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Australian Salt Import Policy in Indonesia: An Analysis of Public Policy

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ABSTRACT

The purpose of this study is to examine how economic variables such as the Import of Australian Salt, Domestic Salt Consumption, Domestic Salt Production, GDP Industrial Sector consisting of textile, leather, and pharmaceutical Industry, Cost Insurance Freight (CIF), Australian Dollar Exchange Rate, and non-economic variables respond to the enactment of Government Regulation Number 9 of 2018. The method used is the Feasible Generalized Least Square (FGLS) by observing the dynamic relationship between independent and dependent variables in quarterly data from 2010 to 2021. The results show that Australia's salt imports are smaller than before the enactment of PP No. 9 of 2018. Second, public policy choices in international trade politics for the case of salt imports still prioritize economic benefits (economic scale). Third, the test results show that even though the CIF of imported salt increases, it is inelastic to a decrease in demand. Lastly, the study states that if domestic demand for salt increases with the assumption that national salt production increases, Australian salt imports can be reduced. Our short suggestions are first, the government needs to invest in physical and human technology to reform salt production technology.

Keywords: Salt Import, economic variables, non-economic variables, FGLS
JEL Classification: D2, D7, C1, F1

INTRODUCTION

Even though Indonesia's sea area reaches 3 million km with the second longest coastline in the world which is 95.181 km long, Indonesia is only able to become a salt producer in 30-40th place globally with an average production share of only 0.27 percent of the world's total salt production (Pusat Riset Kelautan BPSDMKP KKP, 2022). Meanwhile, at the domestic level, the increase in industrial salt production per year is quite good with an average production trend of 5.86 percent. When compared to the largest salt-producing countries in the world such as China which only showed a trend of 0.81 percent, then the US experienced a decrease of minus 4.08 percent, and Australia minus 2.05 percent, the growth in domestic salt production can still be quite well said (Sirait et al., 2021). During declining growth in salt production by some of the world's largest producing countries, Indonesia's salt production still cannot be maximized, especially to meet the needs of the domestic industry (Wardianingsih & Paramita, 2022). It was noted that from 2016-2020, the average national salt production was only 2.3 million tons per year. (Aris et al., 2022). Meanwhile, the average consumption or need for domestic salt is 3.9 million tons per year, of which 33 percent of the total demand comes from the household, food, and fish salting group. Meanwhile, 67 percent is the need for the pharmaceutical Chlor Alkali Plant (CAP)

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industrial group, and non-CAP (Sirait et al., 2021).

Last August 2022, the Ministry of Trade carried out an agenda to sign a memorandum of understanding on local salt absorption with seven salt processing industries. Among them are the food and beverage industry such as hotels and restaurants, the food industry sector includes the production of instant noodles, cooking spices, biscuits, the pharmaceutical industry, and textiles with a planned absorption of around 1 million tons or 43 percent of the total national salt production (Mardoni, 2022).

With government intervention in supply chain management for the national salt industry, it is expected to reduce the gap between production and national salt needs. Graphically, a comparison of the percentage of production, national salt demand, and the gap between the two can be seen in Figure 1. Weak domestic salt production capacity is one of the obstacles. But the problem is, even though production is increased, national salt may not be absorbed by industrial needs that dominate national salt needs (Sirait et al., 2021). The average quality of domestic salt is 93.1 percent Sodium Chloride (NaCI) because production technology still uses more traditional methods, especially people's salt produced by farmers. Consequently, the production process still depends on sunlight so the production process is effective for only 3 months a year (Aris et al., 2022). Not much different from production methods in other countries, only pipe services used to absorb seawater are taken to a depth of 5 km so that the quality of the salt produced is cleaner (Tridge, 2021; USGS, 2021).

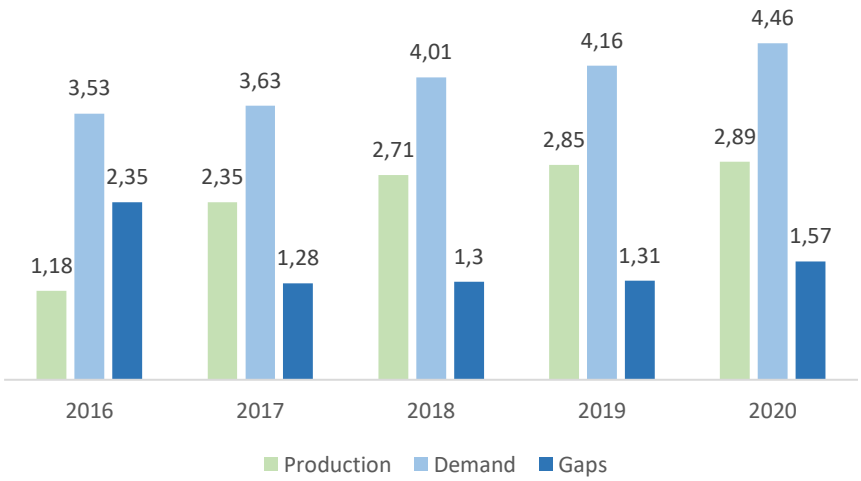

Figure 1
National Salt Production & Demand (million tons) (Pusat Riset Kelautan BPSDMKP KKP, 2022)

The manufacturing sector requires at least 94 percent purity of Sodium Chloride (NaCI) for the food industry, 97 percent for the chemical industry, and 99 percent for the pharmaceutical industry (Boenarco, 2012). Meanwhile, domestically produced salt has only been absorbed in the water treatment, animal feed, soap, detergent, and leather tanning industries, but in reality, the industry's total consumption of domestically produced salt only reaches 2.5 percent of the total salt demand by manufacturers. (Sirait et al., 2021). In addition, people's salt production still relies on less than 0.5 hectares of land per farmer which is far from its economic scale. Because domestic salt production has not been able to meet domestic consumption needs, imports are still possible (Alfiani, 2021). The implication is of course that domestic salt prices will be low. In addition, the Cost of Insurance Freight (CIF) of

importing countries can increase if dependence on imports increases significantly (Aris et al., 2022; Jamil et al., 2017).

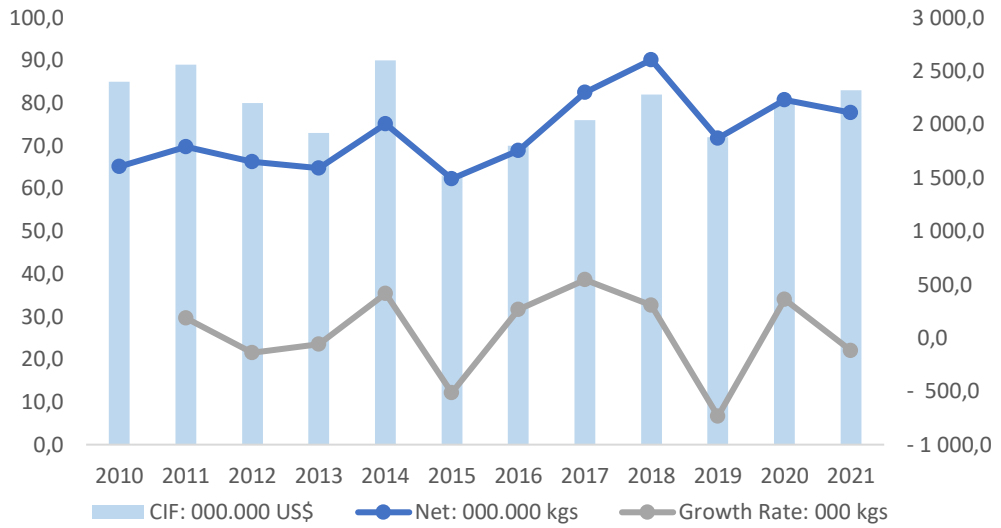

Figure 2
Australian Salt Import Growth (BPS, 2022; USGS, 2021)

In Figure 2 it can be seen that the increase in the amount of Australian salt imports tends to follow fluctuations in the CIF value. Even so, growth does not always increase. Salt production methods that are still traditional compared to other salt-producing countries affect the aspect of comparative advantage (Wardianingsih & Paramita, 2022). Traditional production methods have implications for high production costs at the upstream level which in turn will affect selling prices in the market (Hiau et al., 2008). Meanwhile, the price of imported salt with good quality for industrial absorption is much cheaper. In addition to the problem of using technology, institutional factors are also a problem that must not be overlooked (Mardoni, 2022; Salim & Munadi, 2016). In several countries such as Australia, China, and India, the salt industry is managed by large companies which causes stable production. In contrast to Indonesia, production and processing areas are not centralized and are scattered in various regions (Mardoni, 2022). Besides not being able to determine the rhythm of production together, the quality produced also varies (Jamil et al., 2017). So based on comparative advantage, the decision to import salt is more efficient than forcing oneself to increase domestic production (Sirait et al., 2021). Therefore, public policy choices in this case should not be based solely on populist considerations. This is because it is impossible to increase domestic production and absorption of salt without increasing the use of modern production technology and improving production management at the upstream level. Public policy choices on salt imports within the framework of comparative advantage must be understood as decisions that take into account the economic scale of economic activity. The decision-making process to produce good public policy certainly takes a political process, meaning that the implementation of public policy in this case also involves a series of non-market processes (Soesastro, 2021; Yustika, 2012). The signing of the ASEAN-Australia-New Zealand Free Trade Area (AANZ-FTA) which was carried out on 26 August 2014 is a series of political processes in international trade that seeks to produce the best consensus for the countries within it to create efficiency and economic harmonization. It is appropriate to identify how non-market considerations contribute

to public policy on imports of Australian salt in Indonesia.

Some of the salt-producing countries with the best NaCl quality that are Indonesia's partners are Australia with an average import from 2010-2021 of 1.9 million tons, followed by India with 467 thousand tons. (BPS, 2022; SW, 2016). Australia is Indonesia's largest salt importer country with an average import of 79.8 percent of Indonesia's total salt imports. Through the ratification of the ASEAN-Australia-New Zealand Free Trade Area (AANZ-FTA) signed on 27 February 2009 and 2014, some export and import products enjoyed zero percent tariffs, including imported Australian salt (Nagaraja, 2015). The flourishing of salt imports in Indonesia amidst the minimal utilization of technology for processing is troubling national salt farmers who are burdened by the drop in salt prices. In 2011, the price dropped to Rp. 400 per kg of the three salt imports, which increased by 36% from the previous year. In 2012 the national salt price still fell in the range of IDR 200 – IDR 320 per kg even when salt imports decreased compared to the previous year (Mardoni, 2022). This happened because the supply of imported salt in the previous year still filled the market. Referring to the phenomenon of the routine decline in the national salt price, the government regulates salt import control regulations by issuing RI Government Regulation Number 9 of 2018 concerning procedures for controlling imports of fishery commodities and salt commodities as industrial raw and auxiliary materials. (Alfiani, 2021). This regulation aims to guarantee the protection and empowerment of salt farmers, one of which is to ensure the availability and distribution of natural resources for the domestic industry. However, as explained in market 7 in this government regulation, salt commodity import permits are set at 2,370,054 tons. This figure is far greater than the total yearly salt imports from 2010 to 2017 (Aris et al., 2022).

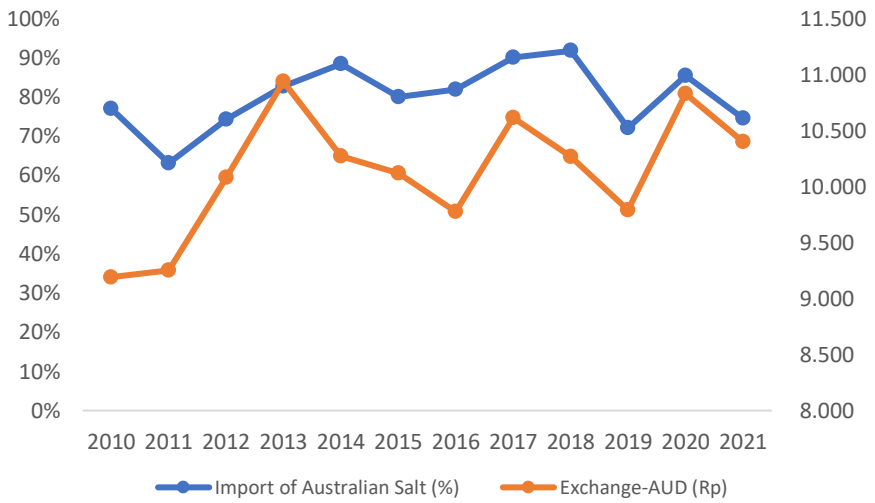

Figure 3
Australian Salt Import Trend and Exchange Rate Fluctuations (Bank Indonesia, 2022; BPS, 2022; USGS, 2021)

Therefore, we suspect that there is no difference between before and after the enactment of Government Regulation Number 9 of 2018 regarding the decline in Australian salt imports. The ability to import salt is also affected by movements in the Australian dollar exchange rate as a means of exchange for trade transactions for imported Australian salt commodities (Boenarco, 2012). As seen in Figure 3, the percentage of Australian salt imports tends to follow fluctuations in the exchange rate. Along with that, the contribution of the food & beverage, textile, leather, and

pharmaceutical industries to GDP continues to increase every year. Demand for domestic industries that use salt as a raw material has also influenced import decisions amidst the minimum domestic salt production (Khairunnisa, 2015; Mardoni, 2022). The growth of the industrial sector can be seen from the value of its contribution to the Gross Domestic Product (GDP). An increase in GDP has the potential to increase imports because it has the potential to increase demand so the industry must respond by increasing supply (Kebbi, 2017).

Theoretical studies and empirical evidence from previous studies support this. This happens because GDP shows the economic size of the country's condition so that when there is an increase in GDP, it will be followed by an increase in the total income of the people (N. Gregory Mankiw, 2013). An increase in GDP will ultimately increase purchasing power, and the industry will respond by increasing supply (Hiau et al., 2008). In the study we propose, to increase industrial output, additional inputs are needed, one of the inputs is the import of salt. Salt import policies can also be affected by changes in exchange rates, in this case, the Australian dollar exchange rate is used as a tool for trade transactions in purchasing imported Australian salt (Boenarco, 2012).

Specific research related to the determinants of salt imports is still very difficult to find in various sources and literature. The results of the socio-political study of previous studies show that Indonesia still has the potential to increase imports of Australian salt due to economic and political reciprocal relations between the two countries (Boenarco, 2012). Second, in India, it shows that even though the value of salt production has a surplus, the productivity of workers engaged in the salt industry must continue to be increased so that in the long run their salt industry will not decline and open up great opportunities for increasing the volume of salt imports. In other words, studies in India show that increasing technology and worker skills will increase domestic salt production capacity and reduce import potential (Nagaraja, 2015). Third, a study conducted in 165 countries to look at the elasticity of salt imports shows at least results in which countries with abundant natural resources tend to experience import inelasticity, but several weighting values prove that this is also supported by regulations that favor domestic salt farmers. This study at the same time proves that international trade factors should not be fully controlled by market mechanisms, institutions need to be regulated so that domestic salt farmers are not disadvantaged (Ghodsi et al., 2016). Fourth, the results of a study in Indonesia show that salt demand, national production, imported salt transport prices and population have a positive influence on salt imports in Indonesia (Razi et al., 2016). However, with a different methodological approach, the results of subsequent studies show that in the long run, an increase in the price of imported salt will have an impact on reducing the volume of salt imports in Indonesia (Jamil et al., 2017). Meanwhile, the higher the number of domestic industries that use raw salt, the demand for imported salt will increase (Khairunnisa, 2015). In another study, the exchange rate variable showed a positive relationship with salt imports. This means that if the rupiah appreciates, the demand for imported salt will increase (Jamil et al., 2017). Meanwhile, the results of a 2022 study in Indonesia show that salt imports in Indonesia depend on national salt consumption and GDP (Mardoni, 2022). Supporting this, further studies explain that salt imports can only be reduced if the government is serious about developing and dares to invest in modern salt production technology (Aris et al., 2022). Our study seeks to complement previous research to see how the salt import policy responds to changes in economic and non-economic variables in the context of public policy.

METHODS

Data

This study uses a quantitative approach with secondary data in the form of time series in the period from 2010 in the first

quarter to 2021 in the fourth quarter, bringing a total of 48 observations. The dependent variable is the volume of Australian salt imports (tons), then the independent variables are domestic salt demand (tons), national salt production (tons), accumulation of industrial GPD in the food & beverage industry, textile industry, leather & leather goods industry, and the chemical & pharmaceutical industry (Rupiah), as well as additional variables, namely the selling rate (AUD), and Cost Insurance Freight (US$). In addition, to find out the impact of the policy of implementing PP No. 9 of 2018, a dummy variable is used. Where the value 1 = after the implementation of PP No. 9 of 2018, which is effective since the third quarter of 2018, and the value of 0 = before the implementation of PP No. 9 of 2018, namely since the first quarter of 2010.

Table 1
Variables and Data Sources

Variable	Unit	Source
Import of Australian Salt	Tons	1 *Badan Pusat Statisik*; 2 World Integrated Trade Solution (WITS). World Bank Report.
Domestic Salt Consumption	Tons	1 *Kementerian Kelautan dan Perikanan (KPP)*; 2 *Pusat Kajian Anggaran, Badan Keahlian Setjen DPR RI*. In the document entitled " *Industri dan Pembangunan; Mengurangi Ketergantungan Impor Garam"*; 3 Badan Pusat Statistik
Domestic Salt Production	Tons	1 *Pusat Kajian Anggaran, Badan Keahlian Setjen DPR RI*. In the document entitled " *Industri dan Pembangunan; Mengurangi Ketergantungan Impor Garam*"; 2 Presentation of *Pusat Riset Kelautan BPSDMKP KKP* In the document entitled "*Telaah: Prediksi Produksi Garam Nasional 2022*";
Accumulation of Industrial Sector GDP consisting of: Food and beverage industry; 1. Textile and Apparel Industry; 2. Leather and Leather Goods Industry; 3. Chemical and Pharmaceutical Industry.	Rupiah	Badan Pusat Statistik
Cost Insurance Freight (CIF)	Dollar	Badan Pusat Statistik
Australian Dollar Exchange Rate	AUD Dollars	Bank Indonesia
Policy Dummy	2010Q1 to 2018Q2 = 0, and 2018Q3 to 2021Q4 = 1	-

Technical Analysis and Model Specifications

The analysis technique used in this study is using a dynamic model. Among the various variables in this study, there is likely a dynamic relationship. The dynamic model shows that the value of a dependent variable is not only influenced by the value

of other independent variables in the same period, but also by the value of the dependent variable in different periods. (*Ariefianto, 2012;* Gujarati, 2003).

First, in the case of salt imports, this might happen because there is an adjustment mechanism. Increasing domestic salt production does not directly reduce the number of salt imports. Import reduction will be carried out in stages to reduce uncertainty (Ghodsi et al., 2016). Second, because of the error correction process. Projections of demand and targets for domestic salt production may not be completely realized, so efforts to recover will be made using supply control or improvements to the institutional aspect. Because there is a relationship between time on the same observation variable, it is very likely that there will be non-stationarity, where:

$$y_t = y_{t-1} + \mu_t \quad (1)$$

Equation 1 shows that y_t is the determinant of y_{t-1}, residual μ_t and not stationary (*Ariefianto*, 2012; Greene, 2003). Equation 1 can be modified to achieve stationarity, y_t eliminated using the first derivative of the time series (*Ariefianto*, 2012), where :

$$y_t - y_{t-1} = y_{t-1} - y_{t-2} + \mu_t$$
$$\Delta y_t = \Delta y_{t-1} + \mu_t \quad (2)$$

Equation 2 is a random walk model without stationary constants with the first derivative AR1. For this study we assumed that some variables were stationary and some were not, where:

$$\Delta y_t = \beta_0 + \delta_1 \Delta x_{1t} + \delta_2 \Delta x_{2t} + \delta_3 \Delta x_{3t} + \beta_4 x_{4t} + \beta_5 x_{5t} + \mu_t \quad (3)$$

So, Δy_t is the amount of imported salt or AR1, then Δx_{1t} is the consumption of salt or also AR1 and then, Δx_{2t} is domestic salt production is also AR1, Δx_{3t} and is the GDP of several industrial sectors with AR1, x_{4t} is CIF, and last x_{5t} and is the latest AUD rate. Meanwhile β_0 is constant, δ intercept for variables that have been modified to AR1, and β for unmodified variables. Meanwhile, to find out the effectiveness of implementing PP No. 9 of 2018 on reducing Australian salt imports, a dummy variable is used, where:

Table 2
Probability Distribution for Policy Variables

D_{6t}	Probability
1	p_t
0	$1 - p_t$
Total	**1**

It means, p_t where D_{6t} = 1 **(**after the implementation of PP No. 9 of 2018) and $1 - p_t$ where D_{6t} = 0 (before the implementation of PP No. 9 of 2018), then in this case D_{6t} follow a probability distribution $\int_0^1 x_{6t}$. Thus, special constants are needed for dummy variables which are denoted by $\beta_0 D_t$. So that the basic model proposed in this study is:

$$y_t = \beta_0 D_t + \delta_1 x_{1t} + \delta_2 x_{2t} + \delta_3 x_{3t} + \beta_4 x_{4t} + \beta_5 x_{5t} + \beta_6 D_{6t} + \mu_t \mid \text{level} \quad (4)$$

$$\Delta y_t = \beta_0 D_t + \delta_1 \Delta x_{1t} + \delta_2 \Delta x_{2t} + \delta_3 \Delta x_{3t} + \beta_4 x_{4t} + \beta_5 x_{5t} + \beta_6 D_{6t} + \mu_t \mid \text{1st difference} \quad (5)$$

This model shows that Australian salt imports are a response to changes in salt consumption, domestic salt production, the GDP of the industrial sector that uses raw & auxiliary materials from salt commodities, the exchange rate, and the price of transportation costs borne by the importing country or CIF, and is hypothesized that there were differences in the behavior of the Australian salt import policy before and after the implementation of Government Regulation Number 9 of 2018.

RESULT AND DISCUSSION

Figure 4.a
An Australian Salt Imports

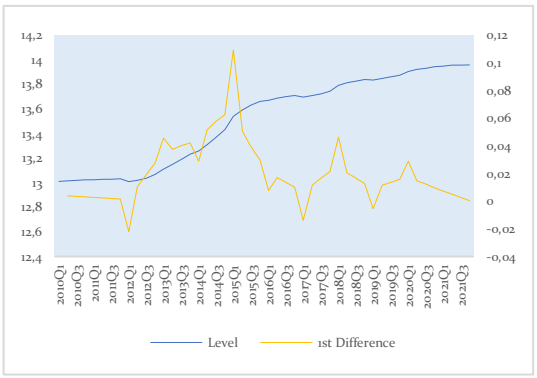

Figure 4.b
Domestic Salt Demand

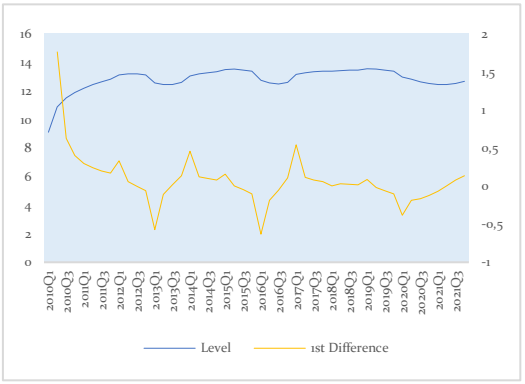

Figure 4.c
National Salt Production

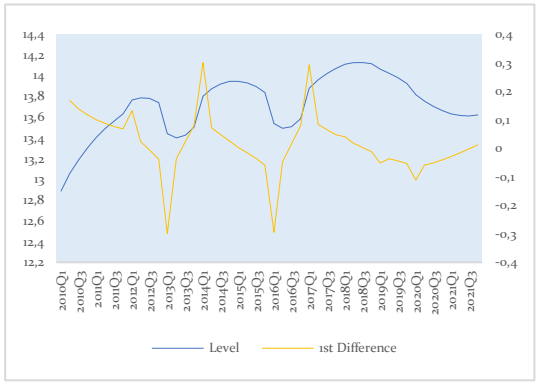

Figure 4.d
Industry GDP with Salt as Raw Material

Figure 4.e
Cost Insurance Freight (CIF)

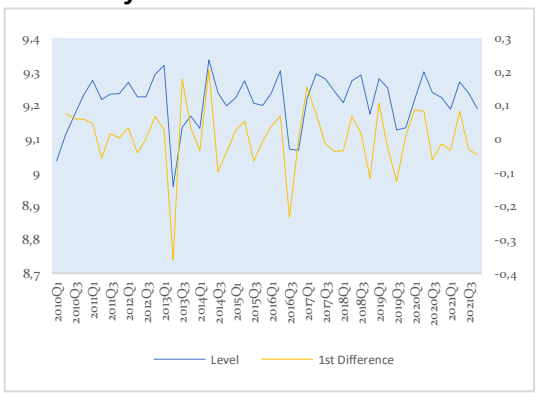

Figure 4.f
AUD Exchange Rate

Source: Eviews processed

Empirical Model Identification

The weak use of technology in national salt production is the reason why import decisions are the only alternative (Wardianingsih & Paramita, 2022). The weak productivity of national salt farmers causes national salt production to not be absorbed, especially for industrial needs (Pusat Riset Kelautan BPSDMKP KKP, 2022). Even though it doesn't always increase every period, imports of Australian salt have experienced an increasing trend, especially from 2010 to 2018. This condition is followed by domestic demand for salt which tends to continue to increase every period. The implication of this time model will give a lagged response effect. Conditions in

which an economic variable in the current period is affected by the effect of the previous time (*Ariefianto*, 2012; Gujarati, 2003). This time effect causes the observation to be studied to be no longer stationary. The non-stationary data can be seen graphically in Figures 4a-4f. The blue graph shows that the observations are plotted by level. Meanwhile, on the yellow graph, the observations have been transformed into first order (first difference).

Source Graphically, stationarity is fulfilled in several variables only in the first order, namely in the variables of Australian salt imports, domestic demand for salt, and the GDP of industries that use salt as raw material. However, these graphical observations will be stronger if proven by unit root testing. As shown in Table 3 by using the Augmented Dicky-Fuller (ADF) test no unit roots were found either at the first difference level or at the level. This shows that the data is stationary even at the level. This means that the test can use an ordinary OLS estimator with an autoregressive approach, and Eviews is processed.

Table 3
Unit Root Test in the Autoregressive Model

Method	Level		1st difference	
	Statistic	**Prob**	**Statistic**	**Prob****
ADF – Fisher Chi-square	38,6	0,0001**	87,43	0,000**
ADF – Choi Z-stat	-2,96	0,0015**	-7,06	0,000**
Maximum lags	9		8	
Variable	6		6	

Source: Eviews processed

However, from the estimation results using the autoregressive model it was found that the Durbin Watson (DW) value was 0.689 as shown in Table 4. Thus, it is known that even though the data is stationary, positive autocorrelation prevails in this model. We assume that the autocorrelation is due to the cobweb phenomenon. In this case, the production period still uses traditional patterns so that supply cannot directly react to an increase in demand, but a certain time is needed. Although it is known that the unit root is not found even at the level, forcing it to use an autoregressive OLS model without modification is tantamount to giving a wrong interpretation.

We have carried out a series of trials by estimating the residual equation with a lag of 1 residual, so that:

$$\mu_t = \sigma\mu_{t-1} + \varepsilon_t; \quad (6)$$

Symbol σ shows the autocorrelation coefficient and is assumed to have an absolute value of less than 1. The residual estimation results with a lag of 1 yield the residual ρ_t to be substituted into the auxiliary regression, so that:

$$\rho_t = \beta_0 D_t + \delta_1 x_{1t} + \delta_2 x_{2t} + \delta_3 x_{3t} + \beta_4 x_{4t} + \beta_5 x_{5t} + \beta_6 D_{6t} + v_t \quad (7)$$

The estimation results using this linear autocorrelation estimator produce a DW value of 2.047. This indicates that the autocorrelation effect has been lost as the correction process is carried out using lag 1 of the residual which is substituted into the auxiliary regression model. Table 4. presents a comparison of the estimators used to find the right model without deviation from the classical assumptions. The only classic assumption that may occur in this model is autocorrelation.

Table 4
Comparison of Models for Assessing Autocorrelation

Variable	Level	1st Difference	Serial Correlation Robust	Cochrane-Orcutt
Ln_impr(-1)	0,452***	0,062	-0.174	0,100
Ln_demn	0,241***	0,090	0,014	0,307**
Ln_prodc	-0,127**	-0,161	-0,025	-0,146***
Ln_gdpind	0,333**	0,357	0,105	0,380***
Ln_aud	-0,093	0,019	0,056	0,016
Ln_cif	0,618***	0,951	0,020	0,948***
Dummy	-0,094***	-0.031	0,011	-0,023
Const	-4,268**	0,014	0,240	-5,308**
Resid(-1)	-	-	0,789***	-
AR(1)	-	-	-	0,932***
Adjusted R-Square	0,921	0,852	0.479	0,964
Prob(Obs*R-Square)	-	-	0,000	-
F-Statistic	65,014	38,04	4,382	141,66
Prob(F-Statistic)	0,000	0,000	0,000	0,000
Durbin-Watson	0,689	1,289	1,917	1,172

- The dependent variable is Australian salt imports (Ln_impr) with a total of 47 observations, namely 2010Q1 – 2021Q4 in quarterly form.
- Serial correlation robust standard error estimator with LM test using lag 1. Testing for this estimator has reached lag 4 but autocorrelation is still detected.
- Signs of significance 1%(***), 5%(**), and 10%(*).
- Robust and Cochrane Orcutt serial correlation estimators were tested at levels
- dl = 1,3167; du = 1,7723, di mana (k=5; n=48).

Source: Eviews processed

At this level, it can be seen that the DW value is only 0.689. This value indicates that there is a positive autocorrelation, where 0, 0.689 < 1.316; 0 < DW < dl. The DW value increased to 1.289 when using the first-order estimator (first difference) but still indicated positive autocorrelation. In addition, all the signs of the variable parameters change and are not significant at various levels of tolerable error. Likewise, the Cochrane-Orcutt estimator considers the iteration procedure (AR1) with a DW value of 1.172. The absence of autocorrelation can be fulfilled by involving the lag variable from the residual as it is produced in the robust serial correlation estimator. The probability value of the obs*r-square in this estimator is 0.000 < 0.01 | prob < 1%; Ho=0. The robust serial correlation estimator that considers lagging 1 of the residual is none other than the Feasible Generalized Least Squares (FGLS) estimator.

To encourage the development of domestic industries, the government strives to design institutions, particularly in import restrictions. Government Regulation No. 9 of 2018 concerning the Procedure for Controlling Imports of Fishery and Salted Commodity and Trade Minister Regulation No. 63 of 2019 concerning Salt Import Provisions are evidence of government intervention to regulate salt imports to meet the sufficient and quality national salt demand as well as to encourage the development of the domestic salt industry. In addition, Trade Minister Regulation No. 63 of 2019 aims to reduce dependence on salt imports to improve the welfare of salt farmers in Indonesia. Before these regulations were introduced, salt imports had been carried out and continued to increase from year to year, thus reducing the competitiveness of domestic salt products and causing dependence on imports (Aris et al., 2022; Alfiani, 2021). Trade Minister Regulation No. 63 of 2019 is highly likely to lead to a decrease in the amount of salt imports. This is because the regulation restricts the amount of salt imports that can be carried out, taking into account domestic demand

and domestic salt production. This restriction is set in the form of import quotas, which are determined annually by the Ministry of Trade. Additionally, salt import quotas must be divided into two categories, namely industrial salt import quotas and consumption salt import quotas. The allocation of these quotas is carried out while still cosnsidering domestic demand and consumption. However, prior to the regulation, the domestic salt industry faced challenges in improving the quality and competitiveness of salt products, such as a lack of investment and technological innovation in salt processing (Mardoni, 2022; Sirait et al., 2021; Kebbi, 2017) . Therefore, it is highly likely that if there is an increase in domestic salt production through institutional and technological improvements, salt imports can be reduced. Our estimation results confirm this hypothesis.

The estimation results using the FGLS method in Table 5 show that the salt import policy is a response to changes in domestic salt demand (Demn), national salt production (Prodc), GDP of industries that use raw salt & auxiliary materials (GDPind), Cost Insurance Freight (CIF). The import (-1) also affects Australian salt imports in the short term. This shows that Australian salt imports in actual years respond to changes in the previous year. The coefficient of this salt import lag variable is 2.41 percent. This can be interpreted as a change in the volume of salt imports in response to changes in salt stocks in the previous year. Of course, this is not something surprising, because most of the decisions of economic agents are based on past considerations.

Table 5
FGLS Estimator in Analysis of Australian Salt Imports

Variable	Short-run	Standard Error	Long-run	Standard Error
Ln_impr(-1)	0,241***	0,082	-	-
Ln_demn	0,243***	0,034	0,282***	0,035
Ln_prodc	-0,200***	0,044	-0,255***	0,043
Ln_gdpind	0,544***	0,112	0,730***	0,101
Ln_aud	-0,034	0,079	0,013	0,084
Ln_cif	0,607***	0,092	0,740***	0,087
Dummy	-0,078***	0,017	-0,071***	0,019
Resid(-1)	0,839***	0,125	0,978***	0,126
Const	-3,934***	0,994	-4,904***	1,022
Adjusted R-Square	0,963		0,947	
F-Statistic	126,90		120,62	
Prob (F-Statistic)	0,000		0,000	
Durbin Watson	2.034		1,498	
Mean lag $\frac{Log2}{Log\beta(y_{t-1})}$	1,24			
Median lag $\frac{1}{1-Log\beta(y_{t-1})}$	1,31			

- Effect decomposition analysis by following Ghozali's suggestion, (2013) to see the indirect impact of domestic salt demand on Australian salt imports through domestic salt production variables. Where, $\left[y_t = (\widehat{\beta_{2t}}\beta_{1t})\right] = [(y_t \mid \beta_{1t})(y_t \mid \beta_{2t})][(\beta_t^2)]$. The assumption is that salt imports will decrease if domestic salt production increases due to changes in the use of technology. The resulting indirect effect value is -0.025.
- • Significant in numbers 1% (***).

Source Eviews processed

Then, domestic salt demand or consumption has a positive influence on Australian salt imports both in the short and long term and confirms previous studies (Boenarco, 2012; Mardoni, 2022; Razi et al., 2016). This result is in line with the

theory of demand and supply in the industry, where when demand (demand) increases, the increase will be responded to by an increase in import capacity (supply). The coefficient values for this salt demand variable are 2.43 percent (short-run) and 2.82 percent (long-run). This supply and demand adjustment shows that the market mechanism applies in international trade in the case of salt imports. On the other hand, if national salt production increases, Australia's salt imports will decrease by 2 percent, and in the long run, the decline will be 2.8 percent. These results confirm previous studies (Nagaraja, 2015). Effect decomposition analysis helps describe how the relationship between salt demand, domestic salt production, and salt imports. The results show that if domestic demand for salt increases with the assumption that national salt production increases, Australian salt imports will decrease by 0.2 percent. This assumption of increasing national salt production needs to be understood as an implication if there is a change in production technology.

In addition, CIF shows a positive sign with a parameter value of 6 percent in the short term and 7.4 percent in the long term. This means that even though the total cost of transporting imported salt increases, it is inelastic to a decrease in demand for imported Australian salt, or other words the demand curve for imported Australian salt is positive. Theoretically, this seems unreasonable, especially if the assumption is that salt is a normal good and the market is in perfect competition. But this fact shows that Indonesia's dependence on Australian salt imports is quite high. In fact, on average, 79.8 percent of Indonesia's total salt imports come from Australia. Apart from being theoretically contradictory, these results are also contradictory to several previous studies. Choosing Australia to be a salt import partner with the largest total imports in Indonesia can certainly be understood within the framework of comparative advantage and economic efficiency. The cost of transporting (CIF) salt from India, America, or other largest salt-producing countries in the world is certainly much more expensive than Australia, which has sea transportation routes that are relatively closer to Indonesia. Especially with the enactment of the Free Trade Agreement (FTA) between ASEAN countries and Australia and New Zealand which was subsequently used as a basis for reducing import duty tariffs on salt, especially from 2009 – 2017. The results of our study also confirm that public policy choices in trade politics and international law in the case of salt imports are still preceded by consideration of economic benefits (economic scale), not just political benefits and other non-economic aspects. It can be said that non-market mechanisms (politics in international trade) under the formulation and implementation of public policies work for economic benefits.

We also empirically confirm that Australia's salt imports have decreased since the enactment of Government Regulation Number 9 of 2018. This has occurred due to the effect of institutional narrowing in efforts to implement salt imports. The tightening of rules, governance, and bureaucracy has had the effect of significantly reducing Australian salt imports. This is statistically proven by the dummy parameter value of -0.7 percent. This means that after the enactment of PP No. 9 of 2018, Australian salt imports were 0.7 percent smaller compared to before its enactment with an average reduction of 39 percent in the short term and 49 percent in the long term. These results specifically confirm previous studies conducted in 165 countries (Nagaraja, 2015). Finally, the speed of adjustment as measured using the mean and median lag in Table 5 explains that at least 50 percent of efforts to reduce Australian salt imports can only be achieved after more than 1 year (1.24) and 13 percent of the reduction in Australian salt imports will be felt in the first period. Meanwhile, the Australian exchange rate showed a positive but not significant effect on the level of tolerable error (1%, 5%, and 10%). These results confirm that exchange rate changes are not the main determinant of salt import policies, especially since salt

is a basic need, especially for industry. This is evidenced by the positive coefficient value given by the industrial GDP variable which is 5.4 percent in the short term and 7.3 percent in the long term. This means that there is an increase in the need for industrial salt by an average of 35% annually. Similar to the results of previous studies which showed that at least the growth of industrial GDP and national GDP also increased the potential for salt imports (Khairunnisa, 2015; Mardoni, 2022).

CONCLUSIONS

Initially, we suspected that even though PP No. 9 of 2018 was enacted, it would not have an impact on reducing salt imports. The results of our study confirm the opposite findings. Since the enactment of PP No. 9 of 2018, Australian salt imports have decreased by 0.7 percent compared to before its enactment. Second, we found the fact that public policy choices in international trade politics for salt import cases are still preceded by considerations of economic benefits (economic scale), not just political benefits and other non-economic aspects. It can be said that non-market mechanisms (politics in international trade) under the formulation and implementation of public policies work for economic benefits. Our empirical results support this. First, dependence on Australian salt imports is quite high, this can be seen from the average Australian salt import of 79.8 percent of the total salt imports by Indonesia. Second, the test results show that even though the total cost of transport (CIF) of imported salt increases, it is inelastic to a decrease in demand for imported Australian salt, or other words the demand curve for imported Australian salt is positive. Lastly, our study shows that if domestic demand for salt increases with the assumption that national salt production increases, Australian salt imports will decrease by 0.2 percent. This assumption of increasing national salt production needs to be understood as an implication if there is a change in production technology and improvements in governance at the upstream level.

Based on these findings, we provide recommendations namely first, Indonesia needs to invest in physical and human technology to reform salt production technology. The first is by adopting the Australian Solar Evaporation salt production method, which is a method that relies on direct solar heat irradiation by utilizing sea pipes with a depth of more than 5 km. These two plans for technological reform need to be understood as a combination of the triple helix namely the government, universities (research institutions), and industry. Third, it may be more expensive to adopt Solar Evaporation technology, also in the maintenance process. So it is more efficient to import than to produce yourself. The presence of research institutions such as BRIN at the national level and BRIDA at the regional level made it possible to prototype technology models. The priority to increase the production of superior commodities such as salt is not only sufficient to encourage the expansion of production areas but must also be accompanied by an increase in the research budget which is focused on efforts to produce prototype production technology models.

BIBLIOGRAPHY

Alfiani, L. F. (2021). Antinomi Peraturan Perundang-Undangan Mengenai Impor Garam Nasional. *Jatiswara*, *36*(1), 24–37. https://doi.org/10.29303/jatiswara.v36i1.277

Ariefianto, Moch. Doddy. Ekonometrika Esensi dan Aplikasi Dengan Menggunakan Eviews. Jakarta : Penerbit Erlangga

Aris, T., Mamahit, D. A., & Ras, A. R. (2022). Indonesian Salt Import Policy as A Threat and Opportunity in The Concept of Blue Economy in Indonesia. *Jurnal Pamator : Jurnal Ilmiah Universitas Trunojoyo*, *15*(1), 1–13. https://doi.org/10.21107/pamator.v15i1.14239

Boenarco, I. S. (2012). Kebijakan Impor

Garam Indonesia (2004-2010): Implikasi Liberalisasi Perdagangan Terhadap Sektor Pergaraman Nasional. In *Fakultas Ilmu Sosial Dan Ilmu Politik Program Studi Hubungan Internasional Ui*. http://lib.ui.ac.id/file?file=digital/20300588-T30500-Intan Sari Boenarco.pdf.

Badan Pusat Statistik. (2022). Impor Garam Menurut Negara Asal Utama. Diakses tanggal 2 September 2022 dari https://www.bps.go.id/statictable/2019/02/14/2013/impor-garam-menurut-negara-asal-utama-2010-2017.html

Ghodsi, M., Grübler, J., & Stehrer, R. (2016). *Import Demand Elasticities Revisited*. *132*.

Greene, W. H. (2003). *ECONOMETRIC ANALYSIS Senior Media Project Manager : Victoria Anderson Production Editor : Michael Reynolds*.

Gujarati, D. N. (2003). *Basic Econometric* (Fourth). McGraw Hill.

Hiau, L. K., Nicita, A., & Olarreaga, M. (2008). Import demand elasticities and trade distortions. *Review of Economics and Statistics*, *90*(4), 666–682. https://doi.org/10.1162/rest.90.4.666

Jamil, A. S., Tinaprilla, N., & Suharno, . (2017). Faktor-Faktor Yang Mempengaruhi Permintaan Dan Efektivitas Kebijakan Impor Garam Indonesia. *Buletin Ilmiah Litbang Perdagangan*, *11*(1), 43–68. https://doi.org/10.30908/bilp.v11i1.73

Kebbi, B. (2017). *Ife Social Sciences Review Nigeria s Export Supply versus Brazil's Import Demand : 25*(2), 48–58.

Khairunnisa. (2015). Model Kebijakan Indonesia Terhadap Australia Dalam Melindungi Industri Garam Nasional (2009-2011). *Jom Fisip*, *2*(2). https://medium.com/@arifwicaksanaa/pengertian-use-case-a7e576e1b6bf

Mardoni, Z. (2022). Analysis of Salt Production, Consumption and Import in Indonesia. *International Journal of Science and Society*, *4*(1), 36–49. https://doi.org/10.54783/ijsoc.v4i1.414

N. Gregory Mankiw. (2013). *Macroeconomics; Eighth Edition*.

Nagaraja. (2015). Economics of salt production in India: an Analysis. *Indian Journal of Applied Research*, *5*(11), 284–288.

Peraturan Menteri Perdagangan. (2019). Nomor 63 Tahun 2019 tentang Ketentuan Impor Garam. Jakarta: Kementerian Hukum dan Hak Asasi Manusia RI. https://jdih.kemendag.go.id/pdf/Regulasi/2019/Permendag%20No.%2063%20Tahun%202019.pdf

Peraturan Pemerintah RI Nomor 9 Tahun 2018 tentang Tata Cara Pengendalian Impor Komoditas Perikanan dan Komoditas Pergaraman. Jakarta: Sekretariat Negara. https://peraturan.bpk.go.id/Home/Details/72811/pp-no-9-tahun-2018

Prasetyo SW, A. (2016). Petani Garam vs Impor Garam Indikasi Besarnya Ketergantungan Belanja Daerah terhadap Dana Perimbangan. *Buletin APBN*, *I*(18), 2–4. http://berkas.dpr.go.id/puskajianggaran/buletin-apbn/public-file/buletin-apbn-public-18.pdf

Pusat Riset Kelautan BPSDMKP KKP. (2022). *Telaah : Prediksi Produksi Garam Nasional 2022* (Vol. 2022).

Razi, F., Ismayani, I., & Iskandar, E. (2016). Analisis Perkembangan Dan Faktor-Faktor Yang Mempengaruhi Impor Garam Di Provinsi Aceh. *Jurnal Ilmiah Mahasiswa Pertanian*, *1*(1), 346–352. https://doi.org/10.17969/jimfp.v1i1.1331

Salim, Z., & Munadi, E. (2016). Info Komoditi Garam. In *Al Mawardi Prima*. https://bppp.kemendag.go.id

Sirait, R. A., Paramita, R., Dahiri, Prasetyo, A., Ramiayu, D. D., & Kusumawardhani, R. T. (2021). Mengurangi Ketergantungan Impor Garam. *Industri Dan Pembangunan Budget*, *1*(1), 1–8.

Soesastro, M. H. (2021). The Political Economy of Deregulation in

Indonesia. *Polit Journal Scientific Journal of Politics*, *1*(1), 36–46. https://doi.org/10.2307/2644831

Tridge. (2021). *Benchmark Report: Salt* (Issue January).

USGS. (2021). *Mineral Commodity Summaries 2021*. U.S., Department of The Interior and Geological Survey.

World Integrated Trade Solution. (2012). *Import Trade. Diakses tanggal 3 September 2022 dari* http://www.wits.org

Wardianingsih, R., & Paramita, R. (2022). Menilik Sebab Impor Garam. In *Buletin APBN: Vol. VII* (Issue 2020, pp. 7–10).