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Analysis of the Imposition of Export Tax on Indonesian Cocoa Beans: Impact on the Processed Cocoa Export in Indonesia and Malaysia

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Introduction

One of the aims to impose export tax is to increase the added value of domestic industries. According to Bouët and Laborde (2012), the imposition of export tax will cause the export volume of raw materials to decrease due to higher export prices, compared to the international price. The decline of the export supply will lead to an increased domestic supply, causing a decrease of the raw materials domestically. Thus indirectly, the imposition of export tax is an incentive provided by the government to ensure the availability of raw materials for domestic processing industries at a lower price. The low price of raw materials will lead to a decrease in production costs so that the selling price of the downstream products in the export market will be more competitive.

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On the other hand, the imposition of export tax on raw materials may also affect the performance of the importing countries of raw materials. Bouët and Laborde (2012) add that the imposition of export tax will lead to a decreased import of the raw materials supply so that it may affect the increase of raw material prices in the international market. Fung and Korinek (2014) are of the opinion that the imposition of export tax on raw materials may lead to a decreased production and profit for downstream industries in importing countries because importing countries have to pay a higher price for imported raw materials from the restricting partner countries, which will cause increased production costs for the user industries and will ultimately increase the cost of the final products for the consumers.

The policy of export tax imposition on cocoa beans was issued by the government through the Minister of Finance Regulation Number 67/PMK.0ll/2010 dated 22 March 2010 regarding the Stipulation of Export Goods Subject to Export Tax and the Export Tax Tariff. In this regulation, cocoa beans are one of the export commodities that are subject to a particular tariff with a progressive percentage, depending on prevailing international prices. The objective of the export tax imposition on cocoa beans is to encourage the downstream side of cocoa processing industries because, prior to 2010, most of the Indonesian cocoa beans were exported than processed domestically, leading to a shortage of raw materials for domestic industries. This is marked by the low installed capacity utilization of the Indonesian cocoa processing industries in 2009 which was only 42%.

According to the International Cocoa Organization (ICCO) data, in 2009, the Indonesian cocoa beans production is the third largest in the world (15% share) after the Ivory Coast (34% share) and Ghana (17% share), with 550,000 tons. In the above mentioned year, the export of the Indonesian cocoa beans reached 439,305 tons (US$1,087,485), with Malaysia having the largest market share of 41%. The need for cocoa beans raw materials for the processed cocoa production in Malaysia is mostly fulfilled by Indonesia owing to the very low cocoa beans production in Malaysia amounting to 15,000 tons. Processed cocoa products are divided into three types, namely cocoa paste, cocoa butter, and cocoa powder. All product types only use cocoa beans as raw materials. In 2009,

the use of the Indonesian cocoa beans raw materials for the need of cocoa processing industries in Malaysia reached 69%. In this year, Malaysia was the largest exporter of processed cocoa in Asia with an export value of US$797,939, followed by Indonesia in the second position with an export value of US$295,575. The data indicate that Indonesia is the main producer of cocoa beans in Asia; yet, the added value generated remains very low because Indonesia exports more cocoa beans than processed cocoa products. The export value of the Indonesian processed cocoa products is even below Malaysia that precisely utilizes most of the cocoa beans raw materials from Indonesia for the production of processed cocoa.

The export tax policy on cocoa beans is issued by the Government of Indonesia to increase the supply of cocoa beans raw materials for domestic use by reducing the export volume of the raw materials. The increased supply of cocoa beans raw materials is expected to stimulate the increase of Indonesian processed cocoa production so that it may also improve the competitiveness of processed cocoa products in the global market. Considering that Malaysia is the largest consumer of cocoa beans from Indonesia, the policy of the export tax imposition on cocoa beans may reduce the cocoa beans supply to Malaysia. The decline in the supply of cocoa beans may obstruct the production of Malaysian processed cocoa so that the processed cocoa industry from Indonesia can capture the market share of the Malaysian processed cocoa in the world.

Therefore, the success of the application of the export tax policy on cocoa beans in the long term is not only observed from the effect of the policy on the export of processed cocoa products from Indonesia, but it should also consider the impact to Malaysia which is the main competitor for processed cocoa products in Asia.

Reference Review

A country applies the policy for export tax on products for various purposes. According to Liefert and Westcott (2016), the main reasons for the government to impose export tax tariffs or other export restrictions are (1) increased revenues, (2) increased profits from export products by using the market power to increase selling prices; (3) increased competitiveness

and also the added value of domestic industries by providing cheaper raw materials so that production costs are lower than competitor countries; and (4) improving domestic food security by increasing the product volume at lower prices.

The imposition of export tax on raw materials will lead to a decreased price of raw materials in the domestic market. In addition, export tax may also increase the price of raw materials in the international market, depending on the market share. Bouët and Laborde (2012) group the market share of a country into small countries and large countries and further perform a partial equilibrium analysis to identify the impact generated from the imposition of export tax. Small countries refer to countries with a small market share, while large countries are countries with large market shares. In this analysis, it is assumed that domestic prices are equal to international prices and domestic demands are lower than domestic supply. The difference between domestic supply and domestic demand is the exported quantity.

In small countries, the imposition of export tax will make domestic producers prefer selling their products to the domestic market to exporting because the product is not taxable if sold domestically. The imposition of export tax will lead to decreased domestic prices. Domestic consumers will benefit from the export tax policy by the increased consumption at lower prices attributable to decreased export quantities. Increased domestic consumption with lower prices will create a consumer surplus. Moreover, the government will also benefit from the application of export tax, namely from the revenue of the export tax. Nonetheless, this policy precisely creates disincentives to domestic producers that are marked by a decreased surplus of producers.

In large countries, the imposition of export duties will lead to increased world prices. The imposition of export tax on countries with significant market shares in the world drives export supply in the world to decline and causes increased global prices. The decline in the export supply will lead to increased domestic consumption so that domestic prices will decrease. The policy to impose export tax on large countries will create a surplus of producers and also a surplus of consumers.

The imposition of the export tax policy may decrease export supply and increase export prices. However, in the context of raw materials,

the imposition of this policy may also affect the added value in the importing countries of the raw materials. According to Murray and Walter (1975), a country may increase the export of downstream products by imposing export tax on raw materials or semi-finished materials and thereby reducing the effective rate of protection (ERP) on the downstream products of the importing country. The imposition of export tax on raw materials in exporting countries will increase production costs of the importing countries' downstream industries, due to the increased prices of raw materials. According to Corden (1966), ERP is defined as a percentage increase of the value added per unit on economic activities as a result of the tariff structure application. The impact of the export tax imposition on raw materials (e_i) by exporting countries against the decreased ERP in importing countries is formulated by Murray and Walter (1975) as follows:

$$g = \frac{t_j - \sum_{i=1}^{n} a_i t_i - \sum_{i=1}^{n} a_i e_i \left(1 + t_i\right)}{1 - \sum_{i=1}^{n} a_i} \tag{7.1}$$

The above equation indicates that the higher the export tax tariff on the input, the lower the ERP on downstream products in importing countries.

A number of previous researches related to the impact of the policy on the cocoa beans export tax against processed cocoa exports were implemented several times, such as the research by Suryana et al. that analyzes the impact of the export tax imposition on cocoa beans against the volume of processed cocoa exports by using the gravity model with panel data. Research outcomes indicate that the export tax policy has a significant impact on the increase of cocoa butter export volume; yet, it does not significantly impact the increased export volume of cocoa powder. Further, Gumay (2014) performs a research on the impact of the cocoa beans export tax enforcement on the competitiveness of Indonesian processed cocoa products by using the method of the *ordinary least squares and data time series.* Research outcomes signify that the policy of the cocoa beans export tax significantly affects the increased *competitiveness of the Indonesian processed cocoa products in the international market.*

Method

The empirical model used to estimate the demand function in Indonesian and Malaysian exports follows the "imperfect substitutes" model established by Goldstein and Khan that is also used by Athanasouglu and Bardaka in estimating the export demand of manufacture products in Greece. The function of the export demand is as follows:

$$X^d = x\left(PX_g, PX_c, Y^f\right), f_1 < 0, f_2 > 0, f_3 > 0 \tag{7.2}$$

where X^d= quantity of domestic products exported to international markets, PX_g= price of domestic products, PX_c= price of competitor products in the international market, Y^f= real foreign revenue.

Further, the long-term model of the Indonesian processed cocoa exports determinant used in this research is as follows:

$$\begin{aligned} \ln\text{XIND}_t = {} & \beta_0 + \beta_1 \ln\text{DPB}_t + \beta_2 \text{PXC}_t \\ & + \beta_3 \ln\text{WMP}_t + \beta_4 \text{BK}_t + \varepsilon_t \end{aligned} \tag{7.3}$$

where $\beta_1 < 0$, $\beta_2 > 0$, $\beta_3 > 0$, $\beta_4 > 0$.

Description:

lnXIND = Natural logarithm of export volume of processed cocoa products in Indonesia in month-t (ton)

- lnDPB = Natural logarithm of the Indonesian cocoa beans price in month-t (Rp/kg)

PXC = Average export price of processed cocoa in five competitor countries of Indonesia in month-t (US$/kg)

lnWMP = Natural logarithm of the volume of processed cocoa imports in the world in month-t (ton)
BK = Dummy application of export tax of Indonesia cocoa beans, value 1 if imposed with the export tax tariff in the related month, value 0 if in the related month the export tax tariff is not implemented
ε_t = error term in month-t

The price of domestic cocoa beans is used as an independent variable on the model of Indonesian processed cocoa exports as a proxy of the Indonesian processed cocoa price. The Indonesian processed cocoa industry uses most of the domestic cocoa beans as raw material (80%). In this model, domestic beans prices are expected to have a negative relationship against the value of the Indonesian processed cocoa exports. The lower the price of domestic cocoa beans, the lower the production costs of processed cocoa so that the Indonesian processed cocoa price is expected to be lower in the international market. The lower domestic sales price will encourage the increased demands for Indonesian processed cocoa in the world.

The average processed cocoa prices in five competitor countries of Indonesia are used as an independent variable that is expected to be positively related to the Indonesian processed cocoa exports. The five competing countries selected are the United States, the Netherlands, Germany, Malaysia, and France. The high average price of processed cocoa exports in competitor countries reflect the high price of processed cocoa in the world, which will encourage the Indonesian cocoa processing industries to increase the export of its products.

The volume of processed cocoa imports in the world is used as a proxy of foreign real revenues. The greater the foreign real revenue, the higher the consumption of processed cocoa. The high consumption of processed cocoa in the world will increase export demands of the Indonesian processed cocoa products.

To identify the long-term relationship between the Indonesian processed cocoa exports and the price of domestic cocoa beans, the average price of competitor processed cocoa, the import volume of the world's processed cocoa, and the export tax policy on the Indonesian cocoa beans, the following Autoregressive Distributed Lag (ARDL) equation is established:

$$\begin{aligned}\Delta \ln \mathrm{XIND}_t = {} & \alpha + \beta_0 + \beta_1 \ln \mathrm{XIND}_{t-1} + \beta_2 \ln \mathrm{DPB}_{t-1} \\ & + \beta_3 \mathrm{PXC}_{t-1} + \beta_4 \ln \mathrm{WMP}_t + \beta_5 \mathrm{BK}_{t-1} \\ & + \sum_{i=1}^{p} \beta_{6i} \Delta \ln \mathrm{XIND}_{t-\mathrm{i}} + \sum_{j=1}^{q} \beta_{7j} \Delta \ln \mathrm{DPB}_{t-j} \\ & + \sum_{k=1}^{q} \beta_{8k} \Delta \mathrm{PXC}_{t-k} + \sum_{m=1}^{q} \beta_{9m} \Delta \ln \mathrm{WMP}_{t-m} \\ & + \sum_{n=1}^{q} \beta_{10n} \Delta \mathrm{BK}_{t-n} + \epsilon_t \end{aligned} \tag{7.4}$$

Coefficients β_1, β_2, β_3, β_4,and β_5 illustrate the coefficient of a long-term relationship.

Further, the error correction model (ECM) equation used in this research is as follows:

$$\begin{aligned}\Delta \ln \mathrm{XIND}_t = {} & \alpha + \sum_{i=1}^{p} \theta_{1i} \Delta \ln \mathrm{XIND}_{t-i} + \sum_{j=1}^{q} \varphi_{1j} \Delta \ln \mathrm{DPB}_{t-j} \\ & + \sum_{j=1}^{q} \varphi_{2j} \Delta \mathrm{PXC}_{t-j} + \sum_{j=1}^{q} \varphi_{3j} \Delta \ln \mathrm{WMP}_{t-j} \\ & + \sum_{j=1}^{q} \varphi_{3j} \Delta \mathrm{BK}_{t-j} + \gamma \mathrm{ECT}_{t-1} + \epsilon_t \end{aligned} \tag{7.5}$$

where θ and φ are the short-term coefficients and γ is the speed of adjustment.

This research also establishes the determinant model of the Malaysian processed cocoa exports. Unlike the model of the Indonesian processed cocoa exports, the Malaysian model of processed cocoa exports also refers to the export demand function established by Goldstein and Khan. Nevertheless, the proxy used for the variable of domestic processed cocoa prices is different from the proxy used in the model of the Indonesian processed cocoa exports. Differences in the proxy used are attributable to differences in the characteristics of raw materials used in the cocoa processing industries of Indonesia and Malaysia.

Unlike Indonesia that expends most of the domestic cocoa beans as raw material, Malaysia utilizes most of the imported cocoa beans as raw material for the processed cocoa. The determinant model of Malaysian processed cocoa exports is as follows:

$$\ln XMAS_t = \gamma_0 + \gamma_1 \ln WPB_t + \gamma_2 PXC_t + \gamma_3 \ln WMP_t + \gamma_4 BK_t + \varepsilon_t \quad (7.6)$$

where $\gamma_1 < 0$, $\gamma_2 > 0$, $\gamma_3 > 0$, $\gamma_4 < 0$.

Description:

lnXMAS = Natural logarithm of export volume of processed cocoa products in Malaysia in month-t (ton)
lnWPB = Natural logarithm of the international cocoa beans prices in month-t (US$/ton)
PXC = Average export price of processed cocoa in five competitor countries of Malaysia in month-t (US$/kg)
lnWMP = Natural logarithm of import volume of processed cocoa in the world in month-t (ton)
BK = Dummy application of Indonesian export tax of cocoa beans by Indonesia, value 1 if in the related month the export tax tariff is imposed, value 0 if in the related month the export tax tariff is not imposed
ε_t = error term in month-t

The international cocoa beans prices are applied as independent variables of Malaysia's processed cocoa export model. The Malaysian processed cocoa industries exploit most of the imported cocoa beans as raw material (99%). In this model, the international beans prices are expected to have a negative relationship against the value of the Malaysian processed cocoa export. The lower the price of international cocoa beans, the lower the production costs of processed cocoa so that the price of the Malaysian processed cocoa is lower. The lower selling price of the Malaysian processed cocoa will encourage demands for Malaysian processed cocoa in the world.

In the variable of average processed cocoa prices from Malaysia's competitor countries in this model are the United States, the Netherlands, Germany, Indonesia, and France. This variable is expected to have a positive relationship with the processed cocoa exports from Malaysia. The higher average export price of processed cocoa in competitor countries reflects the higher processed cocoa prices in the world that could encourage the Malaysian processed cocoa industries to increase exports.

The proxy of real foreign revenues employed in the model of the Malaysian processed cocoa exports, namely the import value of the world processed cocoa. Consumption of the world processed cocoa will increase in line with increased export demands for Malaysian processed cocoa products.

To indicate the long-term relationship between Malaysian processed cocoa exports and the international cocoa beans prices, the average price of processed cocoa competitors, the import volume of the world processed cocoa, and the export tax policy on the Indonesian cocoa beans, the following ARDL equation is established:

$$\begin{aligned}\Delta \ln \mathrm{XMAS}_t = {} & \alpha + \beta_0 + \beta_1 \ln \mathrm{XMAS}_{t-1} + \beta_2 \ln \mathrm{WPB}_{t-1} \\ & + \beta_3 \mathrm{PXC}_{t-1} + \beta_4 \ln \mathrm{WMP}_t + \beta_5 \mathrm{BK}_{t-1} \\ & + \sum_{i=1}^{p} \beta_{6i} \Delta \ln \mathrm{XMAS}_{t-i} + \sum_{j=1}^{q} \beta_{7j} \Delta \ln \mathrm{WPB}_{t-j} \\ & + \sum_{k=1}^{q} \beta_{8k} \Delta \mathrm{PXC}_{t-k} + \sum_{m=1}^{q} \beta_{9m} \Delta \ln \mathrm{WMP}_{t-m} \\ & + \sum_{n=1}^{q} \beta_{10n} \Delta \mathrm{BK}_{t-n} + \epsilon_t \end{aligned} \tag{7.7}$$

Coefficients β_1, β_2, β_3, β_4,and β_5 illustrate the coefficient of the long-term relationship.

The ECM equation for the determinant model of the Malaysian processed cocoa export is as follows:

$$\begin{aligned}\Delta \ln \mathrm{XMAS}_t = {} & \alpha + \sum_{i=1}^{p} \theta_{1i} \Delta \ln \mathrm{XMAS}_{t-i} + \sum_{j=1}^{q} \varphi_{1j} \Delta \ln \mathrm{WPB}_{t-j} \\ & + \sum_{j=1}^{q} \varphi_{2j} \Delta \mathrm{PXC}_{t-j} + \sum_{j=1}^{q} \varphi_{3j} \Delta \ln \mathrm{WMP}_{t-j} \\ & + \sum_{j=1}^{q} \varphi_{3j} \Delta \mathrm{BK}_{t-j} + \gamma \mathrm{ECT}_{t-1} + \epsilon_t \end{aligned} \tag{7.8}$$

where θ and φ are the short-term coefficients and γ is the speed of adjustment.

This research applies secondary data in the form of monthly data from 2006 to 2015. The export volume of processed cocoa products is the addition of the export volume of cocoa paste products (HS. 1803), cocoa butter (HS. 1804), and cocoa powder (HS. 1805). Data of the processed cocoa export volume, average price of competitor countries processed cocoa, and import volume of the world processed cocoa are sourced from trademap.org. Data of domestic cocoa beans prices are sourced from bappebti.go.id, while international cocoa beans prices are obtained from icco.org. Data on the export tax of the Indonesian cocoa beans are obtained from kemendag.go.id. The estimation method in this research uses the ECM by using the ARDL method developed by Pesaran et al. (2001). According to Nkoro and Uko (2016), the ARDL co-integration techniques can be used to determine the long-term relationship between series and different levels of integration. Nkoro and Uko (2016) add that the ARDL model can produce ECM so that the short-term dynamics and long-term relationships can be identified on a single model. Data processing in this research is conducted by using Eviews 9 software.

Outcomes and Analysis

Research Outcomes

Estimation Outcome Model of the Indonesian Processed Cocoa Exports

The initial step in performing the estimation based on the ARDL model is by conducting a stationary test to ensure that data used are not stationary at the second difference level. In this research, the stationary test employs the Augmented Dickey Fuller method. Test outcomes of stationary data denote that at the first difference level all variables are stationary.

Furthermore, the optimum lag determination is conducted to be used in the equation. The optimum lag determination applies the Schawrz information criterion (SIC). The outcomes of SIC imply that the optimal lag for the dependent variable is 2. Then the optimum lag for the independent DPB variable is 0, PXC is 1, WMP is 0, and BK is 1.

Estimation outcomes with the best model for the Indonesian processed cocoa exports are shown in Table 7.1.

The next phase is to perform the diagnostic test and stability test to prevent misinterpretation. The diagnostic test of serial correlation of the Lagrange multiplier (LM) test indicates that the *p*-value is 0.2103 and the heteroskedasticity test indicates that the *p*-value is 0.1486. The outcomes signify that the ARDL model in this research does not contain serial correlation and heteroskedasticity. The next test is the stability test using the cumulative sum (CUSUM) test. The outcome of the CUSUM test suggests that all parameters of the ARDL model are stable.

After performing the diagnostic test and stability test, further phase is conducting the Bound Testing Co-integration to observe whether there is a co-integration relationship between the variables. The Bound Testing Co-integration outcomes are shown in Table 7.2.

The above outcomes of the Bound Testing Co-integration imply that there is a co-integration relationship between the variables of the domestic cocoa beans prices, the average price of processed cocoa of the competitor countries of Indonesia, the import volume of the world processed cocoa, and the dummy application of export tax on the Indonesian cocoa

Table 7.1 Estimation outcomes with the best model for the Indonesian processed cocoa exports

Variable	Coefficient	Prob.
LN_XIND(−1)	0.434425	0.0000
LN_XIND(−2)	0.329083	0.0001
LN_DPB	−0.018190	0.8190
PXC	0.254758	0.1131
PXC(−1)	−0.347288	0.0224
LN_WMP	0.369232	0.0389
BK	0.034949	0.5746
BK(−1)	0.163398	0.0118
C	−1.773776	0.3458
R-squared	0.852855	
Adjusted *R*-squared	0.842055	
F-statistic	78.97074	
Prob(*F*-statistic)	0.000000	

Table 7.2 Outcomes of the Bound Testing Co-integration

Test statistic	Value	*k*
F-statistic	4.061106	4
Critical value bounds		
Significance	I(0) bound	I(1) bound
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

beans with the variable volume of the Indonesian processed cocoa exports. This can be observed from the F-statistic value that is greater compared to 5% critical values.

The next phase is to estimate the ECM equation and co-integration equation, with the following outcomes in Tables 7.3 and 7.4.

Estimation Outcomes of the Malaysian Processed Cocoa Export Model

The determinant estimation phase of the Malaysian processed cocoa exports is similar to the determinant estimation phase of the Indonesian processed cocoa exports. The first phase is performing a stationary test at

Table 7.3 Estimation outcomes of the ECM equation

Variable	Coefficient	Prob.
D(LN_XIND(−1))	−0.329083	0.0001
D(LN_DPB)	−0.018190	0.8190
D(PXC)	0.254758	0.1131
D(LN_WMP)	0.369232	0.0389**
D(BK)	0.034949	0.5746
CointEq(−1)	−0.236492	0.0001*

*Significant at level 1%, **Significant at level 5%

Table 7.4 Estimation outcomes of the co-integration equation

Variable	Coefficient	Prob.
LN_DPB	−0.076918	0.8211
PXC	−0.391263	0.0970***
LN_WMP	1.561287	0.0187**
BK	0.838704	0.0036*
C	−7.500364	0.3240

*Significant at level 1%, **Significant at level 5%, ***Significant at level 10%

the level degree, with data of the stationary test outcomes showing that all variables are not stationary at the level degree except the variable of the Malaysian import value of cocoa beans. Therefore, the stationary test is continued to the first difference level. Data of the stationary test outcomes denote that at the first difference level all variables are already stationary. Further, an optimum lag determination is performed that will be used for the equation. The determination of the optimum lag utilizes the SIC. The outcomes of SIC indicate that the optimal lag for the dependent variable is 1. Then the optimum lag for the DPB independent variable is 0, PXC is 0, WMP is 0, and BK is 0.

Estimation outcomes with the best model for the Indonesian processed cocoa exports are shown in Table 7.5.

The next step is to perform a diagnostic test and stability test to prevent misinterpretation. The diagnostic test on the serial correlation of the LM test indicates that the *p*-value is 0.5113 and the heteroskedasticity test indicates that the *p*-value is 0.1574. These outcomes indicate that the ARDL model in this research does not contain serial correlation and heteroskedasticity. The subsequent test is the stability test by using the CUSUM test. The outcomes of the CUSUM test indicate that all parameters in the ARDL model are stable.

Table 7.5 Estimation outcomes for the best model of Malaysian processed cocoa exports

Variable	Coefficient	Prob.
LN_XMAS(−1)	0.488575	0.0000
LN_WPB	−0.130302	0.2217
PXC	0.087323	0.1034
LN_WMP	0.077997	0.4028
BK	−0.013418	0.6914
C	4.835475	0.0033
R-squared	0.417014	
Adjusted *R*-squared	0.391218	
F-statistic	16.16596	
Prob(*F*-statistic)	0.000000	

Table 7.6 Outcomes of the Bound Testing Co-integration

Test statistic	Value	*k*
F-statistic	7.460052	4
Critical value bounds		
Significance	I(0) bound	I(1) bound
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

Further, the Bound Testing Co-integration is conducted to observe whether there is a co-integration relationship between the variables. The Bound Testing Co-integration outcomes are shown in Table 7.6.

From the above Bound Testing Co-integration outcomes it can be observed that there is a co-integration relationship between the variables of the domestic cocoa beans prices, the average price of processed cocoa of the competitor countries of Malaysia, the import volume of the world processed cocoa, and the dummy application of export tax on the Indonesian cocoa beans with the variables of the export volume of Malaysian processed cocoa. This can be observed from the F-statistic value that is greater compared to the four critical values.

The next phase is to estimate the ECM equation and co-integration equation. Estimation outcomes of the ECM equation are shown in Tables 7.7 and 7.8.

Table 7.7 Estimation outcomes of the ECM equation

Variable	Coefficient	Prob.
D(LN_WPB)	−0.130302	0.2217
D(PXC)	0.087323	0.1034
D(LN_WMP)	0.077997	0.4028
D(BK)	−0.013418	0.6914
CointEq(−1)	−0.511425	0.0000*

*Significant at level 1%

Table 7.8 Estimation outcomes of the co-integration equation

Variable	Coefficient	Prob.
LN_WPB	−0.254782	0.2104
PXC	0.170744	0.0870***
LN_WMP	0.152509	0.4048
BK	−0.026237	0.6909
C	9.454903	0.0005

***Significant at level 10%

Discussion

Export of the Indonesian Processed Cocoa

Estimation outcomes of the determinant model of the Indonesian processed cocoa exports as presented in Table 7.4 indicate that in the long term, variables of export tax on cocoa beans, the import volume of the world processed cocoa, and the average of processed cocoa prices of the competitor countries of Indonesia significantly affect the export volume of the Indonesian processed cocoa. The graph on the export volume development of the Indonesian processed cocoa is displayed in Fig. 7.1.

The policy on the imposition of export tax on cocoa beans in the long term will significantly affect the export volume increase of the Indonesian processed cocoa. The increased export volume of the Indonesian processed cocoa that is affected by the increased export tax on the Indonesian cocoa beans already conforms to the hypothesis presented in this research. The policy of the imposition of export tax on cocoa beans leads to a decreased cocoa beans export of Indonesia. The declined export of the Indonesian cocoa beans will cause an abundance of domestic cocoa beans raw materials that encourages investments in the national cocoa

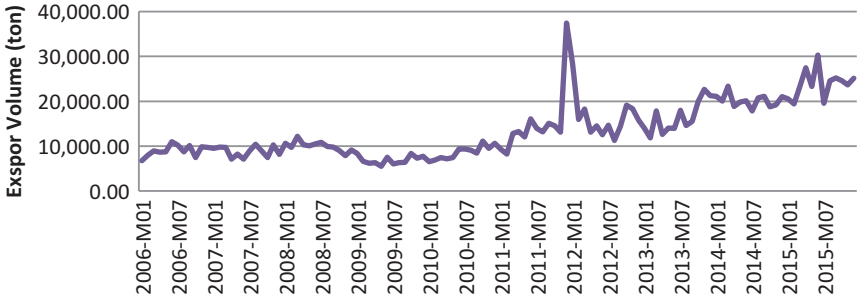

Fig. 7.1 Development of processed cocoa exports of Indonesia. Source: Authors, from trademap

processing industries. The increasing number of the Indonesian cocoa processing industries leads to increased production of processed cocoa that may affect the increase of the Indonesian processed cocoa export value. On the word of Piermartini (2004), domestic processing industries will benefit from the imposition of export tax on the input of the decreased raw material prices so that it may increase competitiveness and expansion of the international market share.

Variables of domestic cocoa beans prices in the long term do not have significant effects on the export volume of the Indonesian processed cocoa. This is assumed because the trend of the domestic cocoa prices is affected by the trends of international cocoa beans prices. As stated by Bappebti (2014), domestic prices of cocoa beans are strongly affected by international prices. Accordingly, when international cocoa beans prices decrease, it will lead to a decreased price of the domestic cocoa beans, and thereby impacting a decreased price of processed cocoa, internationally and in Indonesia.

The average price of processed cocoa in five competitor countries in the long term will have a negative and significant effect. This condition does not conform to the hypothesis presented in this research. The decline of the processed cocoa average price in five competitor countries precisely and significantly boosts the value of the Indonesian processed cocoa exports. This is allegedly caused by the increased quality of the Indonesian processed cocoa so that the demands for the Indonesian processed cocoa in the world continue to climb although the prices of processed cocoa in

the world fall. The decline in the world processed cocoa beans price is expected to be utilized by the processed cocoa user industry (food and beverage industry) to augment the demand for raw materials. This is purportedly to have boosted the export volume of processed cocoa from Indonesia.

The import volume variables of the world processed cocoa will have a positive and significant impact in the long term. This long-term condition conforms to the hypothesis of this research. The higher the import volume of the world processed cocoa, the higher the export volume of the Indonesian processed cocoa. Increased consumption of processed cocoa that is marked by the increased total value of processed cocoa of the world will encourage the export demand for processed cocoa from Indonesia.

From the estimation outcomes of the above ECM equation, the coefficient value of Error Correction Term (ECT) (-1)/CointEq(−1) is −0.23 and significant. This means that a 23% disequilibrium is occurring between the lnXIND and lnDPB, PXC, lnWMP, while the BK will be re-corrected within one period (one month). The negative coefficient mark signifies that there is a corrective mechanism for the long-term balance.

Processed Cocoa Exports of Malaysia

The determinant model on the estimation outcomes of the Malaysian processed cocoa export in the long term as presented in Table 7.8 suggests that independent variables which significantly affect the Malaysian export volume of processed cocoa are only average variables of the processed cocoa prices in the competitor countries of Malaysia. The dummy variables on the policy of the imposition of export tax on the Indonesian cocoa beans have a negative effect, yet are not significant against the export volume of the Malaysian processed cocoa. Even though the import of cocoa beans from Indonesia will decrease after the imposition of the export tax is applied to the Indonesian cocoa beans, this does not affect the Malaysian export of processed cocoa. The policy of applying the export tax on the Indonesian cocoa beans is expected not to cause an increase in the international cocoa beans prices. As said by Ali and Salim, increased prices on products imposed with the export tax in the world may occur if the export volume of

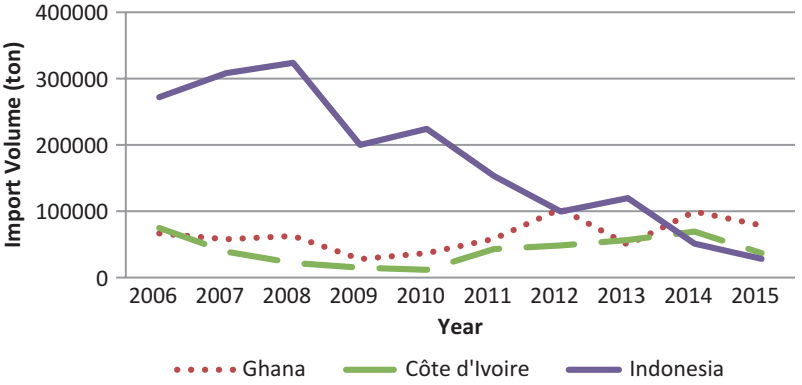

Fig. 7.2 Development of imported cocoa beans volume by Malaysia. Source: Authors, from trademap

the products imposed by the export tax drops and no other country fills the declining export volume with similar products. The decreased supply of the Indonesian cocoa beans is anticipated by Malaysia by transferring the import of cocoa beans to the Ivory Coast and Ghana, so that the supply of cocoa beans as raw materials in the Malaysian processed cocoa industries is still maintained (Fig. 7.2).

Price variables on the international cocoa beans that are applied as a proxy of the domestic processed cocoa price and import volume of processed cocoa in the world do not significantly affect the processed cocoa export of Malaysia. This outcome is different from the research of Hameed and Arshad (2014) where, in the long term, the cocoa butter price of Malaysia will lessen the export volume of Malaysian cocoa butter. The insignificant outcomes are expected because the Malaysian processed cocoa industries succeed in maintaining the stability of the processed cocoa export volume by safeguarding the selling price of their processed cocoa in the world market to remain stable, regardless of the hike in cocoa prices. Additionally, the stable export volume of the Malaysian processed cocoa is supposedly attributable to the high quality of the processed cocoa products. Hameed and Arshad (2014) add that the Malaysian cocoa butter products have a unique characteristic of a high melting point. This character is well suited to be used as a raw material for chocolate products in warm climate countries, resulting in Malaysia being the largest exporter of cocoa butter products in the world.

Variables of processed cocoa average prices in five competitor countries have a positive and significant effect against the export volume of the Malaysian processed cocoa in the long term. The average increase of processed cocoa prices in five competitor countries can be interpreted as the increase of the world export price of processed cocoa exports that may encourage Malaysian processed cocoa industries to export. The increased value of the Malaysian processed cocoa exports that is down to the increased average price of processed cocoa in competitor countries conforms to the hypothesis presented in this research.

From the estimation outcomes of the ECM equation against the model of the Malaysian processed cocoa exports, a coefficient value of ECT(-1)/CointEq(−1) is obtained at −0.51 and significant. This means that a 51% disequilibrium that occurs between lnXMAS and lnWPB, PXC, lnWMP, and BK will be re-corrected in one period (one month). The negative coefficient mark denotes that there will be a correction mechanism on the long-term balance.

Conclusion

Data analyses outcomes imply that the imposition of the export tax on the Indonesian cocoa beans significantly affect the increased value of the Indonesian processed cocoa exports in the long term. In the interim, for Malaysia, the imposition of the export tax on the Indonesian cocoa beans does not significantly affect the decreased value of the Malaysian processed cocoa exports in the long term.

The imposition of the export tax on the Indonesian cocoa beans in the long term will affect the increased value of the Indonesian processed cocoa exports. As the policy on the imposition of the tariff will significantly impact in the long term, it is best to continue the implementation of the policy. The policy on the imposition of the export tax on the Indonesian cocoa beans does not significantly affect the decreased processed cocoa export of Malaysia. Consequently, in order to be able to compete with the Malaysian processed cocoa products in the world market, the Indonesian processed cocoa industries need to continuously improve the quantity and quality of the products.

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