



Impact of Non Tariff Policy on Cocoa Export Performance of Indonesia

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Abstract

Indonesia is a developing country that adopts the open economic system with international trade activities (export-import) as one of its economic growth keys. Each country requires trade policies to protect their domestic economic from the negative impact of the high competition of international trade. As an exporter country, Indonesia considers import trade policies that could be divided into two groups, namely tariff policy and non tariff policy that well known as tariff and non tariff barriers. Non tariff policy applied by importing country is considered as one of the problems in the development of Indonesia's cocoa export. The reserach aims at the impact analysis of non tariff policies on the performance of Indonesia's cocoa export. This research uses series data of 1989-2014 with simultaneous equation model consisted by 20 structural and 9 identity equations estimated by 2SLS (*Two Stage Least Squares*) method. The research revealed that the application of non tariff policies by Malaysia and US has its impact to decrease the total export of cocoa beans from Indonesia (S1 and S2). Reversely, when each importing country remove their respective non tariff policy, the total export of cocoa beans from Indonesia would increase (S3 and S4). The combination of non tariff policy, applied by Malaysia and removed by US, would significantly increase the cocoa beans export to US compared to the decrease of that of to Malaysia (S6). The decrease of cocoa beans export to importing country due to application of non tariff policy could be resolved by improving the quality of the product and through some negotiations.

Keywords: cocoa; export; non tariff policy; impact.

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1. Introduction

Indonesia is the agrarian country with agricultural sector as the main sector that plays a very important role in the country's economic growth. Agricultural sector is the main source for staple foods, a sector for job opportunity, and source of government income through export trade activities. Agricultural sector is consisted by 4 sub sectors, namely food, plantation, horticulture, and livestock [7]. Plantation sub sector contributes the third significant export values following food crops and fisheries [3]. The main plantation crops that contribute positively are palm oil, rubber, coffee, cocoa, and coconut. Cocoa is one of the important plantation crops that perform superior role in Indonesia's economy [6].

Indonesia is a developing country that adopts the open economic system. Export and import trade activities are considered as one of its economic growth keys. The main destination country of cocoa beans export from Indonesia in 2015 is Malaysia with export volume amounted to 105.25 thousand ton (US\$ 300.18 million). The next main destination countries are US, Germany, China, Netherlands, Spain, India, Australia, Philippines, and Thailand [10]. There are two reasons a country involve in international trade activities. First, each country has its own characteristics and countries have its own differences. A state is like an individual that could obtain benefits from the diversity of countries through several agreements to achieve certain level of things. Second, a country create trade activities to achieve an economic scale of production. If each country only produce several type of products, this country could produce a larger amount of such products and more efficient compared to that of a lot of required type of products [9]. Although Indonesia is an open economic country, however, it does not mean that Indonesia allow free movement of products like in Singapore, free flow, in and out of products. Trade policy is required by each country to protect the country's economic interest from the negative impact of competition of global trade. Trade policy could be applied in export and import activities. As an exporter country, Indonesia should face import policies, and these policies could be divided into two groups, namely tariff and non tariff policies that also well known as tariff and non tariff barriers.

Non tariff barrier is a constraint on products flow to a country due to actions other than the application of tariff for certain. Government interventions through other policy instruments include export subsidy, import quota, use of local contents, and other technical barriers. Technical constraint is one of non tariff barriers applied by a country to protect the country's domestic interests. Technical barriers could be in the form of regulations and health and sanitation quality standard, safety, rules and industrial standard, and regulation on labelling and packaging. Technical barriers applied by importer countries on export products from exporter countries could be in the form of, among others, inspection to prevent from micro organism contaminations, such as worm, termite, and the others that could destroy agriculture of the importer countries, quality standard application and technical standard (cleanliness, aroma, color, packaging technique, dangerous contents such as pesticide, herbicide, insecticide, and others) at which its applications may be differ from one country to another. Non tariff barriers basically aimed at holding the market access to exporter countries. Non tariff barriers means to control the quantity of certain export products so that internally the exporter countries could reduce the export share and in turn could reduce the producer's income of the export products. The main non technical barriers for cocoa in several countries is the discrimination of tax in marketing and industry [4].

Many studies have been conducted using a number of methods, on trade policies barriers and its impact on exports for Indonesia's products in trade partner's countries using a number of methods, models, and indicators. Among the others, indicators used to measure trade impacts are Trade Restrictiveness Index (TRI), Overall Trade Restrictiveness Index (OTRI), and Market Access Overall Trade Restrictiveness Index (MA-OTRI). Meanwhile, to identify and quantify non tariff barriers, Trade Coverage Ratio (TCR) and The Frequency Index (TFI) models were used. All of the study results on this issue revealed non tariff barriers contributes additions at about 70 percent on trade barriers originated by tariff and reduce the competitiveness and its level of trade [14]. The application of tariff would not obstruct agricultural exports from Africa, however, non tariff barriers in the form of standardization, sanitary and phytosanitary and the other technical barriers should hold up the Africa's export performance to US and EU. The Gravity Model approach was used to analyze the impact of non tariff barriers on export performance [8]. The limitation of this research is that the cocoa beans were not differentiated based on its quality. No further study has been conducted to find out any information whether the quality of local cocoa beans are equal with that of the imported one. The cocoa beans data used in this research are those with HS 1801 code (cocoa beans, whole or broken, raw or roasted). The processed cocoa only especially used as intermediate product, namely cocoa paste (HS 1803). Demand data of cocoa beans by paste industry are assumed the same amount as that of domestic supply. The non tariff policy used in this research only the dummy variable since no data available for the volume of exported cocoa beans which are affected by the non tariff barriers policy applied by the importing countries. Non tariff policy applied by importing country would be one of the problems in efforts to develop cocoa export from Indonesia. How large would be the impact of non tariff policy application on the performance of Indonesia's cocoa export would need further analysis. Based on the above mentioned background and problems, the objective of the study is to analyze the impact of non tariff barriers of the importing countries on the performance of Indonesia's cocoa export.

2. Materials and Methods

2.1. Data sources, concept and measurement

Data used in this study were those yearly-based secondary data in the period of 1989-2014. Data and information were obtained from the Central Statistic Agency (BPS); Directorate General of Plantation, Indonesia's Ministry of Agriculture; Bank of Indonesia (BI); World Bank; Indonesia's Ministry of Trade; Indonesia's Ministry of Industry; Center for State Income Policy, Agency for Fiscal Policy, Ministry of Finance; Indonesia's Cocoa Association (ASKINDO); Indonesia's Cocoa Industry Association (AIKI); Food and Agriculture Organization Statistics (FAOSTAT); United Nations Commodity Trade Statistics Database (UNCOMTRADE); The International Cocoa Organization (ICCO); United States Department of Agriculture (USDA); and World Trade Organization (WTO).

2.2. The model and procedure for analysis

The research model was designed in the form of simultaneous equation system. Model structure was formed in two blocks, namely block of Indonesia's cocoa beans (production and trade), and block of world cocoa beans. Production block was differentiated based on type of plantation business, i.e., smallholders plantation, private plantation, and state plantation. Trade block was divided based on main export destination countries, i.e.,

Malaysia, US, and Singapore. Assumptions used on cocoa beans demand by domestic pasta industry would be the same amount of Indonesia’s cocoa beans supply. The world cocoa beans block was used to understand the conduct of the export country competitors, namely Ivory Coast and Ghana and to study the conduct of main importers, namely The Netherlands, US, Germany, Malaysia, and Belgium. Dummy variabels were used to see the impact of non tariff policy. Dummy = 1, if there is an application of non tariff policy (application) and Dummy = 0, if there is no non tariff policy applied (removal). The non tariff policy in this paper is referred to Sanitary and Phytosanitary (SPS) and Technical Barriers to Trade (TBT). Non tariff policy of importing countries simulated in this study are Malaysia and US.

Table 1 indicates the type and number of non tariff policy applied by Malaysia, US, and world during the period of 1989 to 2014. This information is useful as the determination basis of simulation for non tariff barriers applied by Malaysia and US.

Table 1: Type and number of non tariff policy applied by Malaysia, US, and world, 1989-2014

Country	SPS	TBT	Quota	Export Subsidy	Total
Malaysia	3	2	0	0	5
US	14	56	0	0	70
World	230	373	43	4	650

Source: WTO, processed

The model identification is required before carrying out the estimation of the model [1,5]. Cocoa trade models consisted by 29 equations (G), namely 20 structural equations and 9 identity equations. Endogenous variables are 29 and predetermined variables are 54, and therefore, the total variable in the model is 83 (K). The maximum total of variables (endogenous and exogenous) in an equation is 8 (M). The results of model identification is $(83-8) > (29-1)$. All of the structural equations in the model are overidentified. The results of model identification of cocoa trade meet the requirements to apply model identification using 2SLS (Two Stage Least Squares) [13]. Model validation is applied to see whether the validity of the model is sufficiebt to apply simulation of policy impact alternatives. Validation criteria used in this model is RMSPE (Root Mean Square Percent Error) and U-Theil (Theil’s Inequality Coefficient). The simulation scenario in this model is the historical simulation period of 2008-2014.

3. Results

3.1. Result for model validation

A good model is a model with smaller values of RMSPE and U-Theil results. The coefficient value of U-Theil (U) is in the range between 0 and 1 [12]. Table 1 shows the results of model validation of cocoa trade, i.e., 86.2% of the variables with RMSPE values below 30% and the value of 13.8% of the validation above 30%. This indicates that during the period of historic simulation, i.e., 1989 to 2014, the value of endogenous variables

prediction is very close with the actual value. The U-Theil value of the model shows that 100% of the equations have values below 0.2. This implies that the model is sufficient to carry out simulation of non tariff policy impact on the export performance of Indonesia's cocoa beans.

Table 2: Validations result of Indonesia's cocoa trade model

No	Variable	Unit	Actual	Prediction	RMSPE	U-Theil
1	Cocoa area of smallholder	ha	861,501.00	897,632.00	6.64	0.03
2	Cocoa area of private estate	ha	31,185.10	27,446.50	16.69	0.09
3	Cocoa area of government estate	ha	30,349.00	26,827.40	16.89	0.08
4	Total cocoa area of Indonesia	ha	923,035.00	951,906.00	5.57	0.03
5	Cocoa productivity of smallholder	tonne/ha	0.82	0.84	6.40	0.03
6	Cocoa productivity of private estate	tonne/ha	0.94	0.92	6.40	0.03
7	Cocoa productivity of government estate	tonne/ha	0.92	0.87	9.28	0.05
8	Cocoa production of smallholder	tonne	707,315.00	754,642.00	8.75	0.04
9	Cocoa production of private estate	tonne	29,415.90	25,521.20	20.37	0.11
10	Cocoa production of government estate	tonne	28,000.10	23,725.10	21.74	0.11
11	Total cocoa production of Indonesia	tonne	764,731.00	803,889.00	7.18	0.03
12	Indonesia's export of cocoa beans to Malaysia	tonne	142,598.00	156,283.00	49.89	0.08
13	Indonesia's export of cocoa beans to US	tonne	40,091.00	43,211.70	5156.50	0.15
14	Indonesia's export of cocoa beans to Singapore	tonne	38,685.70	34,983.80	73.91	0.15
15	Total Indonesia's export of cocoa beans	tonne	283,874.00	281,328.00	41.80	0.07
16	Total Indonesia's import of cocoa beans	tonne	52,066.30	53,957.80	13.84	0.06
17	Domestic supply of cocoa beans	tonne	532,923.00	576,518.00	18.22	0.08
18	Demand of cocoa beans by Indonesia pasta industry	tonne	545,847.00	535,272.00	11.34	0.06
19	Domestic price of cocoa beans	tonne	1,879.60	1,444.80	25.45	0.16
20	Export of Ivory Coast cocoa beans	USD/tonne	913,617.00	928,211.00	11.54	0.05
21	Export of Ghana cocoa beans	tonne	505,439.00	509,258.00	27.04	0.10
22	Total export of world cocoa beans	tonne	3,141,140.00	2,970,319.00	6.77	0.04
23	Import of Netherlands cocoa beans	tonne	709,037.00	714,806.00	6.50	0.03
24	Import of US cocoa beans	tonne	425,441.00	435,062.00	7.50	0.03
25	Import of Germany cocoa beans	tonne	350,561.00	343,031.00	12.41	0.07
26	Import of Malaysia cocoa beans	tonne	344,929.00	398,357.00	20.60	0.09
27	Import of Belgium cocoa beans	tonne	195,851.00	204,894.00	17.41	0.08
28	Total import of world cocoa beans	tonne	3,142,236.00	3,214,459.00	4.19	0.02
29	World price of cocoa beans	tonne	2,584.90	2,457.30	16.04	0.08

3.2. Development of Indonesia's cocoa export

Figure 1 indicates that the export volume of Indonesia's cocoa beans to Malaysia is higher since 2002 compared to that of to US and Singapore. There is a shift of destination countries from US and Singapore to Malaysia for

highest export volume of Indonesia's cocoa beans. This shift condition could be caused by the number of non tariff barriers applied by US on Indonesia's cocoa beans as shown in Table 1.

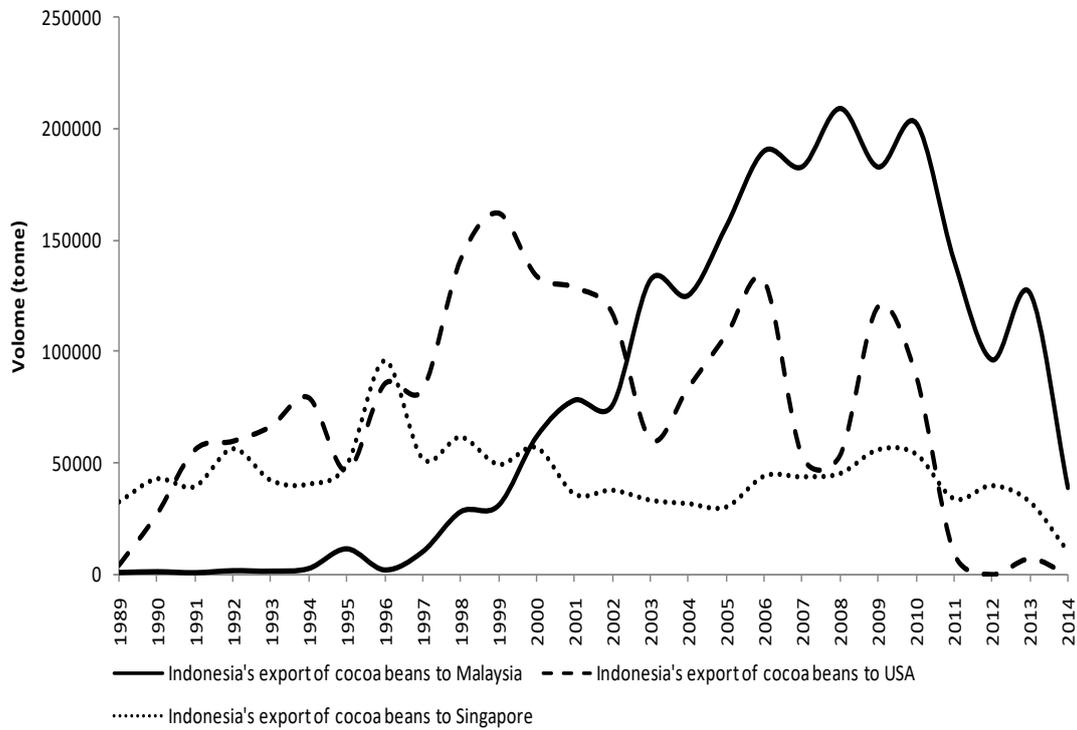


Figure 1: Development of Indonesia's cocoa beans export to Malaysia, US, and Singapore

The export volume of Indonesia's cocoa beans to Singapore since 1989 to 2014 tend to stable because Singapore does not apply non tariff barriers. During the period of 2010 to 2014, the export of Indonesia's cocoa beans to Malaysia, US, and Singapore have decreased. This is due to the efforts of the government to further develop local cocoa processing industry. The Government of Indonesia applies export tax policy on Indonesia's cocoa beans since April 2010 that reduce the amount of Indonesia's cocoa beans export to the three importer countries. The change of the cocoa beans export direction is illustrated in Figure 2.

The cocoa beans that not exported is used to support domestic industry. The Government of Indonesia continue to improve the performance of local processing industry of cocoa beans. Figure 2 illustrates the development of cocoa beans export, pasta, butter dan powder of Indonesia to world markets. The export of Indonesia's cocoa beans was decreased since 2010.

However, the export of pasta, butter, and powder is increasing. Looking thoroughly to the current dynamic situation, Indonesia has been able to achieve certain level of development of domestic cocoa industry. The focus of cocoa export of Indonesia has been shifted from previously dominated by cocoa beans to processed cocoa as intermediate products. The Government of Indonesia could see the result of the change of cocoa policy by looking at the beginning revival of domestic cocoa industry development.

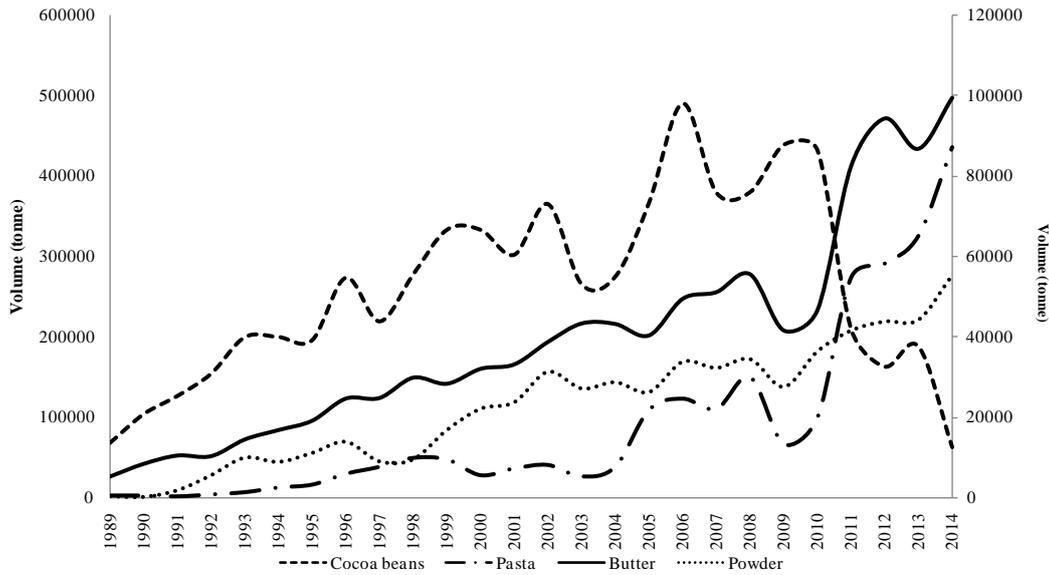


Figure 2: Development of Indonesia's cocoa beans and processed

3.3. Impact of non-tariff policy of Malaysia and US on Indonesia's cocoa export performances

Table 3 shows if in the period of 2008-2014 non-tariff policy was implemented by importing countries, i.e., Malaysia and US, Indonesia's cocoa bean export to those countries were decreasing. Most decrease was observed on export to Malaysia, namely 46.76% (S1) and US as many as 28.02% (S2). During the said period, most of Indonesia's cocoa was exported to Malaysia and US. Indonesia's cocoa is dominated by non-fermented bean. On the other hand, most Europe's cocoa import was the fermented bean.

Impact of Indonesia's cocoa bean trade regime is the applied non-tariff policy lead to decreased Indonesia's cocoa import. Cocoa bean supply in the domestic market increases and it causes lower domestic cocoa bean price. Domestic cocoa bean demand improves as its price decreases. Improved cocoa bean demand makes imported cocoa bean expands. Indonesia's cocoa bean production, as the non tariff policy applied by Malaysia and US, becomes lower along with cocoa area shrink caused by cheaper domestic cocoa bean price. Indonesia's cocoa bean yield also decreases such that overall cocoa production gets lower.

World's cocoa export decreases as Indonesia's cocoa export declines. Decreased world's cocoa export leads to improved world's cocoa price. World's cocoa bean import demand shrinks as cocoa bean price gets more expensive. Decreased Indonesia's coco bean export its causes export value leading to deficit trade balance. Applied non-tariff policy is one of factors affecting Indonesia's cocoa bean export decline. The Netherlands applies most of non-tariff import policy in Europe [11]. Non-tariff policy also constraints other commodities export. Currently, Indonesia's export performance is threatened by non-tariff policy applied by some developed countries. It implies that promising-commodities export to some countries will be unsuccessful. Based on crude palm oil (CPO) research results, the dominant policy affecting Indonesia's CPO commodity trade is TBT. US is the export destination country applies most non tariff policy [2].

Simulations 3 (S3) and 4 (S4) show non tariff policy removal applied by Malaysia and US during the said period. If Malaysia only removed non tariff policy, Indonesia’s cocoa bean export to Malaysia will improve by 13.22%. If US solely removed non-tariff policy, Indonesia’s cocoa bean export will increase by 147.05%.

Table 3: Impact of non-tariff policy of Malaysia and US on Indonesia’s cocoa export performances

Name of variable	Unit	Base Value	Simulation result (%)			
			S1	S2	S3	S4
1 Cocoa area of smallholder	ha	897,632.00	-0.1599	-0.0373	0.0307	0.1319
2 Cocoa area of private estate	ha	27,446.50	-4.4989	-1.0741	0.8296	3.6846
3 Cocoa area of government estate	ha	26,827.40	-2.6350	-0.6318	0.4812	2.1549
4 Total cocoa area of Indonesia	ha	951,906.00	-0.3548	-0.0839	0.0665	0.2913
5 Cocoa productivity of smallholder	tonne/ha	0.84	-1.1307	-0.2618	0.2142	0.9284
6 Cocoa productivity of private estate	tonne/ha	0.92	-1.8866	-0.5016	0.2835	1.4831
7 Cocoa productivity of government estate	tonne/ha	0.87	-1.3919	-0.3451	0.2416	1.1158
8 Cocoa production of smallholder	tonne	754,642.00	-1.2785	-0.2959	0.2405	1.0510
9 Cocoa production of private estate	tonne	25,521.20	-5.7505	-1.4733	0.9710	4.7925
10 Cocoa production of government estate	tonne	23,725.10	-3.5844	-0.9155	0.5985	2.9500
11 Total cocoa production of Indonesia	tonne	803,889.00	-1.4885	-0.3515	0.2742	1.2257
12 Indonesia’s export of cocoa beans to Malaysia	tonne	156,283.00	-46.7620	-0.4959	13.2292	1.4672
13 Indonesia’s export of cocoa beans to USA	tonne	43,211.70	-1.9166	-28.0204	0.2890	147.0581
14 Indonesia’s export of cocoa beans to Singapore	tonne	34,983.80	-0.0878	0.0106	0.0452	0.1361
15 Total Indonesia’s export of cocoa beans	tonne	281,328.00	-26.2825	-4.5783	7.3988	23.4196
16 Total Indonesia’s import of cocoa beans	tonne	53,957.80	0.5541	0.1440	-0.0923	-0.4654
17 Domestic supply of cocoa beans	tonne	576,518.00	10.8017	1.7574	-3.2367	-9.7626
18 Demand of cocoa beans by Indonesia pasta industry	tonne	535,272.00	1.4027	0.3329	-0.2617	-1.1512
19 Domestic price of cocoa beans	tonne	1,444.80	-12.1262	-2.2425	3.1354	10.7004
20 Export of Ivory Coast cocoa beans	USD/tonne	928,211.00	0.1271	0.0267	-0.0240	-0.0946
21 Export of Ghana cocoa beans	tonne	509,258.00	0.3641	0.0705	-0.0833	-0.2826
22 Total export of world cocoa beans	tonne	2,970,319.00	-2.3872	-0.4132	0.6790	2.1401
23 Import of Netherlands cocoa beans	tonne	714,806.00	-0.0361	-0.0029	0.0145	0.0339
24 Import of USA cocoa beans	tonne	435,062.00	-0.3335	-1.2617	0.0818	7.4707
25 Import of Germany cocoa beans	tonne	343,031.00	-0.0327	-0.0055	0.0085	0.0265
26 Import of Malaysia cocoa beans	tonne	398,357.00	-7.1366	-0.0321	2.2402	0.1004
27 Import of Belgium cocoa beans	tonne	204,894.00	-0.3285	-0.0722	0.0595	0.2411
28 Total import of world cocoa beans	tonne	3,214,459.00	-0.9527	-0.1782	0.2951	1.0415
29 World price of cocoa beans	tonne	2,457.30	1.0011	0.1831	-0.2442	-0.7936
Export Value	IDR Billion		-1,706.90	-301.00	473.20	1491.40
Import Value	IDR Billion		20.20	4.10	-4.50	-16.30
Balance of Trade	IDR Billion		-1,727.00	-305.00	477.80	1507.80

Note: S1= non-tariff policy imposed of Malaysia; S2= non-tariff policy imposed of US; S3= non-tariff policy removal of Malaysia; S4= non-tariff policy removal of US.

It is possible because US is one of the biggest cocoa bean consumers in the world which will improve Indonesia’s chance to expand export to US. Non tariff policy removal conducted by Malaysia and US will enhance Indonesia’s cocoa bean export and total world’s cocoa bean will also improve. Increased world’s cocoa export will cause world’s coco-bean price lower. World’s cocoa-bean import improves as its price decreases. It will cause surplus of Indonesia’s cocoa-bean trade balance due to improved Indonesia’s cocoa-bean export value.

3.4. Impact of non-tariff policy combination of Malaysia and US on Indonesia's cocoa export performances

Table 4 indicates if non-tariff policy was implemented by both Malaysia and US. Simulation 5 (S5) shows if both Malaysia and US mutually applied non-tariff policy, Indonesia's cocoa-bean export to Malaysia and US will decrease by 47.25% and 29.93%, respectively. Total Indonesia's cocoa bean export will decrease by 30.85%. Total world's cocoa-bean export will also decline. World's coco-bean price will increase and world's cocoa-bean import will decrease. Another combination is Malaysia's non-tariff application US non-tariff policy removal (S6). It indicates that Indonesia's cocoa-bean export to Malaysia will decrease by 45.30% and its export to US will improve by 145.12%. Indonesia will export more if US does not apply non tariff policy. If Malaysia removed non-tariff policy and US applied it (S7), Indonesia's cocoa-bean export to Malaysia will increase by 12% and its export to US will decrease by 27.73%.

Table 4: Impact of non-tariff policy combination of Malaysia and US on Indonesia's cocoa export performance

Name of variable	Unit	Base Value	Simulation result (%)			
			S5	S6	S7	S8
1 Cocoa area of smallholder	ha	897,632.00	-0.1973	-0.0279	-0.0066	0.1625
2 Cocoa area of private estate	ha	27,446.50	-5.5738	-0.8110	-0.2441	4.5139
3 Cocoa area of government estate	ha	26,827.40	-3.2676	-0.4782	-0.1506	2.6357
4 Total cocoa area of Indonesia	ha	951,906.00	-0.4388	-0.0631	-0.0175	0.3577
5 Cocoa productivity of smallholder	tonne/ha	0.84	-1.3925	-0.2023	-0.0476	1.1426
6 Cocoa productivity of private estate	tonne/ha	0.92	-2.3773	-0.3926	-0.2181	1.7666
7 Cocoa productivity of government estate	tonne/ha	0.87	-1.7485	-0.2761	-0.1150	1.3574
8 Cocoa production of smallholder	tonne	754,642.00	-1.5737	-0.2306	-0.0555	1.2921
9 Cocoa production of private estate	tonne	25,521.20	-7.1705	-1.1488	-0.5125	5.8030
10 Cocoa production of government estate	tonne	23,725.10	-4.4780	-0.7144	-0.3212	3.5658
11 Total cocoa production of Indonesia	tonne	803,889.00	-1.8372	-0.2742	-0.0780	1.5024
12 Indonesia's export of cocoa beans to Malaysia	tonne	156,283.00	-47.2544	-45.3072	12.7320	14.6983
13 Indonesia's export of cocoa beans to USA	tonne	43,211.70	-29.9322	145.1234	-27.7321	147.3497
14 Indonesia's export of cocoa beans to Singapore	tonne	34,983.80	-0.0763	0.0434	0.0555	0.1824
15 Total Indonesia's export of cocoa beans	tonne	281,328.00	-30.8579	-2.8728	2.8202	30.8206
16 Total Indonesia's import of cocoa beans	tonne	53,957.80	0.6985	0.0882	0.0517	-0.5575
17 Domestic supply of cocoa beans	tonne	576,518.00	12.5618	1.0281	-1.4799	-12.9968
18 Demand of cocoa beans by Indonesia pasta industry	tonne	535,272.00	1.7359	0.2507	0.0710	-1.4127
19 Domestic price of cocoa beans	tonne	1,444.80	-14.3757	-1.4120	0.8929	13.8289
20 Export of Ivory Coast cocoa beans	USD/tonne	928,211.00	0.1538	0.0326	0.0027	-0.1186
21 Export of Ghana cocoa beans	tonne	509,258.00	0.4346	0.0817	-0.0128	-0.3658
22 Total export of world cocoa beans	tonne	2,970,319.00	-2.8001	-0.2479	0.2658	2.8193
23 Import of Netherlands cocoa beans	tonne	714,806.00	-0.0389	-0.0021	0.0118	0.0485
24 Import of USA cocoa beans	tonne	435,062.00	-1.5952	7.1369	-1.1798	7.5525
25 Import of Germany cocoa beans	tonne	343,031.00	-0.0385	-0.0064	0.0029	0.0350
26 Import of Malaysia cocoa beans	tonne	398,357.00	-7.1684	-7.0362	2.2083	2.3406
27 Import of Belgium cocoa beans	tonne	204,894.00	-0.4007	-0.0874	-0.0122	0.3011
28 Total import of world cocoa beans	tonne	3,214,459.00	-1.1308	0.0887	0.1169	1.3366
29 World price of cocoa beans	tonne	2,457.30	1.1802	0.2075	-0.0651	-1.0377
Export Value	IDR Billion		-2,013.80	-184.90	173.20	1,954.70
Import Value	IDR Billion		24.30	3.70	-0.40	-20.80
Balance of Trade	IDR Billion		-2,038.00	-188.60	173.70	1,975.50

Note: S5= combination S1 and S2 (non-tariff policy imposed of Malaysia and US); S6= combination S1 and S4

(non-tariff policy imposed of Malaysia and removal of US); S7= combination S3 and S2 (non-tariff policy removal of Malaysia and imposed of US); S8= combination S3 and S4 (non-tariff policy removal of Malaysia and US).

Simulation 8 (S8) is non tariff policy removal conducted by both Malaysia and US. This scenario will enhance Indonesia's cocoa bean export to Malaysia and US by 14.69% and 147.34%, respectively. Simulations 7 and 8 show Indonesia's cocoa bean export improvement and world's cocoa bean price decrease. World's cocoa-bean import enhances as its price decreases. Indonesia's cocoa bean trade balance will increase if Malaysia and US do not apply non tariff policy. Simulations 1 to 8 indicate that non-tariff policy applied by Malaysia and US will reduce Indonesia's cocoa-bean export. Importing countries' non-tariff policy removal is possible through negotiation or through World Trade Organization (WTO) mechanism. Another measure to take to avoid non-tariff policy is satisfying the quality standard and specification established by importing countries.

4. Conclusion and Recommendation

4.1. Conclusion

Non tariff policy applied by Malaysia (simulation 1) and US (simulation 2) will results in decreased total Indonesia's cocoa-bean export leading to world's cocoa-bean export reduction and cheaper world's cocoa-bean price. Conversely, if Malaysia and US removed non-tariff policy (simulations 3 and 4), it will improve total Indonesia's cocoa bean export and it will affect total world's coco-bean export increase. Improved total world's cocoa bean export will reduce its world's price. Finally, total world's cocoa bean import will increase as its world's price decreases.

If Malaysia and US mutually applied non-tariff policy (simulation 5), total Indonesia's cocoa-bean export will shrink with biggest experienced by that of export to Malaysia. If Malaysia and US mutually removed non-policy tariff (simulation 8), it will enhance total Indonesia's cocoa-bean export with highest export increase to US. Simulations 6 and 7 indicate that US removal of non-tariff policy will improve most of total Indonesia's cocoa-bean export to US. Non-tariff application will create Indonesia's deficit cocoa-bean trade balance while non-tariff policy removal will cause Indonesia's cocoa-bean trade balance surplus.

4.2. Recommendation

Indonesia's cocoa-bean export decrease caused by trade-partner countries applying non tariff policy could be overcome through negotiation. It is also possible to resolve non-tariff policy impact through improving product quality in accordance with the standard and criteria set by the importing countries.

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