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Effect of Import Tariffs on Indonesia-Australia Wheat Flour Prices and CIF Prices

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Abstract: Import tariff of Indonesian-Australian wheat flour has been changed from 4% to 0% have implications for wheat flour prices in both countries. This research aims to determine the import tariffs effect on the price of Indonesian-Australian wheat flour and the CIF price of wheat flour. Descriptive quantitative is applied in this research method, with the approach of Vector Error Correction Model (VECM) and Granger Causality Test. The Granger Causality Test results analysis showed that there is a unidirectional causality relationship between HEI with HEA, HEA with KURS, TARIF with HEA, and TARIF with KURS. VECM's results showed the import tariffs had a significant positive effect of the Indonesian-Australian wheat flour price and the CIF price in the long run. The Impulse Response Function (IRF) results analysis for the next 20 periods show that the highest responses given by HCIF, HEA, HEI, and TARIF is responses by variable itself and the highest responses given by KURS is TARIF. The Variance Decomposition results analysis for the next 20 periods show that the largest contribution given to HCIF, HEA, HEI, and TARIF is the variable itself and the largest contribution given to KURS is TARIF.

Keywords: Gramger causality, Import, Price of wheat flour, Rates, VECM

Introduction

The differences in the potential and limited resources of each country in the world make international trade activities increase to meet needs (Ghufron, 2019). Indonesia imports wheat to meet the demand for the domestic wheat flour industry (Baga & Puspita, 2013; Laura Ulina Panjaitan et al., 2012). Wheat occupies the first position as the most popular agricultural product in the world (Hatigoran et al., 2014). Wheat also occupies the first position as the most imported agricultural product with a share of 50.4% larger than other agricultural products, such as salt 14.5% portion, sugar 14.1% portion, soybeans 13.6% portion. and rice with a share of 7.2% (BPS, 2020; UN Comtrade, 2021). The largest portion of wheat imports to Indonesia came from Australia (Rahmawati et al., 2019). Geographical factors and the type of wheat favored by the Indonesian people have made Australia successful in controlling more than 50% of the market share of wheat and its byproducts in Indonesia (Soesilowati, 2020).

The principle of the Indonesia-Australia Comprehensive Economic Partnership Agreement (IA-CEPA), as stated in the PMK RI Number 81/PMK.010/2020, is estimated to be one of the government's efforts to expand the domestic market to increase domestic economic activity (Purwaning Astuti & Juniwati Ayuningtyas, 2018). With the IA-CEPA, the import tariff for wheat flour has changed from 4% to 0% (tariff exemption). According to Marchand (2012) and Nugroho (2017), the exemption of import duty rates provides benefits to the industrial sector and the household sector.

According to Krugman and Obstfeld (2003) import tariffs have an effect on price changes in both markets. If the import tariff increases, the price in the exporting country will decrease and the price in the importing country will increase. However, if import tariffs are lowered, the exporting country will encourage companies to improve export quality and increase export prices in industries with large market share and reduce export prices in industries with small market share (Fan et al., 2015). The exporting country will not sell its products to the importing country if the price in the country of origin exceeds the price in the importing country. According to Faber (2014) the reduction in import tariffs provides a relative change in prices.

After the tariff exemption was determined, the retail price of Indonesian wheat flour only grew by 2% to 3%. Previously, the retail price of wheat flour grew 4% to 11%. Even so, the retail price of wheat flour tends to increase (FAO, 2021). The increase in prices does not make the Indonesian people to reduce the consumption of wheat-based foods. This is because they have considered that wheat-based food is a suitable food ingredient as a substitute for rice and there is a non-rice food diversification program from the government so that wheat-based food has been firmly attached to the tongue of the Indonesian people (Hastuti, 2016). This is evidenced by Indonesia being listed as being ranked 2nd in the world in consuming instant noodles (World Instant Noodles Association (WINA), 2020).

According to Yanuarti and Afsari (2016) wheat-based foods are favored by various levels of society.

Meanwhile, the exporting country will have a great opportunity if the product price in the importing country is higher than the product price in the exporting country (Krugman & Obstfeld, 2003). In this case, Australia raised export prices with an average growth of 2% after the adoption of the exemption on wheat flour import tariffs (FAO, 2021). An increase in Australian export prices led to an increase in CIF (Cost, Insurance, and Freight) prices. This is because the CIF price is a price consisting of export prices, insurance costs, and the cost of transporting products from the exporting country to the importing country. Consequently, if one of the CIF price indicators increases, the CIF price will also increase. According to Hartati (2020) export prices significantly affect CIF prices.

The average CIF price of wheat flour after the stipulation of the exemption from import duty was 0.74 US$/Kg, higher than the average CIF price of wheat flour before the stipulation of the waiver of import tariffs on wheat flour of 0.66 US$/Kg (Directorate of General of Customs, 2021). The increase was due to the export price of wheat flour in Australia, which after the exemption of import tariffs on wheat flour was stipulated, the average export price was 0.25 US$/Kg higher than the average export price before the issuance of the exemption of import tariffs on wheat flour of 0.25 US$/Kg. 0.24 US$/Kg (FAO, 2021). According to Siregar and Rusastra (2003) there is a proportion of import duty rates to the determination of CIF prices. In this case it means that changes in CIF prices are the effect of changes in export prices caused by changes in import duty rates (Fan et al., 2015).

Based on the previous description, this study aims to analyze the effect of import tariffs on wheat flour on the price of Indonesian-Australian wheat flour and the CIF price of wheat flour.

Methods

This study chose Indonesia as the research location with the consideration that since 2018 Indonesia has been named the country that imports the most wheat in the world and Australia is the largest wheat exporter to Indonesia (Rahmawati et al., 2019). The type of secondary data is in the form of time series from January 2017 to March 2021 with wheat flour commodity as the object of research used in this study. The data was obtained from various libraries, including the Directorate General of Customs (DJBC), Bank Indonesia (BI), the Indonesian Wheat Flour Producers Association (APTINDO), the Central Statistics Agency (BPS), Food Agricultural Organization (FAO), United Nations Commodity Trade (UN Comtrade) Statistics Database, and other literature studies that are in line with the discussion under study.

Quantitative descriptive method is a technique for analyzing data, using the Granger Causality Test and Vector Error Correction Model (VECM) approaches. The Granger Causality Test approach looks at the causal relationship between research variables and the VECM approach looks at the effect between research variables for the next 20 periods. The variables of this study are wheat flour import tariffs (TARIF), Australian wheat flour retail prices (HEA), Indonesian wheat flour retail prices (HEI), wheat flour CIF prices (HCIF), and the rupiah exchange rate against the dollar (EXCHANGE).

Findings

Granger Causality Test

The Granger causality test looks at the causality or influence relationship between variables. The causal relationship can be unidirectional or bidirectional. The following are the results of the Granger causality test.

Table 1. **Granger Causality Test Results**

Null Hypothesis:	***Prob.***	**Causality Relationship**
HEA does not Granger Cause HCIF	0.1622	There is no causal relationship
HCIF does not Granger Cause HEA	0.2669	
HEI does not Granger Cause HCIF	0.4939	No causal relationship
HCIF does not Granger Cause HEI	0.5326	
KURS does not Granger Cause HCIF	0.8043	No causal relationship
HCIF does not Granger Cause KURS	0.1370	
TARIF does not Granger Cause HCIF	0.8332	No causal relationship
HCIF does not Granger Cause TARIF	0.7794	
HEI does not Granger Cause HEA	0.0821*	The causal relationship is unidirectional from HEI to HEA
HEA does not Granger Cause HEI	0.1891	
KURS does not Granger Cause HEA	0.3475	The causal relationship is unidirectional from HEA to EXCHANGE
HEA does not Granger Cause KURS	0.0064***	
TARIF does not Granger Cause HEA	0.0587*	The causality relationship is unidirectional from PRICE to HEA
HEA does not Granger Cause TARIF	0.7708	
KURS does not Granger Cause HEI	0.4292	No causal relationship
HEI does not Granger Cause KURS	0.2536	
TARIF does not Granger Cause HEI	0.9947	No causal relationship
HEI does not Granger Cause TARIF	0.8021	
TARIF does not Granger Cause KURS	0.0001***	

Null Hypothesis:	***Prob.***	**Causality Relationship**
KURS does not Granger Cause TARIF	0.9205	The causality relationship is unidirectional from PRICE to EXCHANGE

The results of the Granger causality test between the Tariff and HCIF variables showed no causality relationship. This is because the probability result > alpha (α) 10%. The results of the Granger causality test between the HEI and HEA variables showed that the Granger causality HEI influenced HEA at a 90% confidence level with an alpha (α) of 10%. Meanwhile, granger HEA does not affect HEI. This is because the probability result > alpha (α) 10%. Hence, it is known that there is a unidirectional causality relationship between HEI and HEA. The results of the Granger causality test between the variables HEA and KURS indicate that the Granger HEA affects the exchange rate at a confidence level of 99% with an alpha (α) of 1%. Meanwhile, in a grander way, EXCHANGE did not affect HEA. This is because the probability result > alpha (α) 1%. Thus, it is known that there is a unidirectional causality relationship between HEA and EXCHANGE.

The results of the Granger causality test between the Tariff and HEA variables indicate that the Granger Tariff affects HEA at a 90% confidence level with an alpha (α) of 10%. Meanwhile, HEA does not affect the tariff. This is because the probability result is > alpha (α) 10%. So that it is known that there is a unidirectional causality relationship between Tariff and HEA. The results of the Granger causality test between Tarif and HEI showed no causality relationship. This is because the results of both probability > alpha (α) 10%. The results of the Granger causality test between the Tariff variable and the EXCHANGE show that the Granger Tariff affects the Exchange Rate at a confidence level of 99% with an alpha (α) of 1%. Meanwhile, the EXCHANGE does not affect the tariff. This is because the probability result > alpha (α) 1%. Accordingly, it is known that there is a unidirectional causality relationship between the rate and the exchange rate.

Vector Error Correction Modeling (VECM)
Data Stationarity Test

The data stationarity test is carried out to see the unit root in the data. Data that does not contain a unit root is stationary data. The Augmented Dickey-Fuller (ADF) test in this study was carried out to see the probability value (α) 5%. The following is the output of each variable.

Table 2. **Data Stationarity Test Results**

Variable	Prob. Level	Prob. *First Difference*
HEI	0,4698	0,0060
HEA	0,7018	0,0000
HCIF	0,9976	0,0000
KURS	0,1083	0,0000

Source: Processed Data (2021)

The results of the data stationarity test of the variables above show that at the level level, the HEI variable, HEA variable, HCIF variable, and the EXCHANGE variable the probability value of each variable is > (α) 5%. Meanwhile, at the first difference level, the HEI variable, HEA variable, HCIF variable, and the EXCHANGE variable the probability value of each variable < (α) 5%. Thus, the conclusion is that all variables are stationary and do not contain a unit root at the first difference level.

Lag Optimum Test

The optimum lag test is carried out to meet the requirements for conducting cointegration tests and Granger causality tests at a later stage. The optimum lag test has several model criteria, including Likelihood Ratio (LR) each test at 5% level, Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SC), and Hannan-Quinn Information Criterion (HQ). Below is the processed result of the optimum lag test.

Table 3. **Optimum Lag Test Results**

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1131.741	NA	2.00e+15	49.42352	49.62229*	49.49798*
1	-1103.557	49.01595	1.76e+15	49.28508	50.47767	49.73183
2	-1078.507	38.11897	1.83e+15	49.28292	51.46934	50.10197
3	-1050.633	36.35836	1.79e+15	49.15794	52.33818	50.34927
4	-1004.949	49.65604*	9.00e+14*	48.25865*	52.43272	49.82228

Source: Processed Data (2021)

The table above shows that the lag with the smallest Final Prediction Error (FPE) value and the largest Likelihood Ratio (LR) value and there are more signs (*) behind each number is lag 4. So, it can be concluded that the optimum lag in this study is lag 4.

VAR Model Stability Test

If the VAR model is not stable, the IRF and variance decocmposition analysis stages will later be invalid (Hendayanti & Nurhidayati, 2017). Below is the processed result of the stability of the VAR model.

Table 4. **Processed Results of VAR Model Stability Test**

Root	Modulus
-0.431382 - 0.676221i	0.802101
-0.431382 + 0.676221i	0.802101
-0.254084 - 0.601909i	0.653340
-0.254084 + 0.601909i	0.653340
0.473430 - 0.439362i	0.645891
0.473430 + 0.439362i	0.645891
-0.379966 - 0.064270i	0.385364
-0.379966 + 0.064270i	0.385364
0.265167 - 0.239650i	0.357416
0.265167 + 0.239650i	0.357416

Source: Processed Data (2021)

The results of the stability test of the VAR model above shows all modulus values < 1. Which can be concluded that the VAR model is stable for use in IRF analysis and variance decomposition (Mukhtar et al., 2019).

Cointegration Test

The results of the cointegration test analysis will be used as a determinant for selecting modeling estimates. If the data is stationary at the level and there is no cointegration, then VAR-level modeling is used. If the data is stationary in first difference and there is cointegration, as a result, VECM modeling is used. The cointegration test in this study was carried out with Johansen's Cointegration Test. The following is the processed result of the cointegration test with the Trace Test and Maximum Eigenvalue Test.

Table 5. **Trace Test Results**

Hypothesized No. of CE(s)	Trace Statistic	0.05 Critical Value	Prob.**
None *	96.08574	60.06141	0.0000
At most 1 *	50.41357	40.17493	0.0034
At most 2	23.73199	24.27596	0.0584
At most 3 *	13.09834	12.32090	0.0370
At most 4 *	5.513681	4.129906	0.0224

Source: Processed Data (2021)

Table 6. **Maximum Eigenvalue Test Results**

Hypothesized No. of CE(s)	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	45.67217	30.43961	0.0003
At most 1 *	26.68158	24.15921	0.0223
At most 2	10.63364	17.79730	0.4207
At most 3 *	7.584663	11.22480	0.2028
At most 4 *	5.513681	4.129906	0.0224

Source: Processed Data (2021)

In table 4 the results of the trace test show that there is one hypothesis that the probability value is > (α) 5% and the trace statistic value is < t-Mackinnon critical value. In table 5 the results of the maximum eigen-value test show that there are two hypotheses whose probability value is > (α) 5% and the maximum eigenvalue statistic is < t-Mackinnon critical value. Meanwhile, the conclusion is that there is a long-term cointegration relationship between the variables of Tariff, HEI, HEA, HCIF, and EXCHANGE and in each short-term period all variables try to make adjustments to each other so that the balance is achieved in the same period of time. Therefore, this research was conducted using the Vector Error Correction Model (VECM) estimation.

VECM Modeling Estimation and Parameter Significance Test

VECM modeling estimation and parameter significance test were used to see the significance and influence between variables in the model. The estimation results of VECM modeling consist of short- and long-term estimation results. In this situation, the T-Tab used is 2.036933. The following is the estimation of VECM modeling and the output results of the parameter significance test.

Table 7. **Estimation Results of VECM Long Run Modeling and Parameter Significance**

Cointegrating Eq	CointEq1	CointEq2	CointEq3	CointEq4
D(HCIF(-1))	1.000000	0.000000	0.000000	0.000000
D(HEA(-1))	0.000000	1.000000	0.000000	0.000000
D(HEI(-1))	0.000000	0.000000	1.000000	0.000000
D(KURS(-1))	0.000000	0.000000	0.000000	1.000000
D(TARIF(-1))	154644.9	248830.6	29096.99	170570.8
	[3.20575]	[2.75295]	[3.16224]	[2.92315]

Source: Processed Data (2021)

The results of long-term VECM modeling calculations show that all variables have a T-Stat > T-Tab value. This means that the tariff has a positive and significant effect on HCIF, HEA, HEI, and EXCHANGE in the long term. Consequently, if HCIF increases by 1%, then the tariff will increase by 154644.9%; if HEA increases by 1%, then the tariff will increase by 248830.6%; if the HEI increases by 1%, the tariff will increase by 29096.99%; if the EXCHANGE increases by 1% then the tariff will increase by 170570.8% in the long term.

Table 8. **Estimation Results of VECM Short Run Modeling and Parameter Significance**

Error Correction	D(HCIF,2)	D(HEA,2)	D(HEI,2)	D(KURS,2)	D(TARIF,2)
D(HCIF(-1),2)	1.302024	0.294697	0.019031	0.046847	8.59E-08
	[1.98505]	[1.87636]	[0.75437]	[0.29615]	[0.01848]
D(HCIF(-2),2)	0.436522	0.210602	0.016997	-0.024810	-4.06E-07
	[0.96284]	[1.93999]	[0.97475]	[-0.22691]	[-0.12631]
D(HCIF(-3),2)	-0.039771	0.147702	0.013027	0.018813	-1.61E-07
	[-0.18085]	[2.80489]	[1.54017]	[0.35472]	[-0.10337]
D(HEA(-1),2)	-0.744614	-1.052066	-0.037300	-0.776901	9.61E-06
	[-0.67170]	[-3.96346]	[-0.87485]	[-2.90597]	[1.22367]
D(HEA(-2),2)	1.093129	-0.813474	-0.072234	-0.658814	2.70E-06
	[0.96878]	[-3.01082]	[-1.66445]	[-2.42101]	[0.33719]
D(HEA(-3),2)	1.909937	-0.342097	-0.027809	-0.457997	-1.65E-06
	[2.55013]	[-1.90757]	[-0.96541]	[-2.53564]	[-0.31040]
D(HEI(-1),2)	-4.193221	-2.277083	0.184158	-1.081111	5.85E-06
	[-0.70209]	[-1.59225]	[0.80171]	[-0.75058]	[0.13822]
D(HEI(-2),2)	-5.395909	-2.284950	-0.186309	0.664302	-2.28E-05
	[-0.96199]	[-1.70126]	[-0.86361]	[0.49108]	[-0.57463]
D(HEI(-3),2)	-1.269783	-0.206610	0.078662	-2.117870	-5.52E-06
	[-0.23060]	[-0.15670]	[0.37143]	[-1.59482]	[-0.14162]

Error Correction	D(HCIF,2)	D(HEA,2)	D(HEI,2)	D(KURS,2)	D(TARIF,2)
D(KURS(-1),2)	-1.069492	0.132371	0.000914	0.540612	-7.47E-06
	[-1.07088]	[0.55353]	[0.02379]	[2.24455]	[-1.05545]
D(KURS(-2),2)	-0.980677	0.102804	0.012962	0.370265	-5.75E-06
	[-1.38436]	[0.60606]	[0.47575]	[2.16729]	[-1.14663]
D(KURS(-3),2)	-0.609786	-0.020395	-0.000236	0.141454	-3.65E-06
	[-1.40255]	[-0.19591]	[-0.01410]	[1.34907]	[-1.18336]
D(TARIF(-1),2)	81804.99	17789.92	67.47265	21312.60	-0.060565
	[1.49478]	[1.35756]	[0.03206]	[1.61479]	[-0.15620]
D(TARIF(-2),2)	42565.97	27917.22	455.9334	33591.41	-0.040545
	[0.93039]	[2.54836]	[0.25911]	[3.04447]	[-0.12508]
D(TARIF(-3),2)	25568.08	15708.79	381.6872	57966.63	0.012081
	[0.73833]	[1.89445]	[0.28658]	[6.94085]	[0.04924]

Source: Processed Data (2021)

The results of the calculation of VECM modeling in the short term explain that there are several lag variables that have a significant effect on some of the variables at this time. The variable lag that has a significant effect on the current variable is the variable that has a T-Stat value > T-Tab. The following are the lag variables that have a significant effect on the current variable: (1) HCIF in the previous three periods has a positive and significant effect on the current HEA. As a result, if the current HEA increases, the HCIF of the previous three periods will increase by 2.80489%; (2) the previous HEA had a negative and significant effect on the current HEA. If the current HEA increases, the HEA of the previous period will decrease by 1.052066%; (3) The previous period's HEA has a negative and significant effect on the current exchange rate. As a result, if the current exchange rate increases, the HEA of the previous period will decrease by 2.90597%; (4) HEA of the previous two periods has a negative and significant effect on the current HEA. If the current HEA increases, the HEA of the previous two periods will decrease by 0.813474%; (5) The previous two periods' HEA has a significant and negative effect on the current exchange rate. If the current exchange rate increases, the HEA of the previous two periods will decrease by 0.658814%; (6) The HEA of the previous three periods has a positive and significant effect on the current HCIF. If the current HCIF increases, the HEA of the previous three periods will increase by 1.909937%; (7) HEA of the previous three periods has a negative effect on the current

EXCHANGE. If the current exchange rate increases, the HEA of the previous three periods will decrease by 0.457997%; (8) EXCHANGE of the previous period has a positive and significant effect on the current EXCHANGE. So, if the current exchange rate increases, the exchange rate of the previous period will increase by 0.540612%; (9) The exchange rate of the previous two periods has a positive and significant effect on the current exchange rate. So, if the current exchange rate increases, the exchange rate of the previous two periods will also increase by 0.370265%; (10) The rates of the two previous periods have a positive and significant effect on the current HEA. So, if the current HEA increases, the rates for the two previous periods will increase by 27917.22%; (11) The rates of the previous two periods have a positive and significant effect on the current exchange rate. Hence, if the current exchange rate increases, the rates for the two previous periods will also increase by 33591.41%; (12) The rates of the previous three periods have a positive and significant effect on the current exchange rate. If the current exchange rate increases, the rates for the previous three periods will also increase by 57966.63 %.

Autocorrelation Test

The autocorrelation test was carried out using the Protmanteau Autocorrelation Test. This study uses 20 lags to get more accurate results. The following is the result of the processed autocorrelation test.

Table 9. **Autocorrelation Test Results**

Lags	Q-Stat	Prob.*	Adj Q-Stat	Prob.*	df
1	16.47171	---	16.83775	---	---
3	42.17433	---	44.05358	---	---
5	74.57665	0.0406	80.03629	0.0154	55
7	104.9316	0.4835	115.4288	0.2288	105
9	136.2600	0.8582	153.7366	0.5136	155
11	164.9242	0.9818	190.8240	0.7529	205
13	194.9801	0.9980	232.1934	0.8442	255
15	227.7628	0.9997	280.1464	0.8432	305
17	276.1486	0.9993	355.5431	0.4819	355
19	299.6038	1.0000	394.7027	0.6336	405

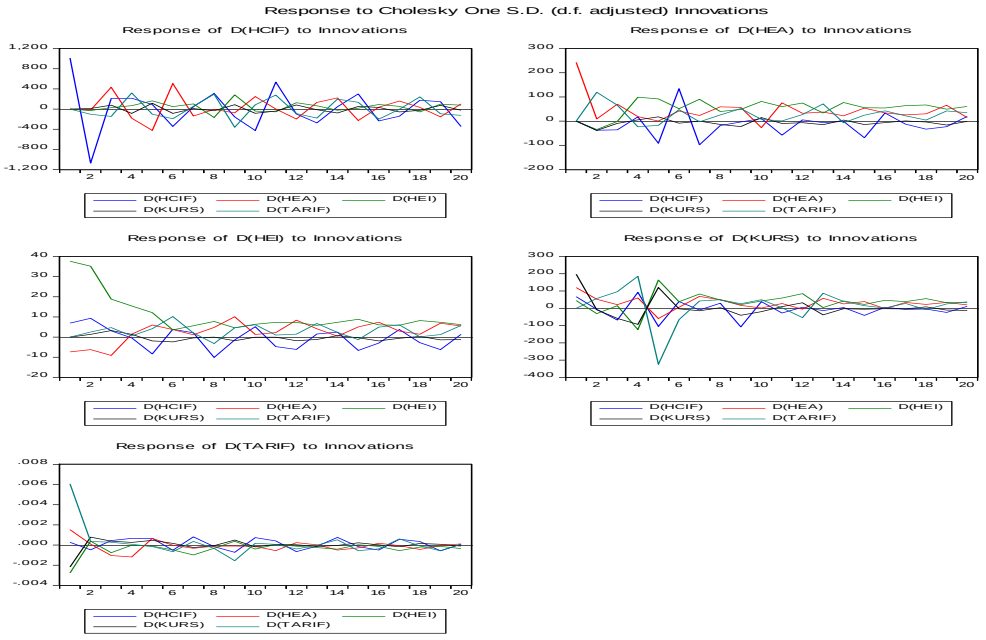
Source: Processed Data (2021)

The results of the autocorrelation test show that the overall probability value is > (α) 5%. It can be concluded that the VECM modeling is free from residual autocorrelation.

Impulse Response Function **(IRF)**

The IRF test aims to determine the response or influence on the shock given between one variable and another or with the variables themselves. The following are the results of the IRF analysis.

Figure 1. **Impulse Response Function (IRF) Analysis Results**



Source: Processed Data (2021)

The results of the IRF analysis shows projections for the next 20 periods. In the IRF chart with the highest HCIF response, the response from HCIF to HCIF itself tends to be positive. Then, the next highest response is the response from HCIF to HEA which tends to be positive, HCIF's response to tariffs which tends to be positive, HCIF's response to HEI which tends to be positive, and HCIF's response to the exchange rate which tends to be negative. On the IRF chart with HEA the highest response is the response from HEA to HEA itself which tends to be positive. Then, the next highest response is the response from HEA to HCIF which tends to be negative, HEA's response to Tariffs which tends to be positive, HEA's response to HEI which tends to be positive, and HEA's response to the exchange rate which tends to be negative. On the IRF chart with HEI the highest response is the response from HEI to the HEI itself which is positive. Then, the next highest response is the response from HEI to Tariffs which tends to be positive, HEI's response to HCIF which tends to fluctuate, strengthens at the beginning of the period and weakens at the end of the period, HEI's response to HEA which tends to be positive, and HEI's response to the exchange rate which tends to be negative.

In the IRF chart, the highest response rate is the response from the EXCHANGE to the rate which tends to be positive. Then, the next highest response is the response from KURS to the EXCHANGE itself which tends to be negative, the response to the EXCHANGE

against HEI which tends to be positive, the response from EXCHANGE to HEA which tends to be positive, and the response from EXCHANGE to HCIF which tends to be negative. In the IRF chart with the highest response rate, the response from the tariff to the rate itself tends to fluctuate, strengthening at the beginning of the period and weakening at the end of the period. Then, the next highest response is the response of the Tariff to HEI which tends to be negative, the response of the Tariff to the EXCHANGE which tends to be positive, the response of the Tariff to HEA which tends to be negative, and the response of the Tariff to HCIF which tends to be positive.

Variance Decomposition (VD)

The Variance Decomposition test was conducted to determine the contribution of each variable to other variables and the variables themselves in the next 20 periods. The following are the results of the analysis of variance decomposition.

Table 10. **Results of Analysis of Variance Decomposition D (HCIF)**

Period	S.E.	D(HCIF)	D(HEA)	D(HEI)	D(KURS)	D(TARIF)
1	1013.535	100.0000	0.000000	0.000000	0.000000	0.000000
2	1480.013	99.43314	0.024436	0.041254	0.004448	0.496722
3	1565.061	90.69251	7.673589	0.070153	0.247891	1.315853
4	1625.481	85.80675	8.349765	0.234847	0.509563	5.099080
5	1697.154	78.99384	13.89941	1.135544	0.933600	5.037608
6	1817.083	72.50180	19.89215	1.061254	1.035614	5.509182
7	1826.614	71.81029	20.26138	1.365614	1.027321	5.535394
8	1883.692	70.22252	19.05347	2.086605	0.999754	7.637648
9	1948.323	66.28966	17.96393	4.028797	1.135289	10.58232
10	2013.667	66.53114	18.33252	3.812928	1.239622	10.08379
11	2103.037	67.48675	16.80752	3.567442	1.171639	10.96665
12	2121.852	66.50460	17.39260	3.850732	1.298323	10.95374
13	2152.022	66.27437	17.27719	3.835010	1.266596	11.34684
14	2174.200	64.97489	17.95362	3.770552	1.370106	11.93082

Period	S.E.	D(HCIF)	D(HEA)	D(HEI)	D(KURS)	D(TARIF)
15	2211.194	64.65636	18.41557	3.650800	1.377549	11.89972
16	2235.259	64.39111	18.04624	3.737589	1.368170	12.45689
17	2246.808	64.13646	18.35733	3.756275	1.420450	12.32948
18	2267.558	63.55278	18.04375	3.752925	1.408745	13.24180
19	2282.622	63.12610	18.26850	3.879824	1.490324	13.23525
20	2315.854	63.57311	17.94087	3.879268	1.459315	13.14744

Source: Processed Data (2021)

The results of the VD analysis on the D (HCIF) variable described in Table 10 show that the estimated variable that will have the greatest influence or contribution to HCIF in the next 20 periods is HCIF itself with an average contribution of 72.5% per period. Then, followed by HEA with an average contribution of 15.1% per period, Tariffs with an average contribution of 8.6% per period, HEI with an average contribution of 2.5% per period, and KURS with an average contribution 1.03% per period.

Table 11. **Results of Analysis of Variance Decomposition D (HEA)**

Period	S.E.	D(HCIF)	D(HEA)	D(HEI)	D(KURS)	D(TARIF)
1	242.6901	0.000590	99.99941	0.000000	0.000000	0.000000
2	278.1099	1.824952	76.25707	1.559271	1.893996	18.46471
3	296.6235	3.062535	72.61526	1.371898	1.765964	21.18435
4	314.5930	3.038637	64.91037	11.07055	1.598731	19.38172
5	341.0967	9.739992	55.21511	16.66033	1.635215	16.74934
6	375.6219	20.77669	46.79666	15.61021	1.401357	15.41508
7	399.1903	24.38357	41.78261	18.93926	1.240784	13.65378
8	406.9424	23.65855	42.32950	19.16859	1.305351	13.53801
9	417.6114	22.47240	42.03556	19.56353	1.537521	14.39098
10	426.7299	21.58611	40.65921	22.35297	1.590163	13.81155

Period	S.E.	D(HCIF)	D(HEA)	D(HEI)	D(KURS)	D(TARIF)
11	441.4555	21.89403	40.92902	22.73891	1.532095	12.90595
12	449.8531	21.09892	39.93179	24.68157	1.494733	12.79299
13	458.4839	20.33003	39.11555	24.29291	1.540177	14.72133
14	465.4972	19.72275	38.16676	26.30311	1.503629	14.30375
15	477.7042	20.79710	37.51217	26.32802	1.514283	13.84842
16	485.0471	20.65005	36.88118	26.77942	1.484822	14.20453
17	490.6117	20.24845	36.33103	27.88498	1.451552	14.08399
18	497.1913	20.15952	35.75206	28.94775	1.418726	13.72193
19	506.4771	19.63082	36.12784	28.85088	1.471226	13.91924
20	511.8741	19.36512	35.45241	29.65370	1.440787	14.08798

Source: Processed Data (2021)

The results of the VD analysis on the D(HEA) variable described in Table 11 show that the estimated variable that will have the greatest influence or contribution to HEA in the next 20 periods is HEA itself with an average contribution of 47.9% per period. Then, followed by HEI with an average contribution of 19.6% per period, HCIF with an average contribution of 16.7% per period, the average contribution rate of 14.2% per period, and KURS with an average contribution of 1.4% per period.

Table 12. **Results of Analysis of Variance Decomposition D (HEI)**

Period	S.E.	D(HCIF)	D(HEA)	D(HEI)	D(KURS)	D(TARIF)
1	38.98163	3.189669	3.537021	93.27331	0.000000	0.000000
2	53.74175	4.693101	3.194008	91.83530	0.062114	0.215472
3	58.03331	4.306856	5.187851	89.29527	0.364141	0.845879
4	60.09002	4.021138	4.897218	89.89476	0.388874	0.798006
5	62.32652	5.532177	5.465593	87.35412	0.454471	1.193642
6	63.52769	5.696561	5.606279	84.39972	0.576659	3.720781
7	63.85531	5.748960	5.581682	84.30945	0.574702	3.785206

Period	S.E.	D(HCIF)	D(HEA)	D(HEI)	D(KURS)	D(TARIF)
8	65.37464	7.879396	5.862677	81.85371	0.548300	3.855918
9	66.50717	7.658883	7.960201	79.56872	0.602049	4.210153
10	67.30602	8.059547	7.811063	78.58604	0.587910	4.955443
11	67.90843	8.396134	7.779351	78.35775	0.577654	4.889111
12	69.12125	8.884648	8.989214	76.73555	0.627478	4.763114
13	69.84325	8.752108	9.153754	75.85362	0.643685	5.596833
14	70.31415	8.758153	9.035166	75.92932	0.645385	5.631979
15	71.36258	9.364287	9.267243	75.23937	0.628888	5.500212
16	72.25812	9.304769	10.08087	74.09467	0.684511	5.835175
17	72.90705	9.401893	10.06696	73.42546	0.678424	6.427260
18	73.43404	9.408013	9.959325	73.62632	0.670704	6.335636
19	74.40310	9.859714	10.56326	72.69024	0.686848	6.199937
20	75.10334	9.709715	10.89786	72.01442	0.700420	6.677586

Source: Processed Data (2021)

The results of the VD analysis on the D (HEI) variable described in Table 12 shows that the estimated variable that will have the greatest influence or contribution to HEI in the next 20 periods is HEI itself with an average contribution of 80.4% per period. Then followed by HEA with an average contribution of 7.5% per period, HCIF with an average contribution of 7.4% per period, Tariffs with an average contribution of 4.07% per period, and Exchange Rates with an average contribution of 0.5% per period.

Table 13. **Results of Analysis of Variance Decomposition D (EXCHANGE RATE)**

Period	S.E.	D(HCIF)	D(HEA)	D(HEI)	D(KURS)	D(TARIF)
1	244.4321	7.546834	24.03852	3.316714	65.09793	0.000000
2	258.2982	6.813008	25.65162	4.368587	58.40504	4.761741
3	291.1091	10.83439	20.69771	3.703626	50.05091	14.71337
4	393.9607	11.43384	13.61448	11.85935	32.87933	30.21299

Period	S.E.	D(HCIF)	D(HEA)	D(HEI)	D(KURS)	D(TARIF)
5	562.4550	9.081094	7.788003	14.29418	20.71404	48.12269
6	568.9726	9.343992	7.621391	14.41722	20.24456	48.37283
7	580.8647	8.994362	8.733521	15.84977	19.48335	46.93900
8	587.7976	9.033819	9.229605	16.15159	19.02908	46.55590
9	600.1498	11.89056	8.931745	15.62308	18.70093	44.85369
10	605.2521	12.09954	8.782623	15.85074	18.48767	44.77943
11	609.4636	12.13303	8.863818	16.58003	18.25883	44.16429
12	618.5968	11.78754	8.610976	17.98260	17.99570	43.62318
13	628.7314	11.45422	9.185864	17.41193	17.78818	44.15981
14	631.9177	11.34414	9.252930	17.68846	17.61078	44.10369
15	635.0511	11.64949	9.538470	17.64308	17.44410	43.72486
16	636.8009	11.59485	9.487854	18.08243	17.34951	43.48536
17	639.5154	11.50591	9.691523	18.28877	17.20541	43.30838
18	642.4659	11.40510	9.727183	18.87578	17.06409	42.92784
19	645.1807	11.44932	9.918540	18.96225	16.94693	42.72296
20	647.6036	11.39525	9.939796	19.07491	16.85462	42.73542

Source: Processed Data (2021)

The results of the VD analysis on the D (KURS) variable described in Table 13 shows the estimated variable that will have the greatest influence or contribution to the exchange rate in the next 20 periods is the tariff with an average contribution of 38.2% per period. Then followed by the exchange rate itself with an average contribution of 24.8% per period, HEI with an average contribution of 14.8% per period, HEA with an average contribution of 11.6% per period, and HCIF with an average contribution of 10.6%. per period.

Table 14. **Results of Variance Decomposition D Analysis (TARIF)**

Period	S.E.	D(HCIF)	D(HEA)	D(HEI)	D(KURS)	D(TARIF)
1	0.007181	0.134090	4.454863	14.88572	9.235897	71.28943

Period	S.E.	D(HCIF)	D(HEA)	D(HEI)	D(KURS)	D(TARIF)
2	0.007258	0.576236	4.376039	14.84738	10.19143	70.00891
3	0.007401	0.909309	6.185093	15.35444	10.06688	67.48428
4	0.007528	1.632863	8.465050	14.83825	9.844642	65.21919
5	0.007602	2.350928	9.045285	14.57243	10.02947	64.00188
6	0.007666	2.770817	8.896012	14.74373	9.905988	63.68345
7	0.007790	3.763849	8.788756	15.87693	9.696813	61.87365
8	0.007807	3.789753	8.770282	15.97894	9.662805	61.79822
9	0.008019	4.398926	8.330511	15.36160	9.535733	62.37323
10	0.008067	5.167160	8.261071	15.42726	9.475894	61.66862
11	0.008098	5.370719	8.683176	15.31768	9.410402	61.21802
12	0.008138	5.974312	8.678401	15.18801	9.316657	60.84262
13	0.008145	5.988068	8.665263	15.26695	9.331927	60.74780
14	0.008222	6.711395	8.880666	15.23137	9.161490	60.01508
15	0.008250	6.701706	8.937781	15.12766	9.170586	60.06227
16	0.008277	7.019784	8.920834	15.05988	9.111774	59.88773
17	0.008339	7.381961	8.794477	15.28484	9.016622	59.52210
18	0.008362	7.511751	9.020265	15.26076	9.001310	59.20592
19	0.008403	7.907668	8.938861	15.13951	8.920615	59.09335
20	0.008413	7.896405	8.936796	15.28291	8.915725	58.96816

Source: Processed Data (2021)

The results of the VD analysis on the D variable (TARIF) described in Table 13 shows that the estimated variable that will have the greatest influence or contribution to the tariff in the next 20 periods is the tariff itself with an average contribution of 62.4% per period. Then followed by HEI with an average contribution of 15.2% per period, KURS with an average

contribution of 9.4% per period, HEA with an average contribution of 8.2% per period, and HCIF with an average contribution of 4.6% per period.

According to Siregar and Rusastra (2003) there is a proportion of import duty rates to the determination of CIF prices. According to Fariyanti (2007) import tariffs cause changes in CIF prices which are used to represent world market conditions based on the theory proposed by Krugman and Obstfeld (2003). Meanwhile, Fariyanti (2007) also explained that if one of the CIF price indicators (indicators: export prices, insurance costs, and transportation costs from the import process of the exporting country to the importing country) increases, the CIF price will also increase. Then, according to Hartati (2020) export prices significantly affect CIF prices. It means that import tariffs and CIF prices have an indirect effect and occur from changes in CIF prices as the effect of changes in export prices caused by changes in import duty rates. According to Fan et al. (2015) if import tariffs are lowered, the exporting country will increase export prices. Thus, when the export price increases, the CIF price will also increase. This indicates that import tariffs have a negative effect on CIF prices.

According to Santos and Paulino (2002) relative import tariffs affect prices. According to Macera and Divino (2015) stated that import tariffs are variables that can influence the law of a price. Then, according to Faber (2014) changes in import tariffs provide a relative change in prices. In addition, according to the theory of Krugman & Obstfeld (2003) import tariffs have an effect on prices in the exporting country and prices in the importing country. If the import tariff for wheat flour increases, the price of wheat flour in Australia will decrease. On the other hand, if the import tariff for wheat flour decreases, the price of wheat flour in Australia will increase. This happens because when import tariffs decrease, Australia will increase its export supply. This was done because Australia's domestic demand for wheat flour decreased due to rising prices in the country. Thus, if there is an increase in import tariffs on a product by t, there will be a decrease of t in the price of a product in the country of origin. This indicates that import tariffs have a negative effect on prices in the exporting country.

Krugman and Obstfeld (2003) also explain that the exporting country will not sell its products to the importing country if the price in the importing country is lower than the price in the exporting country. This means that when prices in Indonesia increase, Australia will increase its export supply. This will only happen if the price conditions in Australia decline. However, domestic demand in Indonesia will decline. Thus, the retail price of Indonesian wheat flour has a negative effect on the retail price of Australian wheat flour. Thus, the export supply law applies to the effect of Indonesian wheat flour prices on Australian wheat flour prices.

According to Nicita (2009), tariff liberalization has a positive impact on the household economy. That is, with the liberalization of import tariffs (abolition of tariffs) causes prices in importing countries to tend to decrease. Thus, it can be concluded that if the import tariff decreases, the price of wheat flour in Indonesia will also decrease. This means that there is a positive influence between tariffs and the price of wheat flour in Indonesia. According to

Krugman & Obstfeld (2003) import tariffs will increase prices in the importing country. Thus, if there is an increase in import tariffs on a product by t, there will be an increase of t in the price of a product in the importing country.

In this case, however, import tariffs tend to be less in contributing to the price of wheat flour in Indonesia. Despite the elimination of import tariffs on wheat flour, it is known that the retail price of wheat flour in Indonesia is still increasing but the growth in price increases tends to decrease (FAO, 2021). This means that there are other factors outside the scope of the study that contribute more to the retail price of wheat flour in Indonesia. According to U. Hadi (2006), the increase in the basic price has an indirect effect on increasing consumer prices. That is, one of the other factors that have a contribution in influencing the price of wheat flour in Indonesia is the base price. According to Yanuarti & Afsari (2016) the retail price of Indonesian wheat flour is influenced by world wheat prices, the availability of imported wheat, exchange rates, wheat flour demand, loading and unloading taxes at ports, and transportation costs.

According to Musa and Maijama'a (2021) there is a unidirectional causality relationship on the retail price of Australian wheat flour with the exchange rate. When the exchange rate weakens, Indonesia will spend more money so that the selling price of its products will be higher. Meanwhile, this condition will be advantageous for Australia if the price of imported products is higher in Indonesia (Fan et al., 2015).

Research by Macera and Divino (2015) explains that the exchange rate appreciation is the impact of offsetting the increase in import tariffs. According to Istianah (2017) the rupiah exchange rate has a positive effect on import duty receipts. However, according to Fender and Yip (2000) the exchange rate will appreciate as a result of the increase in rates. The imposition of an increase in import tariffs by large countries will shock the prices of imported goods because there will be a decrease in import quotas. Then, Indonesia will increase the price of goods in its country as a result of decreasing product availability. So that the decrease in import quotas will cause the exchange rate to appreciate in the long run. (Edwards & Wijnbergen, 1987; Fender & Yip, 2000; Macera & Divino, 2015).

The above is explained through the theory of absolute power parity (PPP) proposed by Gustav Cassel (1922). The absolute theory of PPP is symbolized: $P=S.P^*$ where the domestic price level (P) = the world price level converted to domestic prices ($S.P^*$). In this case, the exchange rate (S) and international price (P^*) are used by the formula: $S=P/P^*$ to determine the existence of the exchange rate. This equation shows the relationship between the exchange rate and the domestic price level. According to Krugman and Obstfeld (2003) when viewed from the side of the exporting country, there is a decrease in international prices due to the determination of the tariff rate (θ), then the domestic price (Indonesia) will increase and the exchange rate will also strengthen. Because in international trade activities there are different tariff rates for each country, the absolute PPP theory is modified: $S=\theta.P/P^*$. Where represents the constant value of tariffs imposed in international trade. That is, an increase in tariffs will make the exchange rate appreciate as a result of a decrease in imports and an

increase in domestic prices (in Indonesia). Where the decline in imports and the increase in domestic prices are the result of the tariffs. This indicates that import tariffs have a positive effect on the exchange rate.

Conclusion

The results of the Granger Causality Test state that there is a causal relationship or unidirectional causality between the retail price of Indonesian wheat flour (HEI) and the retail price of Australian wheat flour (HEA), the retail price of Australian wheat flour (HEA) and the rupiah exchange rate against the dollar (EXCHANGE), wheat flour import tariffs (TARIF) at the retail price of Australian wheat flour (HEA), and wheat flour import tariffs (TARIF) at the rupiah exchange rate against the dollar (EXCHANGE RATE).
The results of the Vector Error Correction Model (VECM) modeling show that the import tariff of wheat flour (TARIF) has a positive and significant effect on the retail price of Australian wheat flour (HEA), the retail price of Indonesian wheat flour (HEI), the CIF price of wheat flour (HCIF), and exchange rate (EXCHANGE) in the long run. The results of the Impulse Response Function (IRF) analysis for the next 20 periods show that the highest response is given by the CIF price of wheat flour (HCIF), the retail price of Australian wheat flour (HEA), the retail price of Indonesian wheat flour (HEI), and the import tariff of wheat flour. (RATE) is the response of the variable itself. Then, the highest response given by the rupiah exchange rate against the dollar (EXCHANGE) was the response to the wheat flour import tariff (TARIF). The results of the Variance Decomposition (VD) analysis for the next 20 periods show that the largest contribution is given to the CIF price of wheat flour (HCIF), the retail price of Australian wheat flour (HEA), the retail price of Indonesian wheat flour (HEI), and wheat flour import tariffs. (RATE) is the variable itself. Then, the biggest contribution given to the exchange rate of the rupiah against the dollar (EXCHANGE) is the import tariff of wheat flour (TARIF).

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