans to meet food supply inadequacies (Ardhana et al., 2023). In this context, soybean consumption is an intervening variable that mediates the relationship between the price and volume of soybean imports, and the increase in soybean consumption is also caused by the international soybean price that is more affordable than the domestic soybean price. In addition, the increase in chicken meat prices has the potential to the purchasing power of consumers who switch to processed soybeans which are both sources of protein. In connection with the domestic soybean production that has not been able to meet national needs, it can also increase soybean consumption directly encouraging an increase in soybean imports to cover the domestic supply +deficit (Galih, 2015). According to the Central Bureau of Statistics (2023), shows the rate of population growth is increasing from year to year which in 2023 reached 270 people.

Overall, this study provides an understanding of how the effect of soybean prices and chicken meat prices on soybean consumption and how the effect of soybean consumption as an intervening variable can mediate between the independent variable and the dependent variable. Based on the description above, soybean imports in Indonesia can be described through a theoretical framework chart as follows

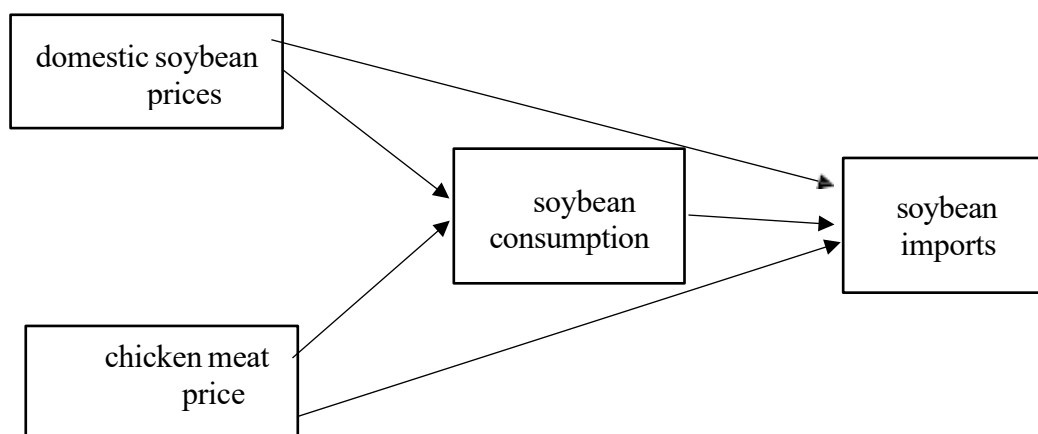


Figure 1. Theoretical Framework

BIBLIOGRAPHY

- Abdullah, F. D., Saleh, C., Rasyid, F. A., & Witro, D. (2023). Analysis of International Trade Through the Heckscher-Ohlin Political Model Against the National Economic Interest of Islamic Economic Law Perspective. *Al Ushuliy: Journal of Sharia and Law Students*, 2(2), 249. <https://doi.org/10.31958/alushuliy.v2i2.11483>
- Akay, R., Kaawoan, J. E., & Pangemanan, F. N. (2021). *Journal of Governance*. Employee Discipline in Improving the Quality of Public Services at the Tikala District Office, 1(1), 1-8.
- Andayanie, W. R. (2016). Development of soybean production as an effort of food independence in Indonesia.
- Anjani, S. R. (2019). Indonesian Soybean Demand. *Journal of Competitive Marketing*, 2(2), 1. <https://doi.org/10.32493/jpkpk.v2i2.2455>
- Annisa Lazuardina, & Suhirman, S. (2024). Stakeholder Analysis in Tourism Development of Panundaan Tourism Village Ciwidey Bandung Regency. *Media Bina Ilmiah*, 18(5), 1211- 1220. <https://doi.org/10.33758/mbi.v18i5.664>
- Hermawan, D., Soybean, P., Soybean, P., Soybean, I., Soybean, K., & Soybean, P. (2018). Analysis of Factors Affecting Soybean Imports in Indonesia with an Error Correction Model (ECM) Approach (1980-2017) Introduction to Literature Review. 2(2), 86-93.
- Irawan, B. (2007). Price Fluctuations, Price Transmission and Marketing Margins of Vegetables and Fruit. *Agricultural Policy Analysis*, 5(4), 358-373.
- Junianto, R., Patiung, M., & Koesriwulandari, K. (2019). Trend Analysis of Supply and Demand of Indonesian Soybean Commodity. *Scientific Journal of Socio Agribis*, 19(2), 45-63. <https://doi.org/10.30742/jisa.v19i2.830>
- Junianto, R., Wanto, H. S., & Patiung, M. (2022). Soybean Imports in Indonesia. *IJEBD (International Journal of Entrepreneurship and Business Development)*, 5(6), 1102-1104. <https://doi.org/10.29138/ijebd.v5i6.2055>
- Kahar, F. A., Wardhono, A., Wahyudi, E., & Fadah, I. (2023). Determinants of Soybean Production and Imports in Indonesia 1. *Orginal Article*, 2(4), 710-717. <https://doi.org/10.56472/25835238/IRJEMS-V2I4P184>
- Kementan. (2023). Sheep Meat Livestock Commodity Outlook Book.
- Ministry of Agriculture. (2020a). Soybean Outlook 2020. Center for Agricultural Data and Information Systems Secretariat General of the Ministry of Agriculture, 1-84.
- Ministry of Agriculture. (2020b). Livestock Commodity Outlook for Chicken Meat. ISSN 2502- 3632 (Online) ISSN 2356-0304 (Paper) *International & National Online Journal* Vol. 7 No.1, January - June 2019 Universitas 17 Agustus 1945 Jakarta, 53(9), 1689-1699.
- Ministry of Agriculture. (2023). Agricultural Economic Data Support 2023. 167.