SOCIAL SCIENCES & HUMANITIES

Export Tax Policy in Indonesia: The Impacts on Competitiveness and Price Integration of Cocoa Products

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ABSTRACT

Until 2010, the Indonesian cocoa exports had been dominated by cocoa beans, which led the government to stimulate the processing industry by implementing cocoa export tax policy. This study aims to determine the impact of cocoa industrialisation policy on the competitiveness of cocoa beans and processed products as well as the integration of cocoa prices. The implementation of export tax policy significantly decreases cocoa bean export competitiveness, contradictory with intermediate products. Export tax policy also has no impact on the integration of domestic and international cocoa market. In developing the cocoa downstream industry, on-farm support in producing fermented cocoa beans is vital.

Keywords: Cocoa, comparative advantages, price, industry, Indonesia JEL classification F1 H2 H3 Q1

INTRODUCTION

As one of the largest cocoa bean producers in the world, the cocoa based industry is one of the priorities in the agro-industry sector in Indonesia. As such, the industry has gained government incentives for its development. The policy which is regulated by Presidential Regulation No. 28/2008, is subject to Indonesia's National Industry Policies and followed by the particular instrument which is the implementation of export tax for cocoa beans in 2010. The major consideration of this policy is to develop cocoa based downstream industry which is value added (Kemenkeu, 2010).

The importance of industrialisation policy can be explained by the trade performance and competitiveness of

Indonesian cocoa. Some studies have shown that Indonesian cocoa exports were dominated by cocoa beans which were more competitive than processed products (Hasibuan, Nurmalina, & Wahyudi, 2012a; Lubis & Nuryanti, 2011; Rifin, 2013). The policy was expected to deliver advantages to the national economy such as increasing in value-added and export competitiveness, opening employment opportunities, improving cocoa farmers' welfare, and eventually enhancing the contribution of this commodity to the economic growth (Arifin, 2013; Drajat, 2011; Lubis & Nuryanti, 2011; Sa'id, 2009; Syam et al., 2006).

The impact of these policies have been widely studied, both before and after implementation (Arsyad, Sinaga, & Yusuf, 2011; Hasibuan, Nurmalina, & Wahyudi, 2012b; Permani, 2011, 2013; Rifin, 2015; Syadullah, 2012; Tresliyana, Fariyanti, & Rifin, 2015). For example, the cocoa export tax might encourage the growth of domestic cocoa processing industry, as well as the use of domestic cocoa beans as its raw materials. Hence, it has resulted in a high demand for local cocoa beans, eventually effecting a significant decline in the export (Hasibuan, Nurmalina, & Wahyudi, 2012c; Syadullah, 2012). Furthermore, there is a possibility that Indonesia will become a net importer of cocoa beans in the future (Permani, 2013). At on-farm levels, Arsyad et al. (2011) cautions that the policy could decrease the production of cocoa beans. However, it will increase competition between exporters and domestic processing

industries that will eventually generate a positive impact on the farm gate price (Rifin, 2015). Nevertheless, some researchers believe that the market structure of cocoa beans tends to be oligopsony where traders have a dominant role in the price setting process (Ermiati, Hasibuan, & Wahyudi, 2014; Sisfahyuni, Saleh, & Yantu, 2011; Yantu, Juanda, Siregar, Gonarsyah, & Hadi, 2010).

The changes in the structure of Indonesian cocoa trade after the industrialisation policy have had an impact on export competitiveness. Tresliyana et al. (2015) examines that the Indonesian cocoa bean competitiveness is showing a declining trend, whereas the processed cocoa is becoming more competitive. In price integration context, Rifin (2015) found that the international price was transferred entirely to the domestic price. On the other hand, price or market integration could establish competitiveness (Barrett, 1996). Products which have better market integration tend to obtain higher competitiveness (Munch & Sørensen, 2000). However, there are gaps in the literature, particularly in the comparison assessment of pre and post policy, with regard to competitiveness and price integration. Thus, this study aims to determine the impact of cocoa industrialisation policy on the competitiveness of the export of cocoa beans and processed products as well as the integration of cocoa prices in the domestic and international markets.

MATERIALS AND METHODS

Data

Competitiveness analysis used annual export and import data (2001-2015) from International Trade Center and Indonesian Statistics Agency. For market integration analysis, monthly price data from January 2005 until December 2015 was used. International cocoa beans' monthly price data were collected from World Bank, while the domestic data was obtained from the Ministry of Trade. In consideration to adjustments in the international and domestic prices, this study used USD-IDR monthly exchange rate from the Bank of Indonesia.

Data Analysis

Competitiveness Analysis. The changing of Indonesian cocoa export competitiveness (cocoa bean, cocoa paste, cocoa butter, cocoa powder and chocolate) was measured by Revealed Comparative Advantage (RCA) and Revealed Symmetric Comparative Advantage (RSCA) criteria, for before and after the industrialisation policy in 2010. These criteria are commonly used to measure product competitiveness of a country in the international market (Leromain & Orefice, 2014; Mallick & Marques, 2016; Nath, Liu, & Tochkov, 2015; Stângaciu & Harja, 2013; Startienė & Remeikienė, 2014; Wahyudi, 2016). RCA is formulated as follows:

$$RCA = \frac{X_{ijt}/X_{jt}}{W_{it}/W_t}$$

X_{ijt} donates the cocoa export value from Indonesia to the world market, X_{jt} is total value of Indonesian export to the world market, W_{it} is cocoa export value from the whole world, and W_t is the total value of world export. The RCA index may have a value from 0 to infinity. If the value is between 0 to 1, it will indicate that Indonesia is not competitive for particular products.

The measurement of RCA is asymmetric, which is considered as a major problem of this index. However, a method to address this issue has been developed using RSCA (Laursen, 2015; Nath et al., 2015). So, RSCA is an improvement measurement of RCA in determining the comparative advantage of trade. RSCA is formulated as:

$$RSCA = \frac{RCA - 1}{RCA + 1}$$

In regards to determining the impact of industrialisation policies on competitiveness, t-test was performed on the RCA through 2-sample t-test, which is mathematically formulated as follows:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\left(\frac{S_1^2}{N_1}\right) + \left(\frac{S_2^2}{N_2}\right)}}$$

The value of $\bar{x}_1$ and $\bar{x}_2$ are average of RCA before and after the export tax policy, respectively while S_1 dan S_2 are standard deviation and N_1 dan N2 are total series data.

Integration of Domestic and International Market Analysis. The measurement of market integration is used to assess the price interaction in different markets (domestic

and international) where the movement of prices in each market indicates the degree of market integration (Goletti, Ahmed, & Farid, 1995). Price integration is used as an indicator of market integration through testing co-integration between the prices which is econometrically considered to be a better approach (Adiyoga, Fuglie, & Suherman, 2006). In examining the integration of the international and domestic market, it is important to analyse the integration of cocoa bean prices of both markets. The study analysed the interdependence between domestic and international markets before and after implementation of the industrialisation policy of cocoa. The method used is the vector auto-regression (VAR) and vector error correction model (VECM), adapted from Rifin (2014). VECM is used if the variable is not stationary and co-integrated at the data level (Hahn, Stewart, Blayney, & Davis, 2016). The method is suitable

to determine the interdependence of the variable time series. Data were analysed with Eviews software package.

RESULTS

Impact of Industrialisation Policy on Cocoa Trade Competitiveness

Cocoa industrialisation policies have been implemented by the Indonesian government where the main instrument is cocoa export tax. This policy has led to significant changes in the structure of Indonesian cocoa exports. In the period of 2001 to 2010, Indonesian cocoa exports were still dominated by cocoa beans. However, the opposite occurred for the period between 2011 and 2015 which showed the volume of export of processed cocoa (intermediate and final product) exceeded cocoa beans (Figure 1). Thus, in general, the implementation of tariff policy cocoa exports in 2010 increased export of processed products.
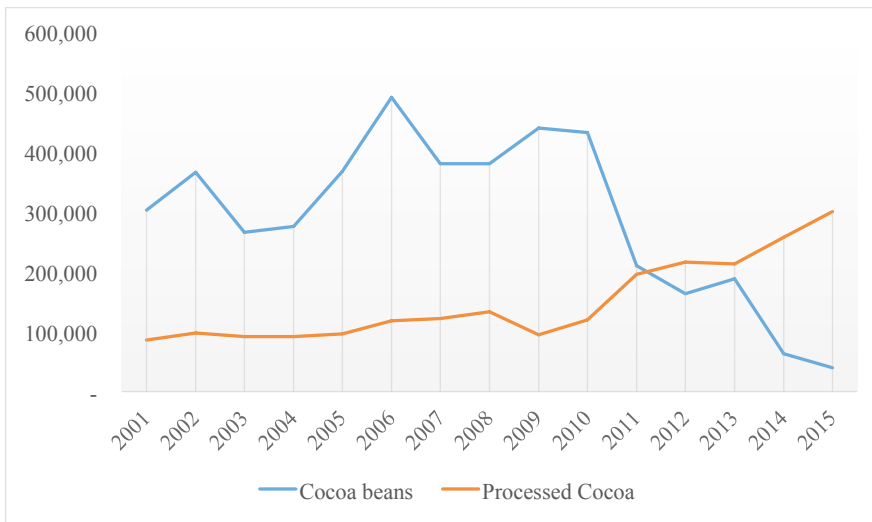

Figure 1. Cocoa bean and processed cocoa export volume, 2001- 2015

The changes in export structure had an impact on the shifting of volume and competitiveness of Indonesian cocoa exports, for both cocoa beans and processed products. In the period of 2001 to 2010, the average export volume of cocoa beans reached 369,992 tonnes per year, while in the period of 2011 to 2015, only 132,989 tonnes were exported annually. With the criteria of revealed comparative advantage (RCA), the export competitiveness of cocoa beans (4-digit HS Code 1801) experienced a significant decline after the implementation of the export tax policy. In the period of 2001 to 2014, the RCA value of cocoa bean exports was greater than 1, which indicates that Indonesia still had a comparative advantage as an exporter of cocoa beans. However, there was a significant decline in comparison to the period before and after export tax implementation. The average value of RCA cocoa beans prior to implementation of the policy was 14.55, even in 2002, it reached 22.55 (Figure 2). On the other hand, the average value of RCA after the policy only reached 4.20 (Figure 2). Statistically, RCA values before and after the application of the export tax policy was significantly different at the level of 5% (t-statistic = 7.53; p-value = 0.000) (Figure 3).
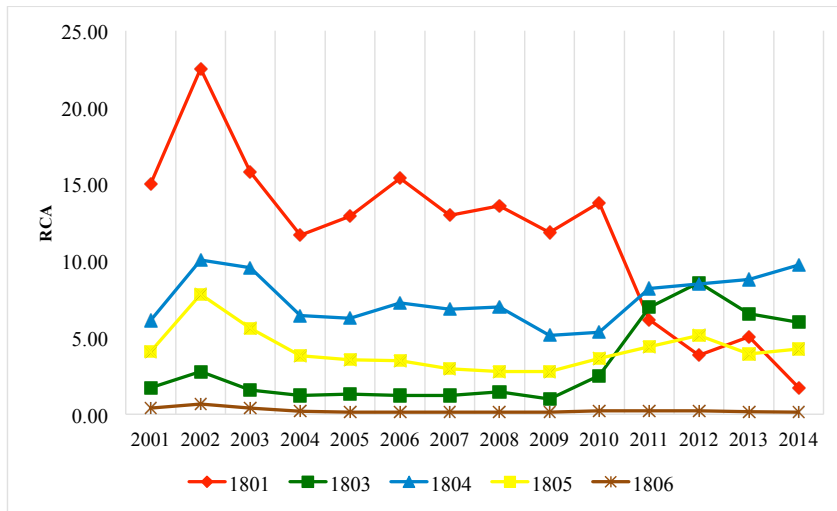

Figure 2. Dynamics of RCA for cocoa bean (1801), cocoa paste (1803), cocoa butter (1804), cocoa powder (1805), and chocolate and food preparation containing cocoa (1806) export
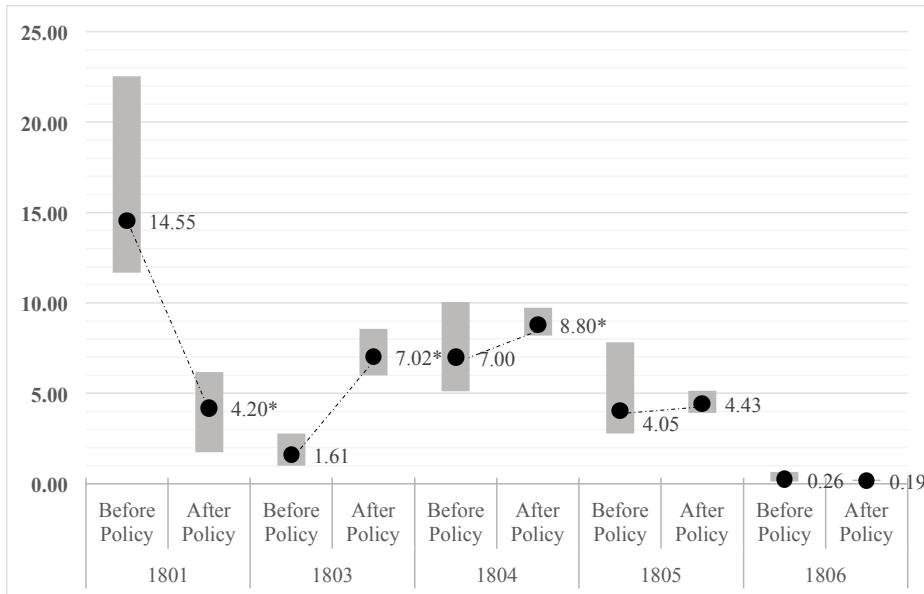
Figure 3. Box plot t-test before and after export tax policy for cocoa bean (1801), cocoa paste (1803), cocoa butter (1804), cocoa powder (1805), and chocolate and food preparation containing cocoa (1806)

The decline of cocoa bean competitiveness is inversely related to cocoa paste (HS 4-digit code 1803). Since the implementation of cocoa export tax policy, cocoa paste export as one of the intermediate cocoa products has increased significantly. The annual average volume of exports of cocoa paste from 2001 to 2010 reached only 16,091 tonnes, yet increased to 75,994 tonnes after the implementation of the policy (2011-2015). Regarding competitiveness, in the period between 2001 and 2010, the average value of RCA cocoa paste only reached 1.61; in 2009 the RCA value dropped 0.99 which indicated that the product was not competitive. On the contrary, following the policy, the competitiveness increased significantly with an annual average of 7.03 RCA. The increasing competitiveness of cocoa paste was also confirmed by statistical

tests (t-test) which significantly rose after the implementation of the policy (t-statistic = -9.26; P-value = 0.003) (Figure 3).

Cocoa butter (HS 4-digit code 1804) is another intermediate product of cocoa which has the largest proportion of the Indonesian export volume of processed cocoa. The cocoa butter industry had developed well before the introduction of the export tax policy, thus further grew after its implementation. As shown by the average volume of exports of cocoa butter, from 2001 to 2010, it reached 44,345 tonnes, whereas after the policy the export volume doubled to 95,543 tonnes. In terms of competitiveness, the RCA value increased from 7.00 to 8.81 which is statistically significant at 5 percentile level. Another intermediate cocoa product, cocoa powder, also found a positive impact of the

export tax policy on export volume. This is indicated by the increase in the average annual export volume from 30.142 tonnes to 68,720 tonnes per year. Unfortunately, the competitiveness based on RCA did not see a significant improvement, even though it was still valued to have a comparative advantage (Figure 2 and Figure 3).

Chocolate and other food preparations containing cocoa (HS 4-digit code 1806) are cocoa final products. Exports of these products also increased after the implementation of the export tax policy. The average annual export volume prior to the policy amounted to 14,444 tonnes, rising to 15,976 tonnes. However, the policy has not been able to raise the competitiveness of Indonesian chocolate products. During the analysis period, the value of this product RCA never reached one which indicated

Indonesian chocolate products as not competitive, even the RCA values tended to decrease. The average value of RCA before the policy was 0.25, but subsequently fell to 1.875 (Figure 2). However, statistically, there was no significant difference at the level of 5 percentile (Figure 3).

The RCA average measurement for each product of cocoa exports showed that prior to the implementation of the export tax policy, cocoa beans had the highest comparative advantage, followed by cocoa butter, cocoa powder and cocoa paste. However, after the implementation of the policy, the largest comparative advantage was owned by cocoa butter, followed by cocoa paste, cocoa powder and cocoa beans. Meanwhile, chocolate and other food containing cocoa did not have any comparative advantage (Figure 4).
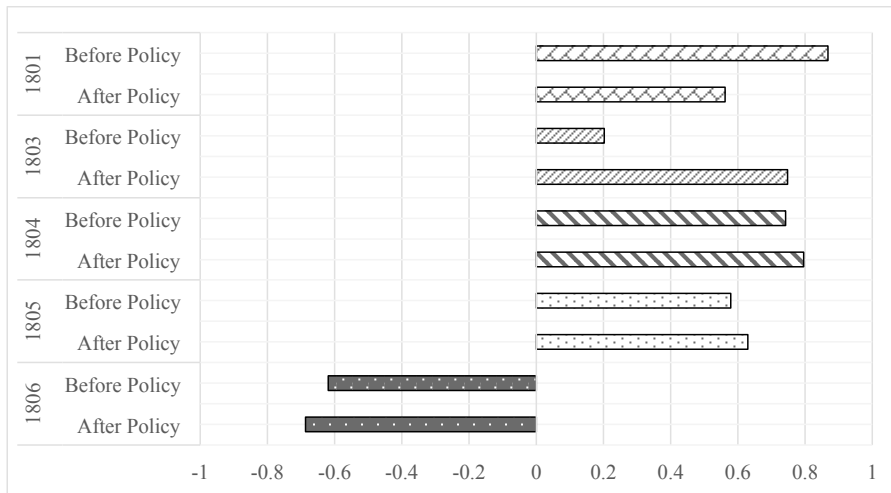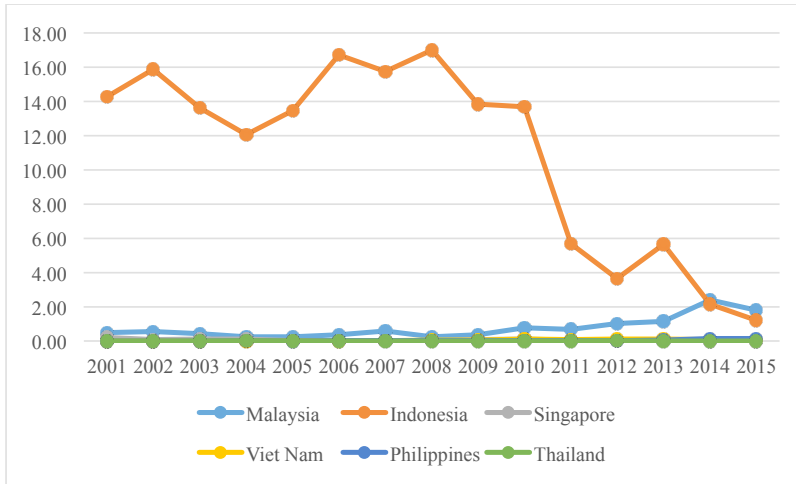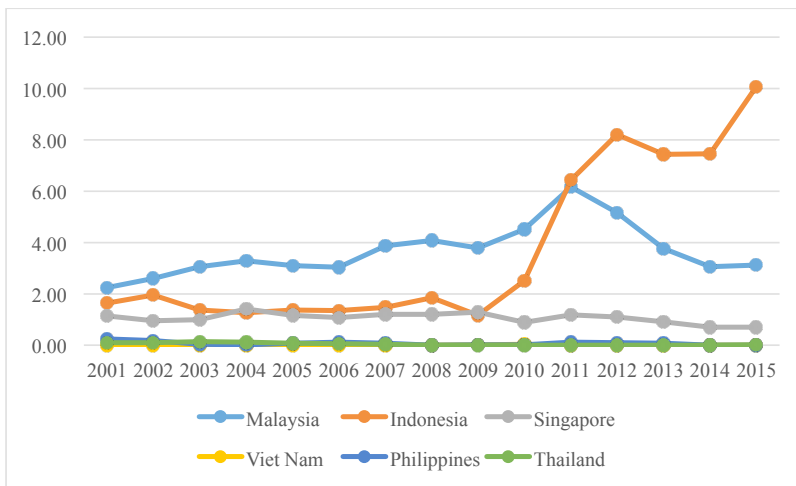

Figure 4. Average RSCA of cocoa export product (HS 4 digit) before and after cocoa export tax policy implementation

(a)

(b)

(c)

(d)

(e)
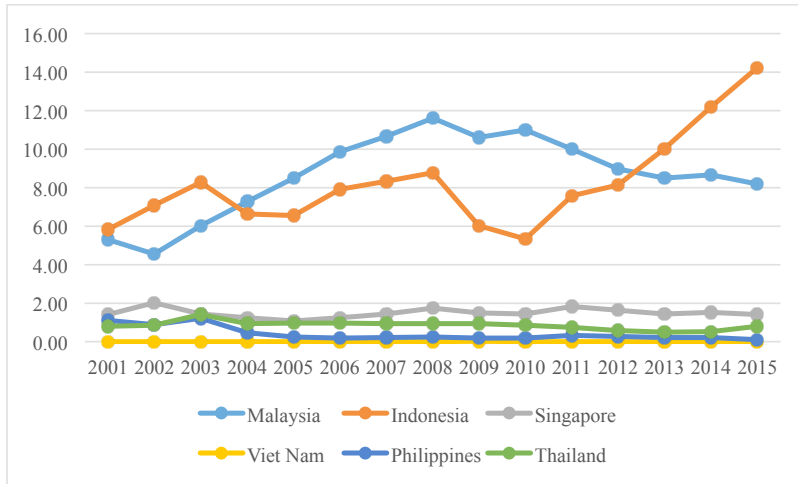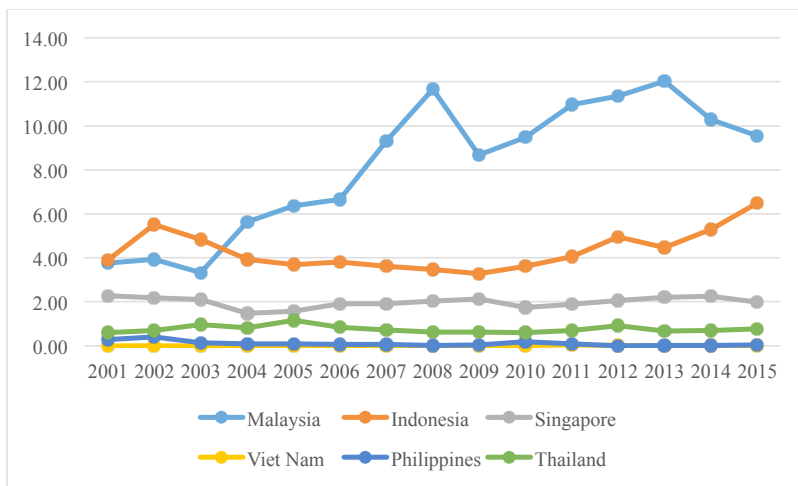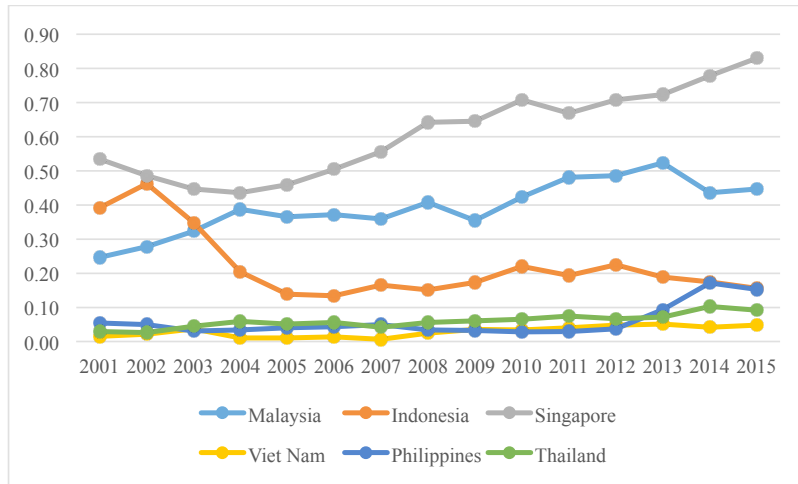
Figure 5. Dynamics of RCA for (a) cocoa bean (1801), (b) cocoa paste (1803), (c) cocoa butter (1804), (d) cocoa powder (1805), and (e) chocolate and food preparation containing cocoa (1806) between ASEAN countries, 2001-2015

Comparing the position of Indonesia with other ASEAN countries, export tax policy has changed the competition structure of cocoa and its preparation (Figure 5). Before the policy, Indonesia was very dominant as a cocoa bean exporter, but since 2014, RCA of Malaysia has been higher than Indonesia, even though its cocoa bean production is lower than Indonesia. The increasing RCA for cocoa downstream products could increase the competitiveness of Indonesia in the ASEAN region. In 2015, RCA value of Indonesia cocoa paste (1803) was the highest, that was 10.07, compared with Malaysia (3.12), and Singapore (0.71). The same pattern was also seen for cocoa butter (1804), where the RCA value of Indonesia, Malaysia and Singapore in 2015 was 14.24, 8.19, and 1.42, respectively. However, Malaysia was still the most competitive for

cocoa powder (1805), despite Indonesia's increasing competitiveness. Unfortunately, none of the ASEAN countries showed any competitiveness for cocoa final products, with the RCA index lower than 1. In comparison, , Singapore had the highest value (0.83), followed by Malaysia (0.45), Indonesia (0.18), the Philippines (0.15), Thailand (0.09), and Vietnam (0.05).

Impact of Industrialisation Policy on Domestic and International Market Integration

Unit Root Test. The variables used in this study was cocoa price in the domestic and international market. The international price was price-adjusted with IDR-USD exchange rate. Unit root test results on both variables showed that the domestic and international

cocoa prices have a unit root, or are not stationary at the data level, both before and after the implementation of cocoa export tax policy. However, on the first difference, all the variables tested were stationary at the level of 5 percentile (Table 1).

Table 1
Augmented Dickey – Fuller test for cocoa price in domestic and international market

| | Before policy | | | | After policy | | | |
| | Level | | 1st Difference | | Level | | 1st Difference | |
	t-Statistics	Prob.*	t-Statistics	Prob.*	t-Statistics	Prob.*	t-Statistics	Prob.*
PDOM	-0.809	0.810	-6.897	0.000	0.009	0.956	-9.044	0.000
PWRLD	-0.628	0.856	-6.238	0.000	0.437	0.983	-8.035	0.000

Note: Bold text means significant at 5% level

Lag Optimum Test. The test based on three criteria, Akaike Information Criterion (AIC), Schwarz Criterion (SC) and Hannan-Quinn Criterion (HQ), indicates that optimal lag was achieved at lag 1, both before and after cocoa industrialisation policy (Table 2). So, lag 1 was used in the VAR model.

Table 2
VAR Lag optimum test result

| Lag | Before policy | | | After policy | | |
	AIC	SC	HQ	AIC	SC	HQ
0	36.524	36.599	36.553	37.069	37.141	37.097
1	33.438*	33.663*	33.524*	33.313*	33.530*	33.397*
2	33.511	33.886	33.654	33.3156	33.677	33.4556
3	33.502	34.028	33.704	33.348	33.855	33.5445
4	33.560	34.235	33.818	33.452	34.103	33.704
5	33.701	34.527	34.018	33.440	34.236	33.748
6	33.602	34.577	33.976	33.491	34.431	33.856
7	33.577	34.703	34.009	33.603	34.688	34.024
8	33.717	34.992	34.206	33.668	34.898	34.145
9	33.771	35.197	34.317	33.723	35.097	34.256
10	33.878	35.454	34.482	33.606	35.125	34.194

Note: AIC = *Akaike Information Criterion*
SC = Schwartz Criterion
HQ = Hannan-Quinn Criterion
* indicates lag order selected by the criterion

Price Co-Integration. Co-integration test for domestic and international prices was conducted by Johansen Co-integration Test with specification models 'no deterministic trend' and lag interval 1, both before and after implementation of the export tax policy. Max-Eigen Statistics criteria shows that in each tested period (before and after implementation of the policy), there was one co-integration equation of domestic and international prices at the level of 5 percentile in the long term (Table 3). The existence of co-integration indicates that in the formation of domestic cocoa prices, world cocoa prices are used as a reference.

Table 3
Co-integration test between cocoa price in domestic and international market

Hypothesised No. of CE(s)	Eigenvalue	Max-Eigen statistic	0,05 Critical value	Prob.**
------------ Before Policy ------------				
None *	0.245	17.424	15.892	0.028
At most 1	0.029	1.816	9.164	0.814
------------ After Policy ------------				
None *	0.275	21.259	15.892	0.006
At most 1	0.017	1.123	9.1645	0.935

Note: * Max-eigenvalue test indicates 1 cointegrating equation(s) at the 0.05 level

Co-integration of domestic and world cocoa prices is also evidenced from the equation estimation of vector error correction model, before and after policy implementation (Table 4). Before implementing export tax policy, the increase in world cocoa prices by 1%, boosted domestic cocoa price of 0.9683%. Meanwhile, after the policy was in practice, the increase in world cocoa price of 1% was only responded with an increase in the domestic price of 0.7678%.

Table 4
VECM Estimations, before and after Export Tax Policy Implementation

Co-integrating equations	Coefficient	Standard error	t-statistics
PWRLD1(-1)	0.968	0.020	47.202*
PWRLD2(-1)	0.768	0.019	39.951*

Notes: *) Significant at 5% level

DISCUSSION

With the RCA and RSCA criteria, it can be determined that the application of cocoa export tax policy as the main instrument for the government to develop the cocoa industry was able to encourage growth of intermediate cocoa products such as cocoa paste, cocoa butter and cocoa powder. The policy also increased the competiveness of Indonesian intermediate products among ASEAN countries. Meanwhile, competitiveness of final products (chocolate and other food preparations containing cocoa) remained unchanged. This means that the policy was only able to encourage the cocoa export structure of raw materials into intermediate products. The domination of intermediate product exports indicates that the added value derived from the cocoa industry development policy was lower than projected. In line with the assertion made by Liefert and Westcott (2016), export tax policy could give an advantage for certain economic groups, such as downstream industry. On the other hand, there was an increase in the volume of import of chocolate and other food preparations containing cocoa. During the period between 2010 and 2015, there was an annual increase of 21.15% for imported chocolate and other cocoa containing food preparations. In tandem, its yearly exports decreased by 3.78%, thus, implying a rise in domestic chocolate consumption. However, this opportunity has not been utilised by the domestic industry in the manufacturing of final products, because they are still focused on producing intermediate products.

Other facts known from the results of this study indicate that export of Indonesia processed cocoa is dominated by cocoa butter which can be produced using raw materials of non-fermented cocoa beans. This can be considered as a consequence of at least three factors. Firstly, Indonesia cocoa beans production is mostly in non-fermented cocoa bean forms (Hasibuan, et al., 2015; Perdew & Shively, 2009). Secondly, Towaha, Anggraini, and Rubiyo (2012)'s study revealed that the cocoa bean fermentation process does not affect the quality of the cocoa butter. Thirdly, one of the advantages of Indonesian cocoa beans is its high butter content (Neilson, 2007). However, Neilson (2007) believes this may cause Indonesian cocoa to relatively have limited product diversification in the world market. In addition, the effort to increase cocoa paste and cocoa powder production is restricted by the availability of fermented beans. On the other hand, attempts to import fermented cocoa beans is less profitable because it is subject to 5% import duty. Previous studies showed that cocoa bean fermentation process is essential to produce high quality of cocoa paste and cocoa powder (Joel, Pius, Deborah, & Chris, 2013; Towaha et al., 2012). In addition, in producing good quality chocolate, raw material of fermented cocoa beans is essential (Lima, Almeida, Nout, & Zwietering, 2011; Misnawi & Ariza, 2011). Thus, the low production of fermented cocoa beans has been the cause of undeveloped chocolate industry in Indonesia.

There is a significant opportunity for improving the quality of cocoa beans domestically through fermentation process. The main problem lies in the reluctance of farmers to produce fermented cocoa bean due to the very low price incentive compared with non-fermented cocoa beans (Drajat, 2011; Hasibuan et al., 2015). Through the profits earned from export tax policy, the domestic cocoa processing industry should be able to provide attractive price incentives for farmers to produce fermented cocoa beans (Listyati, Wahyudi, & Hasibuan, 2014). Farming institutions need to play a more effective role to strive for higher price for better quality (Hasibuan et al., 2015). In turn, this will encourage improvement in the quality of national cocoa beans as well as increase farmers' income while supporting the development of the national cocoa industry to be more value-added and competitive (Hounkonnou et al., 2012).

As stated by Martin and Anderson (2011), export restriction policy, such as export tax, has an impact on price surge and prevents farmers to obtain higher world price (An, Qiu, & Zheng, 2016). For example, the government will raise export tax to reduce the domestic price as a response to increasing international price. On the other hand, farm level prices tend to show asymmetric price transmission, where they are likely more reactive to price decline than rise (Hahn et al., 2016). These findings reveal that the implementation of cocoa bean export tax policy since April 2010 has not made an impact on the integration of domestic market and the world market.

The formation of domestic prices of cocoa beans is reliant upon international prices as reference. This integration occurs because the disclosure of information price of cocoa is good enough. The results of the study by Rifin (2015) also showed that farmers obtain pricing information from exporters based on reference price of the New York Board of Trade (NYBOT). Matous, Todo, and Pratiwi (2015) believe that the ownership and mobile phones can help farmers to acquire pertinent pricing information so as to avoid dishonesty in pricing practice, as occurs in Ghana where buyers do not reward farmers with the true value of cocoa (Peprah, 2015).

In the case of Indonesia, however, export tax caused a lower price transmission after application of the policy, which is indicated by a lower coefficient of co-integrating estimation. This might be due to tariff scheme for cocoa export which follows the fluctuation in international price. Permani (2013) estimated that export tariff implemented by the government was higher than the optimal rate, causing the competitiveness of cocoa beans to decrease significantly, even lower than Malaysia. This finding was previously supported by Barrett (1996), and Munch and Sørensen (2000), where lower market integration decreased competitiveness. Hence, it needs to be considered that export tax is not a single instrument to spur the development of an industry. Yilmaz (2006) reminds that export tax should be maximised to increase the welfare, particularly for countries which have significant market power such as Indonesia. It is important to

consider that cocoa farming can be a crucial strategy to increase income growth for poor rural farmers (Arsyad & Kawamura, 2011; Klasen, Priebe, & Rudolf, 2013). In addition, Narayanan and Khorana (2014) believe that the mobilisation of production factors and technologies would be able to increase expansion for process industries. Hence, there are other alternative strategies to consider for industrialisation, apart from export duty for raw materials.

CONCLUSIONS

Government policies in developing downstream cocoa industry by implementing export tax instrument since 2010 have been able to improve the performance of cocoa processing industry significantly. With regards to the structure and competitiveness of exports, the policy was able to drastically suppress cocoa bean exports and increase the export of processed cocoa products. In addition, export competitiveness of cocoa beans and processed cocoa, particularly intermediate products (cocoa paste, cocoa butter and cocoa powder) experienced opposing trends. The integration of the domestic and the world cocoa market did not change after the implementation of the policy. However, the policy was an advantage to the domestic processing industry in the acquisition of raw materials for cocoa beans. This benefit should be shared with cocoa farmers, particularly in improving the quality of cocoa through fermentation process by providing incentives for a better price. It is important to encourage farmers to produce fermented cocoa beans, and also

to stimulate the development of chocolate industry.

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