Error Correction Model for Pakistan Export Demand for Indonesia's Crude Palm Oil (CPO)

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ABSTRACT : Crude Palm Oil is one of the agricultural export commodities which become a contributor of foreign exchange which is exported to Pakistan continuously but fluctuated from the year 1973 to 2016. The purpose of this study consisted of two things; the first is to identify the factors that influence the demand for Indonesia's CPO exports to Pakistan. The second is to analyze the relationship between the production of CPO, the international and domestic price of CPO, and the exchange rate of Rupiah toward the volume of Indonesian CPO exports to Pakistan both in the long and in the short term of time. This study used time series data (1973-2016). The analytical method used in this study was Error correction model (ECM) to examine the influence of variables: Indonesian CPO production, the international and domestic price of CPO, the international price of coconut oil, the international price of soybean oil, Pakistan's GDP per capita, the inflation in Pakistan, and the exchange rate of Rupiah toward the export variable of Indonesian CPO to Pakistan by using software E-Views 6.0. Based on the results of this study, it is concluded that the factor affecting the short-term demand of Indonesia's CPO exports to Pakistan is the international price of CPO which has a significant negative correlation, while the factor affecting long-term demand is the exchange rate of Rupiah toward the US$ which has a significant positive correlation. There is no correlation between both Indonesian CPO production and domestic price of CPO toward Indonesia's CPO exports to Pakistan both in the short and the long term.

Keywords: Exports demand, crude palm oil, error correction model

INTRODUCTION

The plantation sector has long been recognized as the Indonesia's main export commodity. Palm oil industry in Indonesia increases sharply from 1980 to 2017. Data published Directorate General of Estate Crops (2018) show that there are rapid growth palm oil in term of Area, Production, and Export Volume. In 1980, total palm oil area was 294,560 ha with the total production of 721,712 tons. These area increase to 12.307.677 ha with the total production of 7,071,877 tons in 2017. In term of export, export value has increased from US$ 108,846,000 in 1981 to US$ 16,020,548,000 in 2016.

Among major countries as the main destination of the Indonesian Crude Palm Oil(CPO) export, Pakistan places the third position which tend to increases continuously. Table 1 presents trend of Indonesian CPO exports to major Asian countries export destination in the period of 2000 – 2016. In term of volume, Indonesian Palm Oil Export to Pakistan increases from 850.2 tons in 2005 to 2,318.4 tons, an increase of 172.69% or 15.70% per year. An increasing palm oil volume export is also followed by an increasing in term of export value. In 2005, the CPO value was US$ 319.9 million. This value becomes US$ 1,313.5 or increasing by 28.24% per year, as presented in Table 1.

Table 1. Palm Oil Exports by Major Destination Asian Countries, 2005-2015

Year	Tiongkok		Malaysia		India		Pakistan	
	Volume*)	Value**)	Volume	Value	Volume	Value	Volume	Value
2005	1,354.6	493.4	621.4	215.8	2,558.3	901.3	850.2	319.9
2006	1,758.6	707.5	660.5	240.6	2,482.0	972.6	835.0	337.0
2007	1,441.1	957.2	382.7	253.0	3,305.7	2,180.3	788.1	543.7
2008	1,766.9	1,519.3	745.5	599.7	4,789.7	4,109.1	409.7	387.7
2009	2,645.4	1,628.6	1,195.7	719.4	5,496.3	3,340.0	214.6	139.9
2010	2,174.4	1,866.5	1,489.7	1,210.8	5,290.9	4,340.2	90.3	81.2
2011	2,032.8	2,109.5	1,532.6	1,603.0	4,980.0	5,256.4	279.2	296.8
2012	2,842.1	2,600.0	1,412.3	1,320.8	5,253.8	4,838.4	749.1	714.3
2013	2,343.4	1,794.1	514.3	372.8	5,634.1	4,281.6	1,080.3	814.4
2014	2,357.3	1,789.8	566.1	403.6	4,867.8	3,635.3	1,814.8	1,353.9
2015	3,629.6	2,046.9	1,200.1	655.1	5,737.7	3,217.0	2,318.4	1,313.5

Source: Central Bureau of Statistics(2017)

Note: *) in Tons **) in US$ millions

Examining data presented in Table 1, the volume and value of Indonesian CPO export, including to Pakistan, have also exhibited a fluctuation. This fluctuation could be caused by many factors. Many researchers have examinedthis fenomenon. Sukiyono (2007), for example, indicates that the price of palm oil, the prices of soybean, and the exchange rate of Rupiah are important factors affecting theexport demand for palm oil. Meanwhile, Hasan et al (2001) and Rifin (2010) have included export tax and price to analyse their impacts on Indonesian CPO export.In addition, research by Afifuddin (2004) concluded that CPO export price, soybean oil price, and exchange rate have significant impacts on CPO export. Other studies have also concluded that on demand side, Indonesian CPO exports have affected among others by the revenue and income per head ofcountry's importers, exchange rate and Indonesian governement trade policy (Tan and Tan, 2017)

Based on above discussion, this paper will study Pakistan export demands of Indonesian CPO by examining factors that affect the export demand of Indonesia's CPO by Pakistan, and analysing their influence on the export demand both in long and in short term of time.

RESEARCHMETHODS

The Basic Methods, Types and Data Sources

This study used descriptive and quantitative methods. Descriptive method to analyze the development of data and quantitative methods to analyze the factors that affect the export demand of Indonesian's CPO to Pakistan in the short term and in the long run with the approach of *Error Correction Model* (ECM). Enders (2010) described an Error Correction Mechanism (ECM) as a time series data analysis used for variables that have dependencies which are often called cointegration. In this case, the ECM method is used to balance short-term economic relations with variables that have long-term economic relationship.

This study uses annual secondary data from 1973 to 2016 consist of International and domestic data. Data processing is done in stages, starting with the grouping of data

followed by inputing data and estimating the model using *E-Views* 6.0.

Data Analysis Method

Test Stationarity Data

Test stationary can be done with three stages. First, unit root test (*unit roots)* which will use the test ADF (Augmented Dickey-Fuller). The root of this unit can cause statistically significant regression and high coefficient of determination, but the relationship between variables in the model is not related (Suryana, 2014). Second, the integration degree test of each variable is very important to know whether the variables used are static or not. Third, the cointegration test is performed after it is known that the data used in the research are integrated on the same degree by forming residuals. Granger Representation Theory, explains that if both variables X and Y are cointegration, the relationship between them can be expressed as ECM (Error correction model) (Gujarati, 2012).

Empirical Model

Model The ECM model used focuses on the model developed by Engle-Granger. The basic equation in this study is as follows:

$$E\_CPO_t = \beta_0 + \beta_1 Q\_CPO_t + \beta_2 IP\_CPO_t + \beta_3 IP\_CCO_t + \beta_4 IP\_SO_t + \beta_5 DP\_CPO_t + \beta_6 PK\_GDPP_t + \beta_7 PK\_IFL_t + \beta_8 EXR_t + \mu_t \quad \textbf{(1)}$$

where *E_CPO* is the export volume of Indonesian CPO (ton) to Pakistan, *Q_CPO* is the Indonesian CPO production (ton), *IP_CPO* is the international price of CPO (US $/Ton), *IP_CCO* is international price of coconut oil (US $/ton, *IP_SO* is international price of soybean oil (the US $/Ton), *DP_CPO* is domestic price of CPO (Rp/kg), *PK_GDP* is GDP per capita Pakistan (US $/year), *PK_IFL* is the inflation of Pakistan (%/year), *EXR* is the exchange rate of Rupiah toward the US dollar (Rp/US $)

Then the equation is formulated in the form of Error Correction Model (ECM) then the equation is as follows:

$$\Delta E\_CPO_t = \alpha_0 + \alpha_1 \Delta Q\_CPO_t + \alpha_2 \Delta IP\_CPO_t + \alpha_3 \Delta IP\_CCO_t + \alpha_4 \Delta IP\_SO_t + \alpha_5 \Delta DP\_CPO_t + \alpha_6 \Delta PK\_GDPP_t + \alpha_7 \Delta PK\_IFL_t + \alpha_8 \Delta EXR_t + \alpha_9 ECT_t + \varepsilon_t$$
(2)

To find out if the model specification with ECM is a valid model, then the coefficient of *Error Correction Term* (ECT) istested. If the test results on the ECT coefficient are significant, then the model specification observed is valid. Where,

$$ECT_t = (\Delta E\_CPO_t - \alpha_0 - \alpha_1 \Delta Q\_CPO_t - \alpha_2 \Delta IP\_CPO_t - \alpha_3 \Delta IP\_CCO_t - \alpha_4 \Delta IP\_SO_t - \alpha_5 \Delta DP\_CPO_t - \alpha_6 \Delta PK\_GDPP_t - \alpha_7 \Delta PK\_IFL_t - \alpha_8 \Delta EXR_t)$$

Error correction model (ECM) error correction model used in this study is able to explain long and short term data behavior and can explain the cointegration of observed variables. According to this model, it should be kept in mind that the improvement of the error coefficients is always expected to be negative and statistically, the ECM value is significant then the ECM is valid (Ender, 2010).

Testing Model

Classic Assumption Test

The classicassumption test conducted there are three multicollinearity test, heteroscedasticity test, and autocorrelation test. Through the *correlation matrix*, we can see the multicollinearity problem that is with the Root test of fellow independent variables is nothing more than (Gujarati, 2012). Heteroscedasticity using *White Heteroscedasticity Test.* Nachrowi and Usman (2008) detected autocorrelation problems using the *Breusch-Godfrey Serial Correlation LM Test.*

Statistical Test

The statistical tests conducted there are three of the F test, R^2/*adjusted R-squared* test, and t-test. The F test by looking at the probability of F-statistic on regression output with 5% significant level. Test The coefficient of determination (R^2 / R^2*adjusted*) to explain how much the ability of the independent variables describes the dependent variable in the model. The t-test to partially test each variable by comparing the probability of t value or significance <0.05.

RESULTS AND DISCUSSION

Stationarity Data

The stationary test is performed at thelevel *first difference* where all variables are stationary. After all, stationary variables are searched *lag* the correct to use ECM method with *Schwarz Info Criterion* (SIC).Based on the test *Augmented Dickey-Fuller* in Table 2. that observed variables vary in the data structure with the *inclusion in test equation intercept*.

Table 2. Result of Stationarity DataTest

Variable	Level	1st Different
E_CPO	0,3695	0.0000
Q_CPO	0,9862	0,0000
IP_CPO	0,0000	0,0000
IP_CCO	0,0000	0,0000
IP_SO	0.1890	0.0000
DP_CPO	0,4824	0,0088
PK_GDPP	0.0001	0,0000
PK_IFL	0.0183	0.0000
EXR	0.9249	0.0000

Source: Data processed, 2018

There are four variables that are not stationary at the level as shown in Table 2, thus, they have to be stationary. Based on Augmented Dickey-Fuller test, it can be concluded that all variables in this study have been stationary at the level *first difference* with α 5%.Furthermore, based on the cointegration test, the stationary ECT value at the *level* at α 5% with ADF value (-4,8248) is smaller than the critical value of *MacKinnon* at α 5% meaning that the model can be estimated by using the model ECM (*Error Correction Model*).

Estimated *Error Correction Model*

Error Correction model This yields methods with better interpretation accuracy when compared to other linear regression models, especially for long-term analysis (Nacrowi, 2006 *in* Tuty, 2009). The value of ECT in this study is -0.7033 with a probability of 0.0001 significant at α 5% which means the model specification used is valid and can be used to analyze/estimate the long and short term. According to Son (2013) ECM model *Engle-granger* is valid if the error correction coefficient marked negative and statistically significant. The short rub the ECM model for Pakistan export demand for Indonesian CPO is presented in Table 3.

This ECM model is valid if the error correction coefficient mark (ECT) is negative and statistically significant (Widarjono (2009) as cited by Nuzula (2013). Based on Table 3 the ECT value is -0.70338 and statistically significant with *the p-value* of 0.0001. The statement is supported by Ariefianto (2012) that the error correction coefficient has the desired value and algebra marks (negative and in absolute terms less than one).The coefficient value of ECT can determine how quickly the balance can be recovered. The ECT value of 0.703338 means the proportion of its balance and the development of CPO export demand by Pakistan in the preceding period adjusted for the current period of 70.33%. The value of ECT is significant at the level of α 5% it can be concluded there is a relationship between ECM and cointegration test.

Table 3. Short Term Estimation Results with *Error Correction Model*

Variable	Coefficient	T-Statistic	Stand. error	Probability
ΔQ_CPO	4,67E-07	0,613363	7,61E-07	0,5438
ΔIP_CPO	-0,027299	-2,942578	0,009277	0,0059
ΔIP_CCO	-6,03E-05	-0,781852	7,71E-05	0,4399
ΔIP_SO	0,018105	1,855421	0,009758	0,0725
ΔDP_CPO	0,000634	0,611091	0,001038	0,5453
ΔPK_GDPP	-0,012255	-0,933995	0,013121	0,3571
ΔPK_IFL	0,132108	0,752072	0,175659	0,4573
ΔEXR	7,58E-05	0,169333	0,000448	0,8666
ECT	-0,703338	-4,499448	0,156316	0,0001
Constant	0,001744	0,002423	0,719731	0,9981
F- Statistic	3,584324			
Adj. R-*squared*	0,494322			
F table	3,06			
T table	1,689			

Source: Data Processed, 2018

In the Long-run model, there are several variables that are transformed in the form of *first difference,* this is to avoid any problems in the classical assumption test. The results of data processing in the long run of this study is presented in Table 4.

Table 4. Long Term Estimation Results with Method *Error Correction Model*

Variabel	Coefficient	T-Statistic	Stand. error	Probability
ΔQ_CPO	4,06E-07	0,384038	1,06E-06	0,7033
ΔIP_CPO	-0,008156	-1,357416	0,006009	0,1836
ΔIP_CCO	-4,54E-05	-0,472601	9,61E-05	0,6395
ΔIP_SO	0,001668	0,446104	0,003740	0,6584
ΔDP_CPO	0,000596	0,540580	0,001103	0,5923
ΔPK_GDPP	0,006585	0,451363	0,014590	0,6546
ΔPK_IFL	0,195740	1,059772	0,184700	0,2967
ΔEXR	0,000490	2,559091	0,000191	0,0151
Constant	3,822167	2,143347	1,783262	0,0393
F- Statistic	3,400087			
Adj. R-*squared*	0,313733			
F table	3,06			
T table	1,689			

Source: Data Processed, 2018

Classic AssumptionsTest

Multicollinearity Test

The results of multicollinearity test shows that there are several variables that have a strong correlation in the long term. Ariefianto (2012) recommended to transform the variables to improve the problem multicollinearity. Some commonly method used are *the first difference, ratio transformation*, and log form.Among three methods, the first difference in variables is often used. After the transformation, there are no more multicollinearity problems existed in the long term. The results of the improvement can be seen in Table 5.

Similarly, in the short term show that the variable ΔIP_CPO and ΔIP_SO have a strong correlation (0,91). Consequently, there is a multicollinearity problem. The improvement efforts have been made in the long term by transforming the variables in the form of the first difference in the short term, but the multicollinearity problems still exist. For that reason, the most possible step to do is do nothing. However, those variables are still used to analyse palm oil exports demand regardless the existence of multicollinearity problem as also suggested by Nuzula (2013) when he analysed Vanilla export eventhough there is a multicollinearity problem in the short term.

Autocorrelation Test

Based on the results of short-term model data processing in thelag second obtained the value of Akaike 5.44 in Breusch-Godfrey Serial Correlation LM Test so that the lag used is the secondlag. Based on the results of processed data by using the second lag showed that probability Chi-Square is 0.138 (more than 5% α). It means that there is no problem of autocorrelation. Similarly to long run, there is also no problem of autocorrelation. This conclusion is based on the results of processing the long-run model data on the second lag in which the value of Akaike is 5.57 on Breusch-Godfrey Serial Correlation LM Test and probability of Chi-Square is 0.06.

Heteroscedasticity Test

Heteroskedasticity test is conducted by employing Chi-Square test. If the obtained value of Chi-Square is more than 5% of α, then, there is no heteroscedasticity and otherwise. Based on the results of data processing in the short-term model, the obtained value of Chi-Square is 0.76 (more than 5% of α) resultingthat there is no heteroscedasticity. Correspondingly, in the long run, its Chi-Square value is 0.09 implying that there is no heteroscedasticity.

Table 5. Results Improved Multicollinearity Testing in Long Term

	ΔQ_CPO	ΔIP_CPO	ΔIP_CCO	ΔIP_SO	ΔDP_CPO	ΔPK_GDPP	ΔPK_IFL	ΔEXR
ΔQ_CPO	1	0,27	0,12	0,50	0,64	0,40	-0,16	0,58
ΔIP_CPO		1	-0,28	0,28	0,65	0,27	0,27	-0,05
ΔIP_CCO			1	-0,12	0,003	-0,003	-0,56	0,17
ΔIP_SO				1	0,28	0,42	0,39	0,48
ΔDP_CPO					1	0,20	0,02	0,13
ΔPK_GDPP						1	0,14	0,33
ΔPK_IFL							1	-0,26
ΔEXR								1

Source: Data Processed, 2018

F-test

Short-term model (Table 3), the value of obtained F statistics is 3.584324 with probability 0.003330 and is significant at $\alpha =$ 5%. It can be concluded that the independent variables have an effect on export demand of Indonesia's CPO to Pakistan when it is tested simultaneously. In the long-term model (Table 4), the number of obtained F statistics is 3.400087 with probability 0.005665 and is significant at $\alpha = 5\%$. It can be concluded that the independent variables have an effect on export demand of Indonesia's CPO to Pakistan when it is tested simultaneously.

The Coefficient of Determination R² (*Adjusted R-Squared*)

The value of determination coefficient (adjusted R-squared) in the short-term model is 0.356410. This value indicates that 35.64% variation in the variable of Pakistan export demand of Indonesia's CPO to Pakistan can be explained by the studied independent variables.In the long run, the R²is 0.313733 which means that there are 31.37% changes in the variable of export demand of Indonesia's CPOcan be explained by the studied independent variables and the error correction term.

t-test

Based on the results of processed data by using *Eviews 6.0 software* obtained the only international price of CPO (IP_CPO) that significantly affect the export demand of Indonesia's CPO to Pakistan. The international price of CPO is significantly negative on α 5% toward the exports demand of Indonesia's CPO to Pakistan with probability number 0.0059. The international price of CPO has a coefficient of -0.027299, which means that a one percent price change will lower the export demand of Indonesian CPO by Pakistan by 0.027 tons. The other seven variables have no significant effect on the demand for Indonesian CPO exports by Pakistan.

The result of data processing in the long term is only exchange rate of rupiah (*EXR*) that significantly affect the exports demand of Indonesia's CPO to Pakistan. The exchange rate of rupiah toward US$ is significantly α 5% toward the exports demand of Indonesia's CPO to Pakistan with probability number 0.0151 (smaller than α 5%). Based on the result, it can be concluded that EXR variable in long-term positively affects the demand for Indonesian CPO export by Pakistan. The NTRP variable has a coefficient of 0.000490 which means that the depreciation of the Rupiah exchange rate against US $ of Rp 1 / US $ will increase the demand for Indonesian CPO export by Pakistan by 0.000490 tons.The other seven variables have no significant effect on the demand for Indonesian CPO exports by Pakistan.

Factors Affecting The Export Demand Indonesian's CPO

Indonesia's CPO Production (Q_CPO)

The ECM estimation results on Indonesian CPO production variables do not significantly influence the value of a coefficient of 4.67E-07 which probability value 0.7033 is greater than α 5% in the short-term model. The long-term model, Indonesian CPO production variables also have no significant effect on the coefficient value of 4.06E-07 and the probability value of 0.7033 is greater than α 5% in long-term model. According to Radifan (2014), Indonesia's CPO production in the short term has a positive and insignificant relationship to the export volume of Indonesian CPO, while in the long term the production has a significant and positive effect on the change of export volume of Indonesian CPO.

International Price of CPO (IP_CPO)

The ECM estimation results on international CPO price variables significantly significant from the coefficient value of -0.0273

with probability 0.0059 at α 5% in the short term model. International CPO price variable has a coefficient of -0.027299, which means that a change in the price of one US \$ will reduce the demand for Indonesian CPO export by Pakistan by 0.027 tons. The price of declining international crude oil could lead to international CPO prices also come down. CPO is a commodity used to produce alternative fuels that is *biofuel* which is nothing but fuel substitute fuel.

The long-term model, international CPO price variables have no significant effect on the coefficient value of -0.008 and the probability value of 0.1836 which is greater than α 5% against the export of Indonesian CPO by Pakistan. Hardy (2015) argues that the world CPO priced did not negatively affect 16.5% of Indonesia's CPO exports to the EU.

International Price of Coconut Oil (IP_CCO)

The long-term model, international palm oil price variable has no significant effect on the coefficient value of -4.54E-05 and the greater probability 0.6395 compared with α 5%. The results in the ECM estimate on the international palm oil price variables did not significantly affect the coefficient values of -6.03E-05 and the greater probability of 0.4399 compared with the α 5% in the short-run model. Coconut oil is one of the substitutions of CPO, but even so, the price of coconut oil is more expensive than the price of CPO. The price of coconut oil is quite expensive given the many benefits offered for health and the process of making coconut oil is also one of the benchmarks. International palm oil price fluctuations are not able to influence demand for Indonesian CPO exports by Pakistan.

International Price of Soybean Oil (IP_SO)

The ECM estimation on international soybean oil price variables has no significant effect on the coefficient value of 0.018 and the greater 0.0725 probability compared with α 5% in the short term model. Long-term model, international soybean oil price variables have no significant effect on the coefficient value of 0,0017 and probability 0,6584 bigger compared with α 5%.

Domestic Price of CPO (DP_CPO)

Domestic prices of CPO have no significant effect in the short and long-term on export demandCPO. The ECM estimation results on domestic CPO price variables have no significant effect on the coefficient value of 0.0006 and the probability of 0.5453 which is greater than the α 5% in the short term model. The long-term model, domestic CPO price variables have no significant effect on the coefficient value of 0.0006 and the probability of 0.5923 which is greater than the α 5%. This is due to the cooperation agreement between Indonesia and Pakistan.

GDP per Capita Pakistan (PK_GDPP)

GDP per capita Pakistan have no significant effect in the short-run and long-term demand for exports *Crude Palm Oil*. The long-term model, Pakistani GDP per capita variable has no significant effect on the coefficient value of 0.007 and the greater probability of 0.6546 compared with α 5%. Estimated resultsECM on Pakistani GDP per capita variables has no significant effect on the coefficient value of -0.012 and the probability of 0.3571 is greater than the α 5% in the short term model. The cause of the absence of the influence of the per capita GDP variables of Pakistan due to the cooperation agreement between Indonesia and Pakistan. Pakistani GDP per capita fluctuations are not able to affect the export volume of Indonesian CPOs to Pakistan as Indonesia has an agreement with Pakistan. With the signing of PTA Indonesia-Pakistan, Indonesia's CPO exports to Pakistan which previously amounted to US \$ 36 million or down 83.6% in 2011 again increased to US \$ 296.9 million, it is suspected because of the positive impact of the completion of PTA negotiations Indonesia-Pakistan in 2011 (Directorate General of International Trade Cooperation, 2012).

Inflation Pakistan (PK_IFL)

In the short run, the ECM estimates on Pakistan's inflation variable have no significant effect on the coefficient value of 0.132 and the greater probability of 0.4573 compared with the α 5% in the short-run model. The long-term model, Pakistani inflation variable has no significant effect on the coefficient value of 0.196 and the probability 0.2967 is bigger than the α 5.

The Exchange Rate of Rupiah (EXR)

The long-term model, the Rupiah exchange rate variable to US $ has a significant effect on the coefficient value of 0.0005 and the probability of 0.0151 is smaller than α 5%. The Rupiah exchange rate variable to US $ has a coefficient of 0.0005, which means that the depreciation of the Rupiah exchange rate against US $ of Rp 1 / US $ will increase the demand for Indonesian CPO export by Pakistan by 0.0005 tons. Radifan (2014) also said that in the long term, the Rupiah exchange rate against US Dollar influences significantly and positively to the change of CPO export volume of Indonesia. Hardy (2016) stated that the effect of exchange rate on Indonesian CPO exports was significantly positive by 2.8%. The results in the ECM estimate of the Rupiah exchange rate variable against the US $ have no significant effect on the coefficient value of 7.58E-05 and the greater probability of 0.8666 compared with the α 5% in the short-run model.

CONCLUSION AND RECOMMENDATION

Conclusion

Based on the results and discussion in the analysis of export demand *Crude Palm Oil* (CPO) Indonesia by Pakistan can be concluded that:

The factors that influence the exports demand of Indonesia's CPO to Pakistan simultaneously is Indonesian CPO production, the international price of CPO, the international price of coconut oil, the international price of soybean oil, domestic price of CPO, GDP per capita Pakistan, Inflation in Pakistan , and the exchange rate Rupiah toward US$. Partially in the short term the export demand of Indonesia's CPO to Pakistan affected by the international price of CPO and in the long term the exchange rate Rupiah toward US$.

ECM analysis results showed that: a) between the Indonesian CPO production with the exports demands of Indonesia's CPO to Pakistan did not have a significant relationship in the short term and long term. b) Between the international prices of CPO with the exports demand of Indonesia's CPO to Pakistan a relationship in the short term but not in the long term. c) Between the domestic price of CPO with the exports demand of Indonesia's CPO to Pakistan did not have a good relationship in the short term and long term. d) The exchange rate Rupiah toward US$ has relevance in the long term the exports demand of Indonesia's CPO to Pakistan.

Recommendation

From the above conclusions can be suggested for actors exporter, in the determination of the number of Indonesian CPO export quota must pay attention to the trend of international CPO prices and the exchange rate rupiah toward US$. In addition further research conducted by adding variables, such as other exporting countries demand and population of export destination that have not been observed in this study with the latest methods to enhance these results.

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