AGRIEKONOMIKA
http://journal.trunojoyo.ac.id/agriekonomika
Volume 14, Nomor 1, 2025
DOI: https://doi.org/ 10.21107/agriekonomika.v14i1.25232

Agriekonomika has been accredited as a scientific journal by the Ministry of Research-Technology and Higher Education Republic of Indonesia: ***No. 23/E/KPT/2019*** *SINTA 2*

Unlocking Indonesia's Dairy Potential: Assessing the Role of Fresh Milk Imports in Achieving Self-Sufficiency

Istis Baroh[1*], Eugestin Jions Lveyre[1], M Zul Mazwan[1], Rahayu Relawati[1]

[1]Bachelor of Agribusiness, Faculty of Agriculture and Animal Science, Universitas Muhammadiyah Malang, Jl. Raya Tlogomas 246 Kota Malang

Received: March 2024; Accepted: March 2025; Published: April 2025

ABSTRAK

Indonesia exhibits significant potential for the development of dairy cows agribusiness; however, the country continues to register notable levels of fresh cow's milk imports. This study aims at scrutinizing the trajectory of Indonesia's fresh cow's milk imports spanning the years 2010 to 2019, delineating the origins of these imports and elucidating the determinants affecting the volume of fresh cow's milk imports. Secondary data sourced from the Center for Agricultural Data and Information Systems of the Ministry of Agriculture in 2019 form the basis of this inquiry. Methodologically, the data underwent trend analysis, quantitative descriptive analysis, and multiple linear regression. The findings reveal a downward trend in fresh milk imports across Indonesia during the period under examination. Notably, New Zealand emerges as the foremost contributor to Indonesia's fresh milk imports. The study identifies income variables, domestic fresh cow milk production, and consumption levels as collectively influencing the volume of fresh cow's milk imports. Furthermore, the import price of fresh cow's milk manifests a significant impact on import volumes, whereas the production and consumption metrics of fresh cow's milk exhibit no discernible influence on import quantities within Indonesia.

Keywords: Milk imports, international trade, fresh milk, food self-sufficiency.

INTRODUCTION

Fresh milk stands as a pivotal food commodity, addressing significant nutritional and health requisites within communities. Within Indonesia, the burgeoning demand for fresh milk mirrors population expansion and shifts in consumption habits. Particularly in pandemic scenarios, milk consumption experiences a surge as individuals strive to bolster their immunity, with rural populations acknowledging the imperative of milk, especially for children under five (Ariadi & Relawati, 2021). Nonetheless, the pace of domestic milk production fails to match the soaring demand, presenting formidable hurdles to Indonesia's pursuit of milk self-sufficiency.

Agribusiness within the veterinary sector assumes a pivotal role in satisfying the animal food requirements of the community (Pratiwi & Hakim, 2016). Nevertheless, dairy cow farming encounters numerous impediments, including the small scale of operations stemming from limited capital, insufficient farmer expertise, and suboptimal feed formulations (Rahayu, 2017). Fresh milk stands as a nutrient-

*Corresponding author:
Email: istis@umm.ac.id

p-ISSN 2301-9948 | e-ISSN 2407-6260

rich byproduct of dairy cow husbandry. Heightened public consciousness regarding milk consumption elevates milk to an economically strategic commodity, thus augmenting the demand for milk across Indonesia. Despite an upward trajectory, the per capita annual consumption of fresh milk in Indonesia remains notably deficient compared to peer nations, registering a mere 83,577 tons per capita in 2018 (Pusat Data dan Sistem Informasi Pertanian, 2014).

The government's policy of importing fresh milk is directed towards fulfilling consumption requirements. The phenomenon of milk imports transcends national borders and constitutes a global occurrence observed in various regions including Asia, the Middle East, and Europe, encompassing fresh milk, organic milk, and skim milk powder (Almarri & Al-Mahish, 2021; Budiani & Sudirman, 2020; Davis et al., 2018). An escalation in import volumes is often indicative of declining domestic production levels within a country (Raharjo et al., 2021). Research by Prasetyawati & Basuki (2019) underscores the multifaceted influences shaping the substantial demand for fresh milk imports in Indonesia. Key determinants include the pricing dynamics of imported and domestic goods, per capita income, domestic production and consumption rates, the exchange rate of the rupiah against the US dollar, and Gross Domestic Product (GDP).

Meskipun produksi susu segar di Indonesia yang sudah mampu memenuhi konsumsi dalam negeri, Indonesia tetap melakukan impor susu segar dengan jumlah yang mengalami fluktuasi dari tahun ke tahun. Faktor lain yang mempengaruhi jumlah impor susu segar yaitu produksi susu segar, dan harga susu impor selain konsumsi susu segar. Impor di Indonesia berasal dari berbagai negara dengan persentase yang berbeda.

Fresh milk imports represent a pivotal strategy upon which Indonesia depends to address its milk supply shortfall. Despite their instrumental role in fulfilling fresh milk demand, reliance on imports entails substantial risks and economic ramifications. Consequently, there exists a pressing need to scrutinize the evolution of fresh milk imports in Indonesia alongside their determining factors.

Previous research has investigated the phenomenon of milk imports. According to Rucci et al. (2022), Indonesia exhibits a pronounced reliance on dairy imports, with an average of 40.42 percent of the nation's milk demand being fulfilled through imports. Over the long term (1985-2010), variables such as per capita income, real domestic milk prices, and imported milk prices have been identified as influential factors impacting milk imports (Pratiwi & Hakim, 2016). In Indonesia, cow's milk imports are influenced by production levels, consumption patterns, and national pricing dynamics. Similarly, research by Budiraharjo et al. (2021) highlights the significance of the Rupiah exchange rate, GDP per capita, dairy milk exports, and domestic milk production in shaping cow's milk imports. Furthermore, an investigation into milk import modeling by impor Riska et al. (2021) reveals that milk consumption and imported milk prices significantly influence the milk import model.

This study contributes novelty through its comprehensive analytical approach of secondary data pertaining to fresh milk imports in Indonesia from 2010 to 2019. While the subject of dairy imports has garnered prior attention, this study enhances comprehension by delving into

nuanced facets and prioritizing the principal determinants influencing fresh milk imports. The objectives encompass: 1) analyzing the trajectory of fresh milk imports in Indonesia during 2010-2019; 2) scrutinizing the origins of Indonesia's fresh milk imports; and 3) evaluating the impact of fresh milk production, consumption, and imported milk prices on the volume of fresh milk imports in Indonesia from 2010 to 2019.

The outcomes of this study are expected to provide policymakers with enhanced precision in establishing strategies aimed at attaining milk self-sufficiency in Indonesia. This study is anticipated to yield novel insights into the intricate dynamics of the fresh milk import scenario in Indonesia, alongside the potential and challenges inherent in achieving milk self-sufficiency. Furthermore, this study adds valuable contributions to the realm of research on food security and the sustainability of food resources in Indonesia.

.

RESEARCH METHOD

This study employs a quantitative approach, utilizing numerical computations derived from secondary data. Quantitative research methods are characterized by their rational, systematic, measurable, and objective nature (Mathar, 2013). Secondary data collection and analysis were undertaken between June and July 2022. The variables under scrutiny encompass imported milk prices, Indonesian milk production, Indonesian milk consumption, and the volume of milk imports in Indonesia from 2010 to 2019. The secondary data originates from the Agricultural Data and Information System Center of the Ministry of Agriculture of the Republic of Indonesia.

The first objective underwent analysis employing trend analysis methodology, utilizing the following formula:

$$Y = a + bX \quad (1)$$

where **Y** represents fresh milk imports, **X** signifies the year, and **b** denotes the trend value, whether positive or negative. The second objective underwent analysis employing descriptive methods. The third objective was scrutinized utilizing the multiple linear regression method, following this formula:

$$Y = \beta_0 + b_1X_1 + b_2X_2 + b_3X_3 + \varepsilon \quad (2)$$

Where **Y** represents the volume of Indonesian fresh milk imports, β_0 stands as a constant, b_1 and b_2 denote regression coefficients, X_1 signifies the price of imported milk, X_2 denotes fresh milk production, X_3 represents fresh milk consumption, **Y** corresponds to the amount of fresh milk imports, and **ε** denotes the error term.

RESULTS AND DISCUSSION

Trend of Fresh Milk Import in Indonesia in 2010-2019

Fresh milk imports in Indonesia depict a fluctuating pattern characterized by periods of increase and decrease. The rising trend in milk imports underscores Indonesia's growing reliance on imported dairy commodities to meet domestic demand. These imports serve to bridge the disparity between domestic milk production and consumption levels. The analysis of fresh milk import trends in Indonesia, as conducted in this study, draws upon data spanning from 2010 to 2018. Figure 1 illustrates a graphical representation of the volume of fresh milk imports in Indonesia during the period from 2010 to 2018.

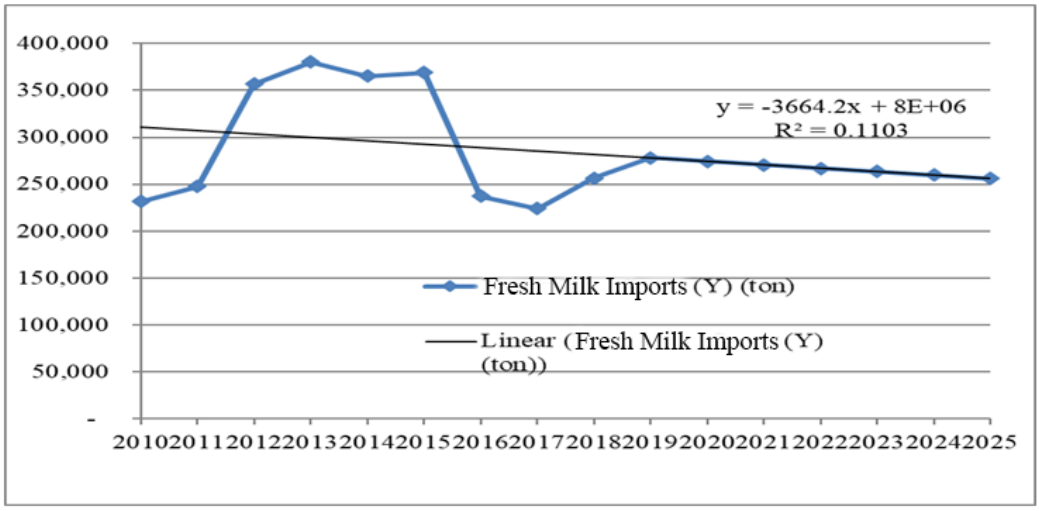


Figure 1.
Graph of fresh milk imports in Indonesia 2010-2018
Data Source: Pusdatin, Processed in 2020

Figure 1 illustrates that the peak of milk imports occurred in 2013, marking a 7% increase from the previous year, totaling 380,558 tons. Conversely, the nadir of Indonesia's milk imports transpired in 2017, experiencing a decline of -6% from the preceding year, registering a volume of 223,855 tons. The most substantial surge in fresh milk imports unfolded in 2012, escalating by 44% from the previous year, followed by a downturn, with the lowest growth observed in 2016, plummeting by -36% from the previous year. Over the long term, the trend of milk imports exhibited a downward trajectory during the analysis period. This outcome diverges from the trend observed in the preceding period from 2003 to 2009, where Indonesia's milk imports tended to ascend (Pratiwi & Hakim, 2016). These findings align with earlier research encompassing a broader timeframe (2000-2016), indicating that fresh milk imports in Indonesia fluctuate annually, experiencing a substantial decline in 2013 followed by a notable resurgence (Riska et al., 2021).

Utilizing fresh milk import data from Indonesia spanning 2010 to 2018, forecasting was performed for the period 2019-2025, employing trend analysis continuation. According to the forecasting results, fresh milk imports in Indonesia amounted to 278,133 tons in 2019 and are projected to decline steadily from 2020 to 2025 (refer to Figure 1). Despite the anticipated decline, the volume of fresh milk imports remains substantial. Consequently, effective measures are imperative to diminish Indonesia's reliance on imported milk, if not replace it entirely with domestic fresh milk sources. To mitigate dependence on imported milk, it is essential to fortify the resilience of the dairy cow business model through maintenance practices that regulate drinking water availability, feed quality, and proficient manure management (Rahmana et al., 2018). Moreover, emphasis should be placed on enhancing production technology and augmenting the number of dairy cows to bolster milk production (Wulandari & Bowo, 2019).

The country of origin for Indonesia's fresh milk imports

Indonesia sources fresh milk from various significant dairy-producing nations worldwide. According to data provided by the Ministry of Agriculture, Indonesia's fresh milk imports stem from ten primary suppliers. Table 3 delineates the countries of origin for Indonesia's milk imports during the period spanning 2014-2018.

Table 3
The country of origin for Indonesia's fresh milk imports, 2014-2018

No	country	Impor Volume (Ton)					Average (Ton)
		2014	2015	2016	2017	2018	
1	New Zealand	59,118	58,430	71,762	57,668	68,699	63,136
2	United States	47,132	37,252	48,903	34,444	58,067	45,160
3	Australia	38,590	50,278	43,502	40,395	34,408	41,435
4	Belgium	12,466	15,910	12,866	25,869	25,937	18,609
5	France	19,594	17,176	17,046	15,432	15,187	16,887
6	Malaysia	9,039	8,466	12,281	16,599	21,023	13,481
7	Germany	7,247	6,300	9,095	12,943	8,231	8,763
8	Netherlands	5.005	2,316	4,631	7,938	7,158	5,410
9	Singapore	3,845	2,541	4,132	1,666	1,959	2,829
10	Denmark	2,903	2,883	2,905	2,167	2,727	2,717

Data Source: Agricultural Data and Information System Center, 2019

Table 3 reveals New Zealand as the foremost importer of milk into Indonesia, with an average of 63,136 tons. Being one of the world's largest milk producers, New Zealand considers milk as a principal commodity. Following New Zealand, the United States and Australia rank as the subsequent major importers, procuring 45,160 tons and 41,435 tons of cow's milk, respectively. Belgium, France, and Malaysia follow suit, importing 18,609 tons, 16,870 tons, and 13,481 tons of milk, respectively. Germany, the Netherlands, Singapore, and Denmark round out the list with imports totaling 8,763 tons, 5,410 tons, 2,829 tons, and 2,717 tons of milk, respectively.

The findings indicate that New Zealand serves as the primary source of fresh milk imports in Indonesia. Renowned for its substantial dairy exports, New Zealand stands as one of the foremost contributors to global dairy trade (Ruccy et al., 2022). Situated in the southern hemisphere, New Zealand boasts a temperate climate conducive to year-round pasture grazing for dairy cows. However, New Zealand's reliance on oil palm meal as a feed by-product contributes to lower pasture grazing rates (Ledgard et al., 2020). The Ministry of Industry of the Republic of Indonesia (2015) highlights Indonesia's stable economy and sizable population as attractive attributes for food and beverage exporting nations. Given its robust dairy industry, New Zealand emerges as a key supplier of dairy products to Indonesia. These findings echo the conclusions drawn by Ruccy et al.

(2022), affirming New Zealand's status as the principal origin of fresh milk imports into Indonesia.

Factors Affecting Fresh Milk Imports in Indonesia

Ningsih & Dukalang (2019) elucidate that the normality test aims to ascertain whether the regression models of dependent and independent variables possess normally distributed residual values. An ideal regression model exhibits normally distributed residual values. This study employs the Kolmogorov-Smirnov normality test for this purpose. The test's criteria dictate that if the significance value exceeds 0.05, the residual values are normally distributed; conversely, if the significance value falls below 0.05, the residual values deviate from normal distribution. The test outcomes affirm the absence of multicollinearity and heteroscedasticity in the regression model utilized.

The objective of multiple linear regression analysis is to assess the impact of two or more independent variables (X) on the dependent variable (Y). A multiple linear regression model is deemed effective—a good model—if it satisfies the assumptions of normality and is devoid of classical assumption violations. Additionally, this test can ascertain the direction of the relationship between the independent and dependent variables. In this study, the multiple linear regression equation seeks to quantify the influence of the independent variables, namely imported milk price (X1), fresh milk production (X2), and fresh milk consumption (X3), on the dependent variable, the quantity of imported fresh milk (Y).

Table 4.
Results of Multiple Linear Regression Test

Coefficients[a]

Model		*Unstandardized Coefficients*	
		B	*Std. Error*
1	(*Constant*)	289,456.880	284,016.971
	Fresh Milk Production	-0.188	0.283
	Fresh Milk Consumption	0.647	0.852
	Imported Milk Price	1.032	0.000

a. *Dependent Variable*: Fresh Milk Imports

The multiple linear regression equation elucidates the impact direction of independent variables, namely fresh milk production, fresh milk consumption, and milk import prices, on the dependent variable, namely the quantity of fresh milk imports. A positive regression coefficient of an independent variable signifies a unidirectional effect on fresh milk imports, whereas a negative regression coefficient indicates a contrary unidirectional effect on fresh milk imports. To assess significance, this study employs a 10% significance test due to the absence of significant variables when using a 5% significance level, where the p-value exceeds 0.05. Table 4 presents the results of the Multiple Linear Regression test conducted in this study.

From Table 4, the multiple linear regression equation can be formulated as follows:

Y = 289,456.880 -0.188 X1 + 0.647 X2 + 1.032 X3+ e

The coefficients derived from multiple linear regression analysis provide insightful interpretations. The constant value of 289,456.88 signifies that when the independent variable remains constant or at zero, the dependent variable (fresh milk imports) is projected to be 289,456.88. A regression coefficient of -0.188 for fresh milk production implies that a decrease in fresh milk production corresponds to a reduction in fresh milk imports. Conversely, a regression coefficient of 0.647 for fresh milk consumption suggests that an increase in fresh milk consumption leads to heightened fresh milk imports. Furthermore, a regression coefficient of 1.032 for imported milk price indicates that a rise in the price of imported milk results in increased fresh milk imports. The residual value 'e' represents the residual or potential error within the regression equation model, which may stem from unaccounted variables that could influence the dependent variable but were not incorporated into the model.

The simultaneous F test in multiple linear regression analysis aims to determine the relationship or effect between the independent variables together on the dependent variable. If the significant value is <0.1, it means that the independent variable (X) simultaneously affects the dependent variable (Y). If the significant value is greater than 0.1, it means that the independent variable (X) simultaneously has no effect on the dependent variable (Y). If the calculated F value is greater than the F table, it means that the independent variable (X) simultaneously affects the dependent variable (Y). If the calculated F value is smaller than the F table, the independent variable (X) simultaneously has no effect on the dependent variable (Y). The following are the results of the Simultaneous F test in this study.

Table 5
ANOVA Test Results

Model	*Sum of Squares*	Df	*Mean Square*	F	Sig.
Regression	2,64E+10	3	8802160447	4,59	.054[b]
Residual	1,15E+10	6	191902514		
Total	3,79E+10	9			

a. *Dependent Variable*: Fresh Milk Imports

b. *Predictors*: (*Constant*), Imported Milk Price, Fresh Milk Consumption, Fresh Milk Production.

Table 5 shows that the significance value in the Simultaneous F test is 0.054. The significance value is smaller than 0.1, it can be concluded that the variables of production, fresh milk consumption, and imported milk prices simultaneously have a significant effect on the variable of the amount of fresh milk imports (Y). The calculated F value of 4.59 is greater than the F table of 3.07, which means that the variables of production, fresh milk consumption and imported milk prices simultaneously affect the variable amount of fresh milk imports.

The partial t test in multiple linear regression analysis aims to determine the relationship or effect between the independent variables individually on the dependent variable. Several requirements in partial t test

decision making. Based on the significance value of the partial t test, if the Significant value is smaller than 0.1, it means that the independent variable (X) has a significant effect on the dependent variable (Y). If the significance value is greater than 0.1, it means that the independent variable (X) has no significant effect on the dependent variable (Y). Based on the t-count and t-table values, if the t-count value is greater than the t-table, it means that the independent variable (X) partially affects the dependent variable (Y). If the t-count value is smaller than the t-table, it means that the independent variable (X) partially has no effect on the dependent variable (Y). Table 6 below shows the partial t-test results of the model of factors affecting the amount of fresh milk imports in Indonesia.

Tabel 6
Results of Partial t Test

Model		***Unstandardized Coefficients***		***Standardized Coefficients***		
		b	Std. Error	Beta	t	Sig.
1	(*Constant*)	289456.880	284016.971		1.019	0.347
	Fresh Milk Production	-0.188	0.283	-0.230	-0.662	0.532
	Fresh Milk Consumption	0.647	0.852	0.229	0.760	0.476
	Imported Milk Price	0.000	0.000	0.784	2.184	0.072

a. *Dependent Variable*: Fresh Milk Import

Table 6 indicates that the fresh milk production variable (X1) has a significant level of 0.532. The significant level is greater than 0.1, indicating that fresh milk production partially does not have a significant effect on fresh milk imports (Y). The fresh milk consumption variable (X2) has a significant level of 0.476. The significant level is greater than 0.1, indicating that fresh milk consumption partially has no significant effect on fresh milk imports (Y). The imported milk price variable (X3) has a significant level of 0.072. The significant level is smaller than 0.1, indicating that the price of imported milk partially does not have a significant effect on fresh milk imports (Y). This means that partially the production variable, fresh milk consumption does not have a significant effect on the amount of fresh milk imports in Indonesia. Meanwhile, import prices partially have a significant effect on the amount of fresh milk imports in Indonesia.

The variable of fresh milk production (X1) has a t-count value of -0.662. The t-count value is smaller than the t-table value of 1.943, indicating that fresh milk production partially has no effect on fresh milk imports (Y). The fresh milk consumption variable (X2) has a t-count value of 0.76. The t-count value is smaller than the t-table value of 1.943, indicating that fresh milk consumption partially has no effect on fresh milk imports (Y). The imported milk price variable (X3) has a t-count value of 2.184. The t-count value is greater than the t-table value of 1.943, indicating that the price of imported milk partially does not affect the import of fresh milk (Y). This means that partially the independent variables of

fresh milk production and consumption do not affect the amount of fresh milk imports in Indonesia, while the price of imported fresh milk affects the amount of fresh milk imports in Indonesia.

Determination coefficient (R^2) explains how much the percentage of total variation in the dependent variable is seen from the size of the percentage of the coefficient of determination (Santoso, 2013). The greater thedetermination coefficient (R^2), the greater the effect of the model in explaining the dependent variable. The following are the results of the determination coefficient (R^2) test in this study.

Table 1
Results of the Determination Coefficient (R^2) Test

Model	R	R *Square*	*Adjusted R Square*	*Std. Error of the Estimate*
1	.834[a]	.696	.545	43806,649

a. *Predictors*: (*Constant*), Imported Milk Price, Fresh Milk Consumption, Fresh Milk Production, Per Capita Income
b. *Dependent Variable*: Fresh Milk Imports

Table 7 reveals that the R Square value in the Determination Coefficient test stands at 0.545, corresponding to 54.5%. This indicates that the results of the multiple linear regression test in this study demonstrate that 54.5% of the amount of fresh milk imports from 2010-2019 can be attributed to fresh milk production, fresh milk consumption, and imported milk prices. The remaining 45.5% of the fresh milk import quantity is influenced by other variables not scrutinized in this study.

The results of this study contradict prior research findings which suggested that production, consumption, and prices influence import quantities (Sari, 2014). It is demonstrated here that collectively, the variables of production, consumption, and the price of imported milk jointly impact import volumes. However, individually, the variables of fresh milk production and consumption do not significantly influence fresh milk imports, whereas the variable representing the price of imported fresh milk does impact import quantities. Previous studies have highlighted milk consumption as the most influential factor in milk imports (Budiani & Sudirman, 2020). The insignificance of production and consumption factors in influencing fresh milk imports may be attributed to the relatively low levels of domestic production and consumption.

The study data reveals that fresh milk consumption in Indonesia remains relatively low despite annual increases over time. Previous research on liquid milk consumption indicates that consumption frequency varies from three times a week to once a day (Prastiwi & Setiyawan, 2016). Despite having domestic fresh milk production sufficient to meet local demand, Indonesia still imports fresh milk due to its simultaneous exportation of this product. However, Indonesia's export capacity remains notably lower than that of developed nations, largely due to technological and agricultural challenges. Consequently, Indonesia's dairy industry is perceived globally as a net consumer rather than a producer of dairy products.

If immediate enhancements are not made to Indonesia's livestock agribusiness system, it risks following the path of becoming a livestock product importer akin to Japan. However, the nation's trade activities, encompassing both exports and imports, are integral to macroeconomic policies, aiding in assessing a country's trade balance and consequently influencing factors such as inflation and exchange rates (Ngatikoh & Faqih, 2020). As highlighted by Rusdiana & Soeharsono (2019), government initiatives, such as elevating import tariffs on dairy milk products, can positively impact the competitiveness of dairy farming enterprises, enhancing both their value and comparative advantage. Continuous endeavours in this direction are pivotal for progressing towards achieving milk self-sufficiency.

CONCLUSION

Fresh milk imports in Indonesia from 2010 to 2019 exhibited a declining trend. The peak import volume was observed in 2013, totaling 380,558 tons. Among the key source countries for fresh milk imports were New Zealand, the United States, Australia, Belgium, France, Malaysia, Germany, the Netherlands, Singapore, and Denmark. Notably, New Zealand emerged as the foremost importer, averaging 63,136 tons. Import prices exerted a significant influence on the volume of fresh milk imports in Indonesia, whereas the production and consumption of fresh milk showed no significant impact on import volumes. Continuous endeavors aimed at enhancing the competitiveness of livestock enterprises and bolstering farmers' income are anticipated to progressively steer Indonesia towards achieving milk self-sufficiency.

REFERENCES

Almarri, A., & Al-Mahish, M. (2021). Consumers' willingness to pay for organic fresh milk in saudi arabia. *Journal of Agricultural Sciences - Sri Lanka*, *16*(3), 503–512. https://doi.org/10.4038/jas.v16i03.9475

Ariadi, B. Y., & Relawati, R. (2021). Alokasi Belanja untuk Ketahanan Pangan Rumahtangga Petani Waduk Pacal, Bojonegoro. *Agriekonomika*, *10*(2), 145–160. https://doi.org/10.21107/agriekonomika.v10i2.10613 Agriekonomika

Budiani, N. K., & Sudirman, I. W. (2020). Analysis of Effect of Consumption, Production, and Inflation Levels on the Import of Milk in Indonesia. *International Journal of Education and Social Science Research*, *3*(01), 143–149. https://ijessr.com/uploads2020/ijessr_03_271.pdf

Davis, C. G., Cessna, J. G., & Blayney, D. P. (2018). Southeast Asia's import demand for skim milk powder: Implications for US exporters. *Journal of Dairy Science*, *101*(5), 4676–4689. https://doi.org/10.3168/jds.2017-12848

Ledgard, S. F., Falconer, S. J., Abercrombie, R., Philip, G., & Hill, J. P. (2020). Temporal, spatial, and management variability in the carbon footprint of New Zealand milk. *Journal of Dairy Science*, *103*(1), 1031–1046. https://doi.org/10.3168/jds.2019-17182

Mathar, M. Q. (2013). *Metode Penelitian Kuantitatif dan*

Kualitatif untuk Ilmu Perpustakaan (I. Mulyadi (ed.)). Alauddin University Press.

Ngatikoh, S., & Faqih, A. (2020). Kebijakan Ekspor Impor : Strategi Meningkatkan Pertumbuhan Ekonomi di Indonesia. *LABATILA: Jurnal Ilmu Ekonomi Islam*, *4*(1), 68–93. https://doi.org/10.33507/labatila.v4i02.269

Ningsih, S., & Dukalang, H. H. (2019). Penerapan Metode Suksesif Interval pada Analsis Regresi Linier Berganda. *Jambura Journal of Mathematics*, *1*(1), 43–53. https://doi.org/10.34312/jjom.v1i1.1742

Prasetyawati, F. D., & Basuki, A. T. (2019). Analisis Faktor-faktor yang Mempengaruhi Impor Daging Sapi di Indonesia Periode 1988-2017: Menggunakan Metode VECM (Vector Error Correction Model). *Journal of Economics Research and Social Sciences*, *3*(2). https://doi.org/10.18196/jerss.030213

Prastiwi, W. D., & Setiyawan, H. (2016). Perilaku Konsumsi Susu Cair Masyarakat Di Daerah Perkotaan Dan Pedesaan (Milk Consumption Behavior of Urban and Rural Communities). *Agriekonomika*, *5*(1), 41–53. https://doi.org/10.21107/agriekonomika.v5i1.996

Pratiwi, H., & Hakim, A. (2016). Perilaku Impor Susu di Indonesia. *Telaah Bisnis*, *14*(1), 53–70. https://doi.org/10.35917/tb.v14i1.14

Raharjo, K. B., Raharjo, B., & Solikhin, S. (2021). Analysis of Factors Affecting the Import of Dairy Milk (Case Study: the Import of Dairy Milk in Indonesia). *Agrisocionomics: Jurnal Sosial Ekonomi Pertanian*, *5*(1), 27–33. https://doi.org/10.14710/agrisocionomics.v5i1.7138

Rahayu, E. T. (2017). Analisis Pendapatan Usaha Ternak Sapi Perah Di Kecamatan Cepogo Kabupaten Boyolali. *Sains Peternakan*, *11*(2), 99. https://doi.org/10.20961/sainspet.v11i2.4852

Rahmana, A., Daryanto, A., & Jahroh, S. (2018). Sustainability Strategies of Indonesian Mega-Dairy Farm Business: A Case of Greenfields Indonesia. *Jurnal Manajemen Dan Agribisnis*, *15*(2), 162–171. https://doi.org/10.17358/jma.15.2.162

Riska, P., Maruli, P., & Firmansyah. (2021). Analisis Model Impor Susu di Indonesia Periode Tahun 2000–2016. *Jurnal Agribis*, *14*(1), 1624–1634. http://jurnal.umb.ac.id/index.php/agribis/article/view/1266

Ruccy, M. V., Suharno, & Asmarantaka, R. W. (2022). Pada Industri Susu Indonesia. *Jurnal Agribisnis Indonesia (Journal of Indonesian Agribusiness)*, *10*(1), 101–112. https://doi.org/10.29244/jai.2022.10.1.101-112

Rusdiana, S., & Soeharsono, S. (2019). Upaya Pencapaian Daya Saing Usaha Sapi Perah Melalui Kebijakan Pemerintah dan Peningkatan Pendapatan Peternak. *Agriekonomika*, *8*(1), 36. https://doi.org/10.21107/agriekonomika.v8i1.5111

Santoso, C. E. . (2013). Perputaran Modal Kerja Dan Perputaran Piutang Pengaruhnya Terhadap Profitabilitas Pada PT. Pegadaian (Persero). *Jurnal*

EMBA, *1*(4), 1581–1590. https://doi.org/10.35794/emba.1.4.2013.2963

Sari, R. K. (2014). Analisis Impor Beras di Indonesia. *Economics Development Analysis Journal*, *3*(2), 320–326. https://doi.org/10.15294/edaj.v3i2.3838

Wulandari, S., & Bowo, P. A. (2019). Pengaruh Produksi, Konsumsi dan Harga Susu Sapi Nasional Terhadap Impor Susu Sapi. *Economic Education Analysis Journal*, *8*(3), 1130–1146. https://doi.org/10.15294/eeaj.v13i2.35717