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The Potential Impact of Indonesian Beyond Cabotage Policy on Coal and Crude Palm Oil Trade

by

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Abstract

In order to increase the participation of domestic shipping industry in Indonesian foreign trade, Indonesian Ministry of Trade decided to restrict the regulation by imposing a new cabotage policy or so-called beyond cabotage policy through Indonesian Ministry of Trade Regulation No. 80 of 2018 in terms of the use of National Shipping Companies and National Insurance Companies for the export of coal and crude palm oil. However, guidelines on implementing the rules and possible exemptions have not been released and postponed until 2020 since the rules still need to be clarified. As one of world's top coal exporter and crude palm oil producer, Indonesia has risen awareness among indigenous exporters and importing countries of both products due to the plan of imposing beyond cabotage policy will also change the terms of delivery from FOB to CIF. Moreover, the exporters and importers consider that Indonesian shipping companies are not capable either from quality or quantity to serve the entire international trade freight.

This research assesses the potential impacts of the planned Indonesian beyond cabotage policy on coal and crude palm oil trade. Desk research was conducted on Indonesian coal and crude palm oil industries as well as the shipping industry that involved in transporting both commodities. To identify the position of Indonesian coal and crude palm oil exporters in global market as well as the readiness of Indonesian shipping industry to comply with the enactment of beyond cabotage policy, the competitive analysis using Porter's Five Forces model was conducted. Then, to quantitatively measure the potential economic and trade impacts of beyond cabotage policy, the GSIM model was utilized as a simulation tool.

The competitive analysis has proven that the enactment of beyond cabotage policy could increase the freight costs for shipment of coal and crude palm oil from Indonesia. This is due to lower bargaining position of Indonesian exporters over the suppliers which are the shipping companies and several factors that could arise from imposing such policy. Furthermore, changing the incoterms also could give counter-productive effects of the commodity exports as the consequence of lower bargaining position and the threats in the markets for Indonesian exporters.

Under the GSIM model two scenarios were developed based on competitive analysis conducted. On both scenarios it is clear that Indonesian coal and crude palm oil exporters will suffer the most as the consequence of higher transportation costs from Indonesia with respectively more than 2 per cent and 0.7 per cent decreased in their exports. In terms of welfare effects, Indonesian coal and crude palm oil exporters also witness significant decrease in their producer surplus with more than $90 million and $20 million respectively. Moreover, in scenario 1, the other exporting countries of coal and crude palm oil tend to gain very slightly on their exports and producer surplus from Indonesia condition, while the major importing countries witness significant loss on their consumer surplus. Under scenario 2, as the government of the other exporting countries have lowering the freight costs through subsidy to enhance their export products, those countries gain significantly on their exports and producer surplus. In addition, the loss in consumer surplus that was witnessed by the importing countries in the first scenario is significantly reduced.

Overall, Indonesian government should consider these findings before imposing the beyond cabotage policy to avoid the counter-productive effects for Indonesian coal and crude palm oil exporters.

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List of Abbreviations

APBI	: *Asosiasi Pengusaha Batubara Indonesia* Indonesian Coal Mining Association
BPS	: *Badan Pusat Statistik Indonesia* Indonesia Central Statistics Agency
CGE	: Computable General Equilibrium
CIF	: Cost, Insurance, and Freight
DWT	: Deadweight Tonnage
FOB	: Free on Board
GAPKI	: *Gabungan Pengusaha Kelapa Sawit Indonesia* Indonesian Palm Oil Association
GDP	: Gross Domestic Product
GE	: General Equilibrium
GSIM	: Global Simulation Model
INSA	: Indonesian National Ship Owner Association
ITC	: International Trade Centre
NTMs	: Non-Tariff Measures
OECD	: Organization for Economic Co-operation Partnership
PE	: Partial Equilibrium
TRAINS	: Trade Analysis Information System
UN COMTRADE	: United Nations Commodity Trade Statistics Database
UNCTAD	: United Nations Conference on Trade and Development
WITS	: World Integrated Trade Solution

Chapter 1 Introduction

Indonesia has been considered as the one of sovereign states which has effectively implement the cabotage principles in its territorial waters since it has been a significant factor in the fast pace of Indonesia's growing importance to the shipping industry in Asia and beyond (HFW, 2018). Generally, the cabotage principles require that domestic sea trade be carried out by an Indonesian shipping company, flagged in Indonesia and manned by Indonesian crew. It aims to promote the interest of Indonesian shipping industry through restriction of foreign vessels operating within Indonesian waters. According to Achmadi (2016), several advantages for Indonesia maritime industry have been obtained since the initiation of cabotage principles in 2005. For instance, the number of Indonesian fleets have increase up to 132 per cent as well as the capacity of fleet that rises up to 351 per cent.

However, as estimated by World Bank (2016), more than 90 per cent of Indonesia foreign trade is shipped with foreign flagged vessels. Therefore, in order to achieve the government's objective, Indonesian Ministry of Trade decided to restrict the regulation by imposing a new cabotage policy or so-called beyond cabotage policy through Indonesian Ministry of Trade Regulation No. 80 of 2018 in terms of the use of National Shipping Companies and National Insurance Companies for the export and import of certain goods. However, guidelines on implementing the rules and possible exemptions have not been released and postponed until 2020 since the rules still need to be clarified to avoid misconception among industry actors that might hamper the activities of export and import.

The majority of Indonesian export products are shipped under Free on Board (FOB) term while import products were under Cost, Insurance, and Freight (CIF) term. Currently, the Government of Indonesia is focusing on exploring ways to encourage the participation of locally established freight forwarders, insurance firms, and shipping companies by increasing the use of CIF for exports and FOB for imports. Considering the Ministry of Trade Regulation No. 80 of 2018 under Article 3 (1), all Indonesian importers of rice and exporters of specific products of coal and crude palm oil and will be obliged to use National Shipping Companies and use National Insurance Companies for every export activity. This beyond cabotage policy will force a change in terms of delivery from FOB to CIF for coal and crude palm oil exports as well as change in terms of delivery from CIF to FOB for rice import which in turn it will promote Indonesian flag vessels and lead to boost the Indonesian economy.

Theoretically, the shifting from FOB to CIF will allow the exporters to demand higher prices as they will organize the shipment and take responsibility of the risk further on the supply chain. Likewise, the usage of FOB term on imports could generate lower prices as the importer will organize sea transport and carry risk earlier in the supply chain. Nevertheless, shifting from FOB to CIF for exports not only has the potential to improve the balance of the services, but also raises some negative impacts on commodity market trades (World Bank, 2016).

1.1. Research Objectives

The purpose of this research is to determine and analyse the potential impacts of Indonesian beyond cabotage policy and more specifically, the policy might affect coal, crude palm oil, and rice commodities which are involved in main Indonesian bilateral trade and maritime industry as the main player within the supply chain flow

of commodities. However, this research will focus on the effects to the coal and crude palm oil commodity markets, as both commodities are the most exported products from Indonesia as well as the main consumed products worldwide.

This research therefore aims to identify the position of Indonesian coal and crude palm oil exporters in global market as well as the readiness of Indonesian shipping industry to comply with the enactment of beyond cabotage policy. In addition, this research also focuses to derive conclusions on how changing the Incoterms might affect the trade flows and welfare of respective coal and crude palm oil trading countries. These countries consist of main exporting and importing countries for both coal and crude palm oil commodities worldwide.

The scope of this research thus focusing on the competitive analysis for coal and crude palm oil exporters and Indonesian maritime industry to see the alignment between the policy enacted and current market situation and its effects to coal and crude palm oil global trade as well as the potential changes in global coal and crude palm oil trade patterns.

Correspondingly, the main research question that this research aims to answer is posed as follows:

What are the potential effects of Indonesian beyond cabotage policy for Indonesian coal and crude palm oil exports and how will these effects change the economics of global coal and crude palm oil trade?

The main idea behind this research question is that the beyond cabotage policy has the objectives to enforce the change of Incoterms from FOB to CIF for export activities and also to escalate the participation of domestic shipping companies, freight forwarders, insurance firms, and national flag vessels in international trade freight. However, the potential economic impacts for coal and crude palm oil trades are yet to be known since the policy has not yet been formalized for further assessment.

In order to sufficiently answer the main research question, there are several of sub-research questions that need to be addressed:

1. *How is cabotage policy implementation in Indonesia compared to other countries?*

2. *How is cabotage policy in Indonesia developed into beyond cabotage policy?*

3. *What are the current coal and crude palm oil trade flows between Indonesia and other countries?*

4. *What is the current state of Indonesian coal and crude palm oil shipments for export in terms of operation and competitiveness?*

5. *What is the position of Indonesian coal and crude palm oil exporters in global market?*

6. *What are the impacts of changing the FOB to CIF incoterms on coal and crude palm oil freight costs from Indonesia?*

7. *What is the best methodological approach to measure the potential economic and trade impacts of changing the FOB to CIF through enforcement of Indonesian beyond cabotage policy to coal and crude palm oil global trade?*

1.2. Relevance

As one of world's top coal exporter and crude palm oil producer, Indonesia has risen awareness among indigenous exporters and importing countries of both products due to the plan of imposing beyond cabotage policy. According to Indonesia Palm Oil Association or GAPKI (2018) the enforcement of the policy would shift the terms of delivery from FOB to CIF and might affect both coal and crude palm oil commodity markets as the presence of this policy is considered as a trade barrier that might could hamper the trade flows of these commodities. This is due to the exporters and importers consider the Indonesian shipping companies are not capable either from quality or quantity to serve the entire international trade freight.

On the other hand, the enactment of this beyond cabotage policy from Ministry of Trade regulation brought with its great expectations by the stakeholders in Indonesia shipping industry, since there was the belief that the implementation of this policy would bring changes as the indigenous operators would be able to take control of the carriage of cabotage cargoes, particularly for coal and crude palm oil export activities. Furthermore, Indonesia sea transportation has been considered as one of several sectors that have large contribution on the deficit of Indonesia trade balance of payment. Therefore, the policy is expected to help raising the performance of Indonesia trade balance of payment from shipping sector (Haryana, 2018).

The current situation concerning the pros and cons of beyond cabotage policy implementation has made the Ministry of Trade to temporarily revoke the policy until 2020. However, since Indonesian government has historical backgrounds in postponing certain policies, it is not sure whether the policy will enter the force in planned year or suspended again for certain periods. As the future of beyond cabotage policy is not yet clarified as well as the guidelines on implementing the rules, the consequences regarding the enactment of the policy are yet to be known. Considering the potential impacts derived from the policy, it is important to conduct preliminary study in order to provide a thorough analysis for Indonesian coal and crude palm oil exporters and shipping industry competitiveness in facing with beyond cabotage policy compliance. In addition, potential economic changes that will occur in global coal and crude palm oil trade caused by the policy are also a relevant issue to be researched.

1.3. Research Design and Methodology

This research will employ quantitative methods. In this manner, Global Simulation (GSIM) model is utilized to simulate the impact on macro-economic variables, identifying the shifts in terms of trade flows, welfare effect that include producer surplus, consumer surplus, and changes in tariff revenues, as well as output effects that would take place following the enactment of beyond cabotage policy. The policy envisaged to have such macro-economic impact because of the policy enforce the shifting in incoterms from FOB to CIF for coal and crude palm oil that expected to increase the trade costs as Non-Tariff Measures (NTMs) faced by Indonesian exporters. As a matter of simplification, the model will only include the main exporting and importing countries to have a representative view of global coal and crude palm oil trade. On GSIM model for coal trade we include Indonesia, Australia,

and the United States of America as the main exporting countries and China, India, Japan as the main importing countries. In addition, under GSIM model for crude palm oil we include Indonesia, Malaysia, Netherlands, Papua New Guinea, and Colombia as the main exporting countries and India, China, Pakistan, Spain, and the United States of America as the main importing countries.

1.4. Thesis Structure

This thesis is organized as follows. Chapter 2 describes the implementation of cabotage policy in Indonesia and its development throughout certain periods, comparing Indonesian cabotage with other countries that also imposing cabotage policy, and how the beyond cabotage could developed from cabotage policy in order to answer the first and second sub-research questions. Chapter 3 gives an overview of Indonesian coal and crude palm oil on current market condition and analyse the supply and demand side for both commodities to answer third sub-research question. Furthermore, this chapter also gives an overview of Indonesian coal and crude palm oil shipments on current market condition and analyse the tonnage supply for coal and crude palm oil shipment for export to answer the fourth sub-research question. Chapter 4 provides competitive analysis for Indonesian coal and crude palm oil exporters using Porter's Five Forces model in order to analyse the position of Indonesian coal and crude palm oil exporters in global market and clarify the effects of changing FOB to CIF incoterms on coal and crude palm freight costs to answer the fifth and sixth sub-research questions. Chapter 5 details the quantitative methodology employed to complete the research, the GSIM model as well as to answer the seventh sub-research question. Moreover, data description and argumentation for the use of the model are incorporated in this chapter. Chapter 6 present the findings and analysis of quantitative methodology utilized with objectives to analyse the result of the model employed in previous chapter. Lastly, Chapter 7 concludes by summarizing the key findings of the research and the implications of said findings. Furthermore, the limitation regarding the conducted research and recommendations for further research will be discussed as well in this chapter.

Chapter 2 Implementation and Prospect of Indonesian Cabotage Policy

This chapter describes the implementation of Indonesian cabotage policy and its development over the years as well as comparing it to other countries that also imposing cabotage policy in their territories. It is important to understand the aforementioned things in order to have a clear view of possible outlook for the application of planned beyond cabotage.

2.1. Indonesian Cabotage Policy

In Maritime Law, cabotage is an exclusive right of a State to regulate its seaborne transportation of goods and persons between two points / ports within the territory of the same nation for compensation or hire. The essence of cabotage is granting of privileges to the country-flagged merchant vessels to carry cargoes or passengers between ports within the territory of the flag state. The privileges include the right to limit or even prohibit the service of foreign-flagged vessels serving the foresaid route. Furthermore, the vessels concerned shall be owned or operated by a resident or entity business established under the laws of that country and the ship concerned shall have the flag of that country (Ishak & Prameswari, 2018).

Cabotage has been considered as a vital protectionist policy employed by various States in the protection of their domestic fleet in the carriage of cargoes within their coastal waters. The cabotage principle is biased in nature, by shutting foreign-flagged ships out of coastal waters in order to avoid foreign competitions (Asrofi, 2017). The provisions on the use of Indonesian-flagged ships by domestic shipping companies are aimed to implement the principle of cabotage to protect the sovereignty and to support the realization of the Archipelagic Insight and provide the extensive opportunity for the domestic shipping company in obtaining the share of cargo.

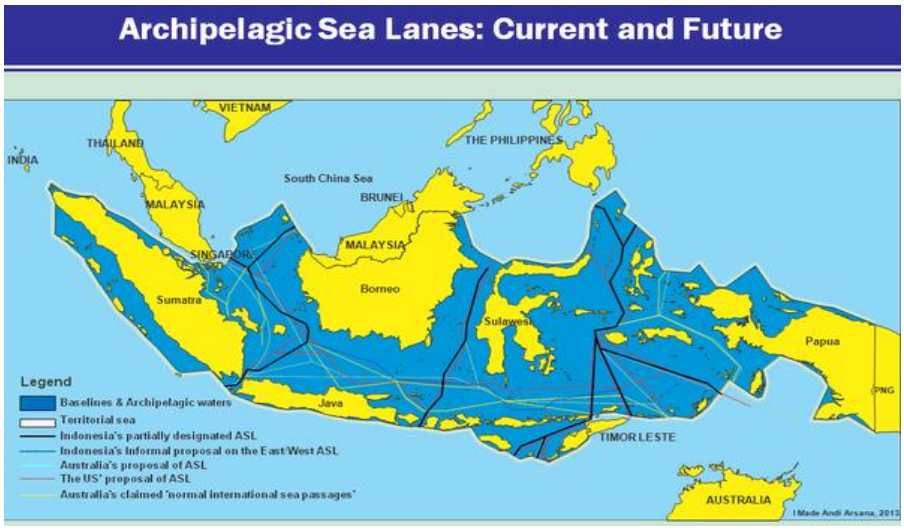

Figure 1: Indonesia Domestic and International Shipping Route
Source: Arsana (2013)

2.1.1. Cabotage Policy Arrangement in Indonesia

Maritime cabotage has been involved in Indonesia's maritime territory since the colonialism era. This maritime law was initially actualized under the Dutch colonial era through the 1936 Indische Scheepvaartwet. This colonial shipping law had been

implemented since then until 1992 based on the Transition Rules of the 1945 Constitution of the Republic Indonesia. The first Indonesian Shipping Law on cabotage principle was established in 1992 under the Law No. 21 of 1992 on Shipping. According to Kurniasari (2011), it was recorded that implementation of maritime cabotage principle from post-independence until the enactment of 1992's law was influenced by some unfavourable government policies and regulations. First example was Government Regulation No. 17 of 1988 on Sea Transport Provision and Management which enabled national shipping companies to operate foreign-flagged vessels through charter or lease to operate in domestic routes without prior request for a dispensation regarding national flag requirement. Next example was the Law No. 21 of 1992 on Shipping itself which stated in Article 73 Paragraph (2) that foreign-flagged vessels might serve domestic shipping routes as long as they were maintained and operated under domestic shipping companies. These policies are at the same time opened up opportunity for foreign-flagged vessels to flood the domestic shipping routes.

Such condition had weakened maritime cabotage grip of Indonesian waters and obstruct the growth of domestic shipping industry. Therefore, in 2005 the maritime cabotage in Indonesia was re-regulated through Presidential Instruction No. 5 of 2005 on the Empowerment of National Shipping Industry. This regulation instructed all authorities in Indonesian regions empower the national maritime industry through application of cabotage principle and make necessary steps and policy according to their duty and functions. Consequently, the Presidential Instruction has shown its effectiveness, as depicted on Figure 1, the number foreign-flagged vessels serving domestic routes decreased significantly from 2,494 units in 2004 to 1,154 in 2007.

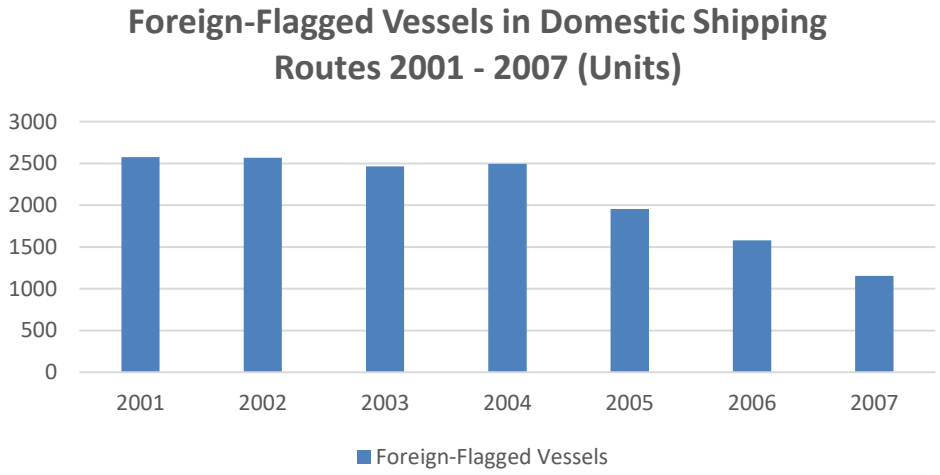

Figure 2: Foreign-Flagged Vessels in Domestic Shipping Routes
Source: Author via Indonesian Ministry of Transportation (2008)

The government then re-stated the implementation of cabotage principle on the higher hierarchy of Indonesian laws in order to guarantee that maritime cabotage could take its full effect in empowering and developing the national shipping industry. In 2008, the government issued Law No. 17 of 2008 on Shipping (Shipping Law) as a legal basis to implement the cabotage principle within Indonesian waters and still recognized by now. The provision on cabotage principle is stipulated in Article 8 that all domestic shipping activities are required to be conducted by Indonesian-flagged vessels with manned crew of Indonesian nationality. Moreover,

shipping companies are required by law to establish and licence themselves as “Indonesian Sea Carriage Companies” and is required to be incorporated in Indonesia and must observe 51 per cent of Indonesian equity. Three years after the enactment of this policy, all foreign-flagged ships are completely excluded from carrying cargoes and passengers between ports or between islands within Indonesian territorial waters.

2.1.2. Implications of Indonesian Cabotage Policy

Cabotage policy is part of the implementation of the sovereignty into a form of state coastal policy to restrict foreign ships entering its territory, especially inland water areas. Due to other territorial areas such as cross-country and additional zones the state is obliged to provide a peaceful passage for foreign ships, in accordance with the United Nation Convention of Law at Sea or UNCLOS 1982. As stated by Olowookere (2011), cabotage regime would give positive impacts to domestic shipping industry as government efforts aimed at ameliorating the unfavourable conditions of shipping companies, shipbuilding, and ship repair yards. According to Siregar & Asnawi (2012), there are several objectives to be achieved from implementation of cabotage policy, as follows:

1. Avert and Reduce the dependence on foreign-flagged vessels
2. Streamlining the flow of goods or services and people to all regions of the archipelago widely
3. One of the efforts of employment providers for residents
4. As reliable and supporting the National Defence and Security System

In addition, Indonesian Ship Owner Association or INSA (2016) has mentioned several impacts in successfully implementing the cabotage principle for the government, shipping companies, and for INSA itself. The impacts are presented on Table 1 below.

Government	Shipping Companies	INSA
• Strengthen state sovereignty	• Extent the domestic market share of the cargo loaded by national vessels	• Increase the number of INSA members
• Recruitment of domestic for crew shipping	• The high growth of the national economy and the growth of domestic cargo	• Easy to monitor domestic shipping companies
• Establishment of national security		

Table 1: Impacts of Successful Cabotage Principle
Source: INSA (2016)

During the implementation of cabotage policy over ten years, the policy has been sufficiently effective and give significant positive impacts to national shipping industry. This is due to cabotage principle has successfully escalate the competitiveness of national shipping industry. The positive impacts since re-regulated cabotage policy in 2005 are evident by several increment in number of domestic shipping companies, national-flagged vessel unit and vessel capacity. As shown on Table 2, number of shipping companies increases 127 per cent in 2017.

Meanwhile, the quantity of vessel and capacity of vessel rises 356 per cent and 453 per cent respectively.

Year	2005	2017
Number of Shipping Companies	1,591	3,612
Quantity of Vessel (Units)	6,041	27,567
Capacity of Vessel (DWT)	3.66 Million	20.26 Million

Table 2: Impacts on National Shipping Industry
Source: Indonesian Ministry of Transportation (2018)

2.2. Cabotage Policy in Other Countries

In general, there are two types of cabotage policy implementation in different countries. The differences are depending on each country's objectives, local situations, and national interest as well as the perceived security implications of such cabotage principle to the country. The types of cabotage policy implementation are strict cabotage policy and relaxed cabotage policy.

2.2.1. Strict Cabotage Policy

Under the strict maritime cabotage regime, the existence of foreign-flagged vessels and foreign nationality of crews are strictly prohibited by the law. This regime typically stipulates that domestic shipping trade is restricted to the following elements of ships built, owned, crewed and operated by residents or entity business established under the laws of that country (Olowookere, 2011). The best example of such cabotage policy regime can be found in the United States of America by incorporating of some of its shipping laws of which the Jones Act 1920 stands out. The Act regulates maritime trade in the United States waters and between United States ports. As stipulated in Section 27 of the Act implies the cabotage and provides to the effect that cargo moving between the United States shall be carried on the United States flag ships, constructed in the United States, owned by the United States citizen, and crewed by the United States citizens and the United States permanent residents. The same requirements for the transport passengers between the United States ports are set under the Passenger Vessel Services Act 1886 (Agama & Alisigwe, 2018).

Countries that also apply strict maritime cabotage yet not as strict as the United States are Japan and Thailand. In Japan, for coastal shipping as stipulated in Article 3 of the Ships Act implies the cabotage and provides to the effect that any other ships other than those of Japanese flag which operated by Japanese residents and crewed by Japanese citizens are restricted to conduct coastal shipping of cargo or passengers between ports in Japan unless to avoid capture or marine accident, or there is a provision in law or otherwise provided by treaty, or they have obtain a permit from the Ministry of Land, Infrastructure, Transport and Tourism (Anugrah, 2016).

In Thailand, the domestic shipping in accordance with Thai Vessels Act 1938 is reserved for domestic service suppliers. As stated in Article 7 of the Act, the vessel

to be used for domestic shipping shall be owned either by a Thai national or juristic person incorporated under Thai law with at least 70 per cent Thai equity. Seafarers working on Thai vessels engaging in domestic trade must be Thai residents. Employing foreign-flagged vessel in domestic shipping may be allowed under certain condition on a case-by-case basis (Kularbwong, 2018).

2.2.2. Relaxed Cabotage Policy

Relaxed or liberalized cabotage maritime regime implemented by a country could be implied as if the aforementioned elements of restriction are not required to complied with or are not strictly enforced under its cabotage law. In such cabotage regime, foreign participation is granted some measures in the ownership or building of the vessels and their operations in domestic shipping trade. This has been the trend for a decade or so as several countries with the objective of making their cabotage policies more relaxed in terms of accommodating foreign involvement in their coastal trade. These countries include China, Korea, Brazil, Australia, Malaysia, European Union, *et cetera*.

For instance, Chinese government grants relaxation of cabotage to allow foreign carriers to ship empty containers between domestic ports. Empty containers were considered as domestic cargoes and therefore subject to the cabotage policy. the rationale is port congestion relief with capacity increases and growth accommodation. However, the amendments only applied to shipping companies of countries that have signed relevant bilateral agreements with China (Anugrah, 2016).

Similar yet slightly different to China, the Korean government grants relaxation of cabotage to allow foreign carriers to ship containers as well as abolished trans-shipment fees between domestic ports. The rationale new entrants in feeder operations improved frequency of service and reduce freight rates for shippers through a competition (Anugrah, 2016).

In Brazil, in its relaxation policy, foreign-flagged vessels can only have rights of cabotage in its ports for port support and maritime support navigation when such foreign-flagged vessels are chartered by a Brazilian shipping company, and provided that there is no Brazilian-flagged vessel available. Moreover, foreign-flagged vessel could also enjoy rights of cabotage in Brazilian ports if it is a matter of public interest or being chartered as a substitute for an under-construction vessel owned by Brazilian shipping company (Vianna, 2010).

In Australia, all vessels including foreign-flagged vessels involved in the cabotage trade shall be licensed. However, foreign-flagged vessels are only eligible for licensing, if they do not receive a subsidy from a foreign government. Moreover, they must meet all requirements of Australian customs and immigration legislation for both the ship and crew. In this case, the crew shall receive Australian rates of wages (Hackston, et al., 2005).

Malaysia also perform similar to Australia in regards of relaxation on its cabotage policy where the Domestic Shipping Licensing Board (DLSB) give temporary license for foreign-flagged vessels to partake in domestic shipping trade provided that there are no Malaysian-flagged vessels available. Moreover, the government also gives relaxation on cabotage right for Penang and Port Klang route whereby foreign shipping lines are allowed to carry between two Malaysian ports as part of its international legislation (Anugrah, 2016).

The European Union adopts a relaxed cabotage for its Member State in accordance with Council Regulation No. 3577/92/EEC that implies ships from any Member State recognized by other Member States as national ships. This freedom to provide maritime transport within a Member State applies to European Union shipowners who have their ships flying the flag of any Member State, provided that the ships comply with all requirements for carrying out cabotage in the Member State (Anugrah, 2016).

2.2.3. State of Indonesian Cabotage Policy

For Indonesian cabotage regime, its practices can be described as strict cabotage policy although the country's cabotage maritime policy is not as strict as the United States has been applied. One of the elements of restriction that obviously differ between Indonesian and United States cabotage regime is that under Indonesian cabotage regulation does not stipulate the compulsory to build the vessels in Indonesia to provide cabotage services in domestic shipping trade. This is due to the lack of Indonesian shipyards capability to build certain vessel types as a consequence of poor infrastructure development in several shipyards (Aprilianto, et al., 2014).

The cabotage regime also recognizes the proportion of equity ownership similar to Thailand. However, in Indonesia the foreign equity is limited to 49 per cent for vessels and shipping companies that serve within Indonesian territorial waters. Moreover, under the Presidential Instruction No. 36 of 2010, South-east Asia or ASEAN countries are given preferential treatment regarding the equity ownership with 60 per cent limit although this preferential treatment is restricted only for export and import sea-borne trade not for domestic shipping trade. The objective is to divert foreign participation in domestic shipping trade from initially competing with indigenous shipping providers to empower them through foreign investment due to the enactment of cabotage policy.

In terms of cabotage relaxation, Indonesian government implemented an exemption for foreign vessels to conduct services in oil and gas sectors within Indonesian territory due to the lack of Indonesian-flagged vessels capable of servicing the needs of these sectors. This exemption is regulated under Regulation No. 22 of 2011 and Ministry of Transport Regulation No. 48 of 2011.

It can be concluded that currently, Indonesia has performed well strategy to implement its cabotage regime incorporated with several government regulations to empower its national shipping industry by considering every aspect that might benefit the industry.

2.3. Cabotage to Beyond Cabotage

Following several benefit impacts of Indonesian cabotage policy in escalating national sea transportation industry performance, Indonesian government started the initiation to expand its cabotage policy to beyond cabotage policy in order to increase the participation of Indonesian-flagged vessels on international territorial waters. In this manner, Indonesian-flagged vessels and Indonesian shipping companies are expected to compete and gain more benefit from international trade rather than only dominating the domestic shipping trade (Haryana, 2018).

In general, beyond cabotage is a term of principle used by Indonesian government as the extension of its cabotage policy to conduct Indonesian export and import

services by prioritize the utilization of Indonesian-flagged vessels that operated by national shipping companies with manned crew of Indonesian nationality (INSA, 2016). As a realization of such principle, Indonesian government through Ministry of Trade has issued yet postponed a Ministry of Trade Regulation No. 80 of 2018 which under Article 3 stipulates that all Indonesian exporters of specific products of coal and crude palm oil as well as importers of rice shall be obliged to use Indonesian-flagged vessels, Indonesian shipping companies, and national insurance companies for every export and import activity. According to Haryana (2018), this regulation is in accordance with realization of government program to change the term of trade for exports from FOB to CIF which is regulated under Ministry of Finance Regulation No. 41 of 2014 regarding the obligation from government to filling the export transaction value by CIF on the export declaration. The objectives of the alignment of these policies are (World Bank, 2016):

- CIF term will enhance the contribution of domestic-flagged vessels since the transport matters will be taken care by Indonesia.
- Under CIF term, Indonesia will organize the transport and take cargo liability further in supply chain scheme, thus, the utilization of national insurance firms and shipping companies will preferably be chosen.

Therefore, it is believed that this beyond cabotage policy will create great opportunities for Indonesian sea transportation has been considered as one of several sectors that largely contribute to Indonesia trade balance of payment due to the export and import activities are 93.7 per cent carried by foreign flagged vessels, while Indonesian-flagged vessels only have proportion of 6.3 per cent. As stated by INSA (2016), the enactment of beyond cabotage policy is expected could increase Indonesian-flagged vessels proportion for international sea carriage to 15 per cent in 2 years after the policy already take effect. Moreover, several supporting and inhibiting factors of current cabotage policy in Indonesia should be considered before imposing beyond cabotage policy in order to follow the previous fruitfulness of Indonesian cabotage policy as shown on Table 3.

Supporting Factor	Inhibiting Factor
• Cabotage principle is an indigenous sea transport company needs to enhance the growth of national marine transportation	• Domestic shipping companies have not been able to provide specialized types of ships
• Establishment of a supervisory team to identify ships in charge of either controlling or overseeing vessels operating in the territorial waters of Indonesia	• The cost of vessel procurement investment is very large
• Facilitate the process of providing vessels by the government to support the licensing process and provide information required by the national sea transportation company	• The absence of long-term employment contracts between ship owners
• Loans from banks and financial institutions regarding vessel procurement investment	• The low quality and quantity of human resources

Table 3: Supporting and Inhibiting Factors of Cabotage Policy
Source: Aprilianto, et al (2014)

Chapter 3 Coal and Crude Palm Oil Industry

This chapter gives an overview of Indonesian coal and crude palm oil on current market condition and analyse the supply and demand side for both commodities to. From the supply side include the production capacity and the importance of coal and crude palm oil export. The demand side include the global market share of Indonesian coal and crude palm oil as well as the main importing countries. Moreover, this chapter also presents an overview of Indonesian coal and crude palm oil shipments on current market condition and analyse the tonnage supply for coal and crude palm oil shipment for export.

3.1. Coal Industry

Coal is the most important energy source for electricity generation as well as an essential fuel for steel and cement productions. Moreover, coal is a global industry with coal mined commercially in over 50 countries and consumed in over 70 countries. In terms of production, countries like China, India, United States, Australia, Indonesia, and Russia are the largest producers in global coal market. At current rates of production, global coal reserves are estimated to last around 112 years. The biggest coal reserves are found in the United States, Russia, China, and India (British Petroleum, 2017).

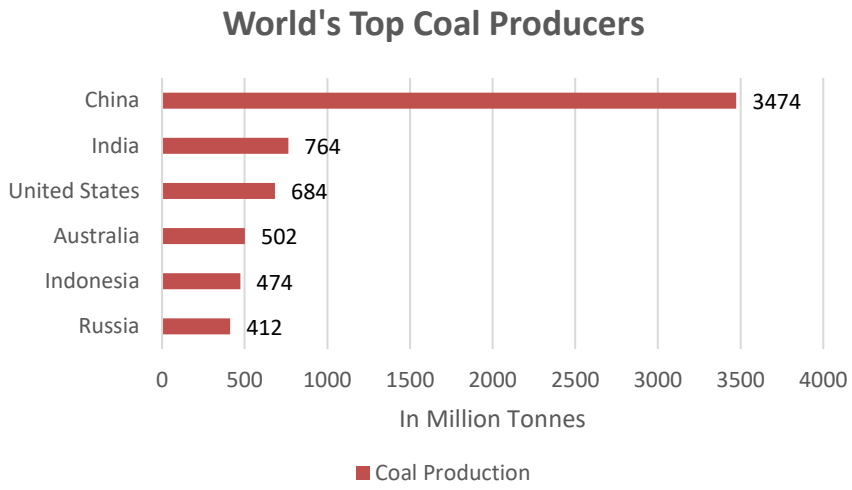

Figure 3: World's Top Coal Producers
Source: Author via IEA (2018)

According to Rosyid & Adachi (2016), Indonesia has been one of the world's largest producers and exporters of coal as it supplies approximately 20 per cent of the total volume of global coal trading every year. Indonesia has three largest regions of coal resources: South Sumatra, South Kalimantan, and East Kalimantan. The Indonesian coal industry is rather fragmented with only a few big producers and many small players that own coal-mines and coal mine concessions. Ministry of Energy and Mineral Resources estimated that Indonesian coal reserves could last around 83 years with current rate of production.

Since the coal mining was reopened for foreign investment, Indonesia witnessed a significant increase in its production for export and domestic consumption. As illustrated on Figure 4, Indonesian coal production is gradually increase over periods

although its production fell in 2014 due to slight decrease on export. Generally, it can be seen that the coal exports tend to fluctuate, but the domestic sales side show steady incremental volume.

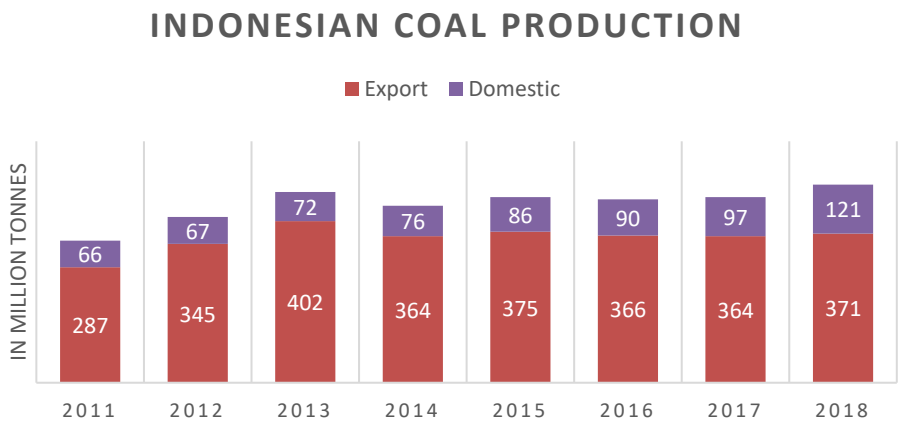

Figure 4: Indonesian Coal Production
Source: Author via IESR (2018)

Compared to other top coal producers such as China, India, Australia, and United States, Indonesian coal production is anomaly. Even though these countries generally have a larger level of production and reserves than Indonesia, their exports are much lower. This is due to the different viewpoints in the operation of resources (IESR, 2018).

3.1.1. The Importance of Indonesian Coal Export

Indonesian export products are categorized into two main sectors, oil and gas and non-oil and gas. With the total value of export around $180 billion in 2018, the contribution of oil and gas was 10 per cent and non-oil and gas was 90 per cent, (BPS, 2019). According to IESR (2018), Indonesian coal export contributes to national development as a revenue stream for the State budget. As Indonesian government aims to increase trade revenue and help in counterbalancing deficit coming from oil and gas trade through the exploitation of coal. Furthermore, total Indonesian export in terms of volume in 2018 was 610 million tonnes, while total coal export in terms of volume on the same period was 343 million tonnes. This means that the contribution of coal export over Indonesian total export in terms of volume in 2018 was 56 per cent as shown on Figure 5.

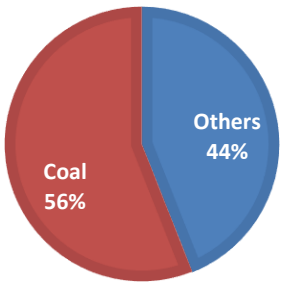

Figure 5: Coal Contribution to Indonesian Total Export
Source: Author via BPS (2019)

3.1.2. Global Coal Trade

Based on coal trade data derived from International Trade Centre (2019), there are top five major exporting countries with global market share of world coal export ranging from 5 – 38 per cent in 2018. These countries are Australia, Indonesia, Russia, United States, and Colombia. As illustrated on Figure 6, Australia and Indonesia are the world's largest coal exporters with global market share 38 per cent and 16 per cent respectively. This combined 54 per cent of total world's coal export.

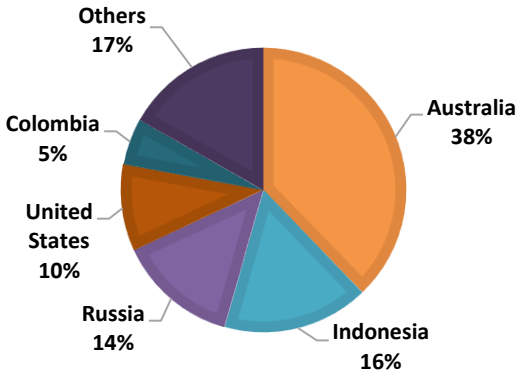

Figure 6: Global Market Share of Coal Export in 2018
Source: Author via ITC (2019)

As it can be seen on Figure 7, the global coal exports tend to fluctuate among major exporting countries. There was slight fall in exports during period from 2015 to 2016, but the number of exports show significant increase in the next years. In addition, Australia and Indonesia maintained to be the largest coal exporters throughout the years with highest coal value exports among other countries.

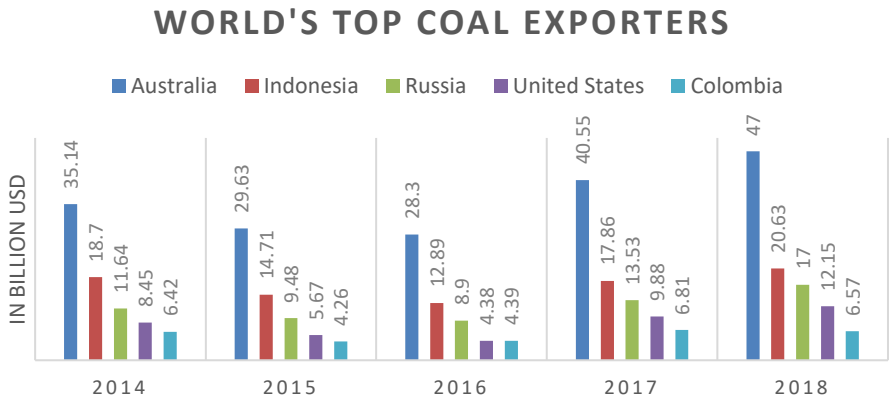

Figure 7: Total Value of Major Coal Exporting Countries
Source: Author via ITC (2019)

Coal has a clear importance for Indonesian budget as the commodity accounts for 56 per cent of country's total export. Indonesia has strategic geographical position towards the giant markets in Asia. As reported by IESR (2018), 61% of Indonesian global coal export was emerged in Asia with China and Japan as the most significant importing countries. Demand for low quality coal from these two countries has increased as many new coal-fired power plants have been built to supply electricity to their societies. As we can see on Figure 8, there are five main export destinations of Indonesian for Indonesian coal such as China, Japan, South Korea,

India, and Malaysia. Overall, in 2018 India was the largest Indonesian coal importer with total value of coal imported from Indonesia $5.36 billion. Japan and China had slight difference in total value of Indonesian coal imported to them with $2.78 billion and $2.76 billion respectively.

Figure 8: Major Indonesian Coal Importers by Value in 2018
Source: Author via ITC (2019)

3.2. Indonesian Coal Shipment

Generally, the type of vessels used to transport Indonesian coal export belongs to the group of dry bulk carrier due to the large volume and long-haul shipping. Meanwhile, barge utilized as well to transport the cargo due to limited access in river area, short draught, and short distance shipping. Moreover, the majority of Indonesian exporting ports are transhipment terminal that located far away from the coast. Therefore, the shipment of coal export is transported from transhipment terminal to open-sea is carried by barge and moved to international importers' vessel. However, there are small number of non-transhipment ports that could directly accommodate to the importers' vessel since these ports can meet the vessel's draught (Indonesian Ministry of Transportation, 2018).

According to Indonesian Ministry of Transportation (2018), there were 10,452 shipments of coal export in several Indonesian ports for coal shipment that carried by dry bulk carrier, tugboat with barge and only barge. As shown on Figure 9, The largest proportion for coal export shipment was 88 per cent or 9197 shipments for carriage by dry bulk carrier. For tugboat with barge was 11 per cent or 1149 shipments. Lastly, for carriage with only barge was 1 per cent or 104 shipments.

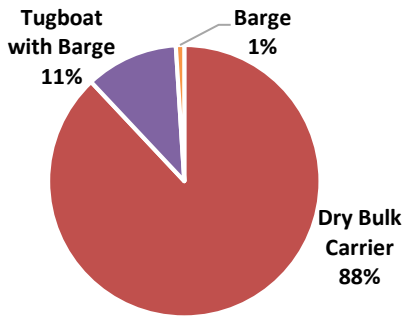

Figure 9: Shipment for Indonesian Coal Export
Source: Author via Ministry of Transportation (2018)

3.2.1. Incoterms for Coal Export

Commonly, most of Indonesian coal exporters are utilizing the FOB incoterms for transporting cargo overseas, through which they handover the risk of loss to importers who pay the fees for freight and insurance. However, there are also few transactions using Cost and Freight (CFR) or CIF incoterms for exporting coal to countries nearby Indonesia such as Malaysia and Singapore in which the exporters are liable for the cost of freight and/or insurance to the importers. Moreover, the CFR or CIF incoterms were used by few companies under certain conditions. In this case, these terms of delivery for coal export might use by importers if the freight offered is moderately lower than freight that the company produced or should not higher than 8 per cent of the coal price (APBI, 2018).

3.2.2. Coal Shipping Market

As we know that Indonesian coal shipments for export are commonly using dry bulk carriers. This type of ship is the most suitable ship for transporting dry unpackaged commodities such as coal. This vessel is constructed by single deck, top side tanks, and hopper side tanks in cargo spaces and intended to primarily carry dry cargo in bulk. Moreover, common dry bulk carriers have several holds covered by hatches and geared by loading-unloading process equipment (Wartsila, 2017). Numerous dry bulk carriers with various size are operated for Indonesian coal export as shown on Table 4.

Type of Ship	Size
Small Dry Bulk	< 20,000 DWT
Handysize	20,000 – 40,000 DWT
Handymax	40,000 – 50,000 DWT
Supramax	50,000 – 60,000 DWT
Panamax	60,000 – 80,000 DWT
Post-Panamax	80,000 – 125,000 DWT
Capesize	125,000 – 220,000 DWT

Table 4: Type of Dry Bulk Carrier for Indonesian Coal Export
Source: Ministry of Transportation (2018)

As stated by Indonesian Ministry of Transportation (2018), there was 88 per cent of dry bulk utilization from total 10,452 shipments of Indonesian coal export. Which means that 9,197 shipments as shown on Figure 10 are using dry bulk carrier, where 36 per cent or 3,310 shipments using Panamax carrier and followed by Supramax dry bulk carrier with 20 per cent or 1839 shipments. Meanwhile, for Post-Panamax and Small dry bulk have 11 per cent or 1011 shipments and 14 per cent or 1287 shipments of the proportions of shipment respectively. Moreover, the same proportion of 6 per cent belongs to Handysize and Handymax. For the largest size, Capesize, had the least proportion with 3 per cent of total shipment.

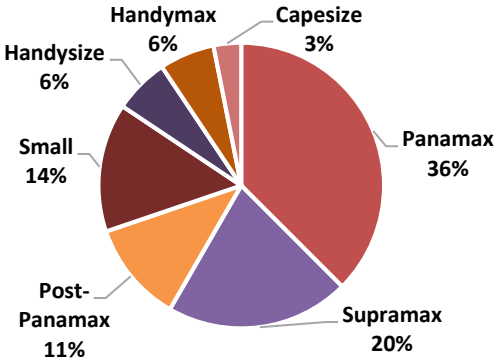

Figure 10: Indonesian Coal Export Shipment by Dry Bulk Size
Source: Ministry of Transportation (2018)

3.2.3. The Availability of Indonesian Fleet

In order to clarify the availability of Indonesian fleet to serve Indonesian coal export shipment, the current condition of Indonesian fleet that conduct services for coal export shipment is presented on Table 5. According to INSA (2018), the type of vessel that appropriate for Indonesian coal export is dry bulk carrier. However, this type of vessel accounted only 68 units or 6 per cent (Supramax 55 units and Panamax 13 units) of total Indonesian-flagged vessels to serve coal export, while other type of vessels is not appropriate for long haul shipping of coal export to several major importing countries of Indonesian coal. Moreover, barge vessel was dominating the transport for coal export with 92.5 per cent and mainly utilized for short distance transport while coal exports carried by foreign-flagged vessels or transport coal to importing countries that close to Indonesia such as Singapore or Malaysia.

Type of Vessel	Vessel Unit	%
Barge	1032	92.5
Supramax	55	4.8
Panamax	13	1.2
Landing Craft Transport (LCT)	14	1.3
Supply Vessel	2	0.2
Total	1115	100

Table 5: Indonesian-flagged Vessel for Coal Export
Source: INSA (2018)

In addition, World Bank (2016) has estimated that in order to serve major importing countries of Indonesian coal, the national shipping industry should have at least 16.25 million DWT or 270 units of dry bulk carrier. Therefore, it can be concluded that in current condition, Indonesia is still lack of dry bulk carrier to transport coal export which is mostly needed for long haul shipping.

3.3. Crude Palm Oil Industry

Palm oil is one of the most produced and consumed oils globally. This low-priced, production-efficient, and highly stable oil has a variety of uses in food, animal feed, oleochemicals, and hygiene products. One significant use is in biodiesel and renewable diesel production, which can replace diesel fuel in transport and other industries. Over the periods, global palm oil is dominated by Indonesia and Malaysia that account for approximately 85 per cent to 90 per cent of total global palm oil production. Moreover, other countries that also considered as major palm oil producer with smaller volume are Thailand, Colombia, and Nigeria (ICCT, 2019).

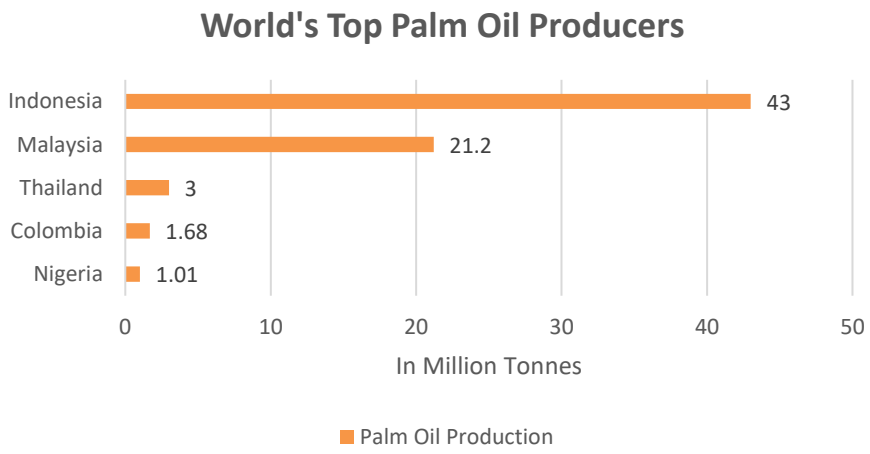

Figure 11: World's Top Palm Oil Producers
Source: Author via Index Mundi (2019)

As reported by Oeko-Institut (2019), Indonesia is the largest producer of palm oil as it accounts 50 per cent of total palm oil world production. The production and export of Indonesian palm oil has grown rapidly over the last decade and followed by the growing quantity of its plantation area. The plantation of palm oil has been expanded significantly by Indonesian planters and conglomerates as an expanding global population gives rise to rising consumption of food and oleochemical products that contain some sort of material that is derived from palm oil. Palm oil plantations in Indonesia are spread in 22 provinces with the highest concentration in Sumatra with total area of 6.9 million hectares then Borneo with 3.4 million hectares.

Palm oil production in Indonesia could be categorized into two types, crude palm oil and palm oil products (Nurcahyani, et al., 2018). Figure 12 shows the growth of palm oil production for both crude palm oil and palm oil products in the last eight years. As it can be seen, Indonesian palm oil production mostly dedicated for export. The volume of Indonesian palm oil production both for export and domestic consumption are generally increases over the years. On export side there was fluctuation during the period of 2015 to 2017. Meanwhile, on domestic consumption the fluctuation happened during the period of 2013 to 2015.

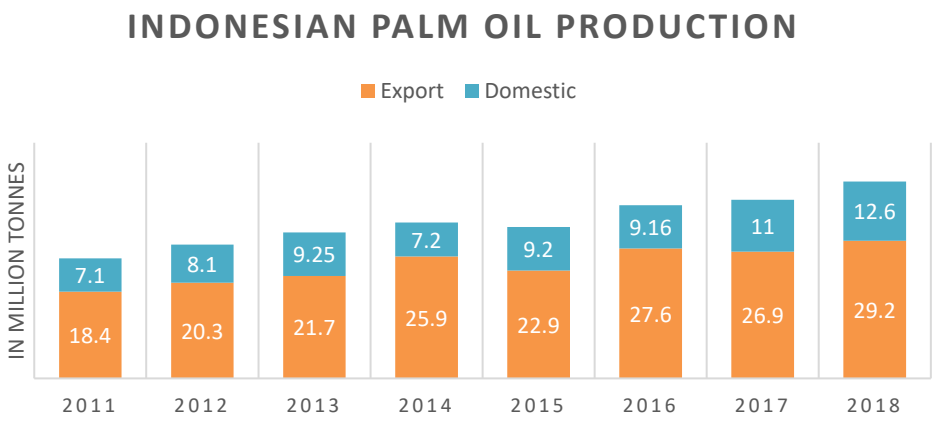

Figure 12: Indonesian Palm Oil Production
Source: Author via Index Mundi (2019)

3.3.1. The Importance of Indonesian Crude Palm Oil Export

As the largest producer and exporter of palm oil that providing half of the world's supply, it is obvious that palm oil production is important to the economy of Indonesia. The palm oil industry has also been considered as one of the Indonesia's biggest earners of foreign exchange value by contributing in average 2.46 per cent to the country's gross development product (GAPKI, 2019). Furthermore, as already discussed before, that most Indonesian export was dominated by non-oil and gas sector, which accounted by 90 per cent of the total export value. Palm oil production both crude palm oil and palm oil products belong to the non-oil and gas sector with total value of export in 2018 was $20.5 billion which represented 11.38 per cent of the total Indonesian export value (BPS, 2019).

In spite of that, Indonesian palm oil product has slightly different contribution on the total export in terms of volume. Based on BPS (2019), total Indonesian export volume in 2018 was 610 million tonnes while total export of palm oil was 29.2 million tonnes. This means that palm oil has contributed 5 per cent of total Indonesian export with proportion of crude palm oil 1.2 per cent or 7.13 million tonnes and palm oil products 3.8 per cent or 22 million tonnes at the same period as shown on Figure 13.

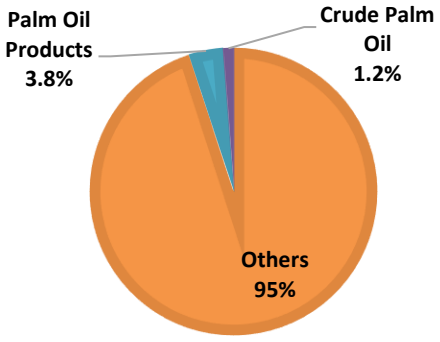

Figure 13: Palm Oil Contribution to Indonesian Total Export
Source: Author via BPS (2019)

3.3.2. Global Crude Palm Oil Trade

Based on palm oil global trade data derived from International Trade Centre (2019), Indonesian palm oil export value has represented 54.5 per cent or $16.5 million of world's total export value of palm oil and thereafter Malaysia as the second largest exporter with proportion 28.6 per cent or $8.68 million. Followed by Netherlands, Papua New Guinea, and Colombia with each proportion is 3.2 per cent, 1.6 per cent, and 1.5 per cent. Moreover, although Netherlands is not a palm oil producer it is accounted as one of the largest exporters, because its palm oil export is re-exporting palm oil from other exporter countries.

Since the scope of the research is to study crude palm oil trade, from this section onward, it will focus on analysing the crude palm oil only as one of the potential palm oil products. According to International Trade Centre (2019), there are five major crude palm oil exporting countries such as Indonesia, Malaysia, Guatemala, Papua New Guinea, and Colombia. As illustrated on Figure 14, in 2018 Indonesia and Malaysia were dominating as well in this sector with global market share 46.4 per cent and 25.3 per cent. This combined 72 per cent of total world's crude palm oil export.

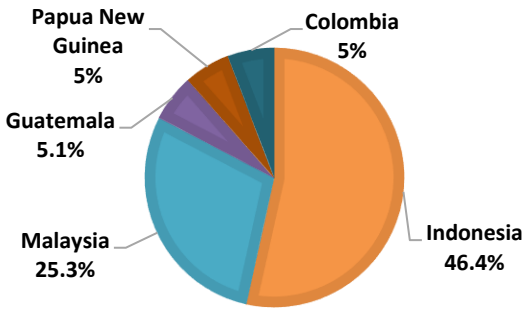

Figure 14: Global Market Share of Crude Palm Oil Export in 2018
Source: Author via ITC (2019)

As it can be seen on Figure 15, Indonesian crude palm oil export values tend to fluctuate over periods as well as Papua New Guinea. Meanwhile, Malaysia as the second largest crude palm oil exporter shows decreasing trend on its export. Moreover, Guatemala and Colombia showing positive trend throughout the years.

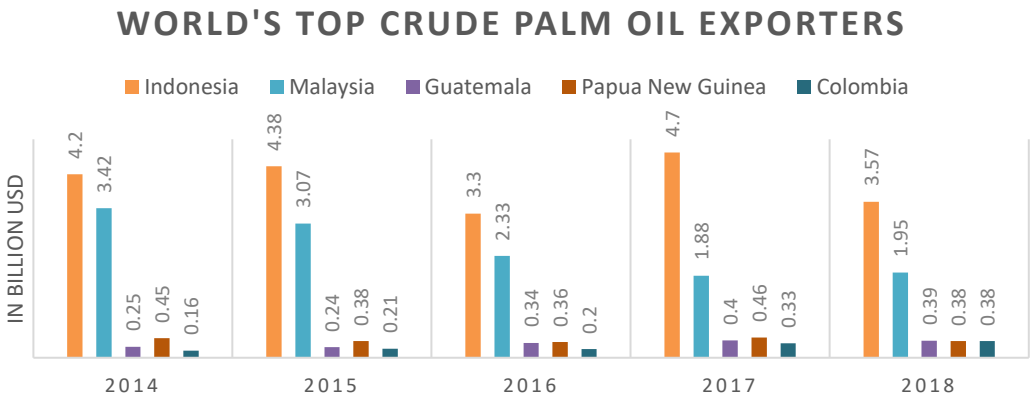

Figure 15: Total Value of Major Crude Palm Oil Exporting Countries
Source: Author via ITC (2019)

On the demand side, the major importing countries of Indonesian crude palm oil in 2018 were India, Netherlands, Singapore, Italy, and Malaysia, together accounting for about half of world's total crude palm oil imports (ITC, 2019). As shown on Figure 6, India was the largest importing country of Indonesian crude palm oil with total value $2.17 billion and thereafter Netherlands with $350 million. Moreover, Malaysia was accounted as one of the major exporting countries and major importing countries of crude palm oil at the same time. This is due to Malaysia is re-exporter of Indonesian crude palm oil, although it basically has a large palm oil plantation (Nurcahyani, et al., 2018).

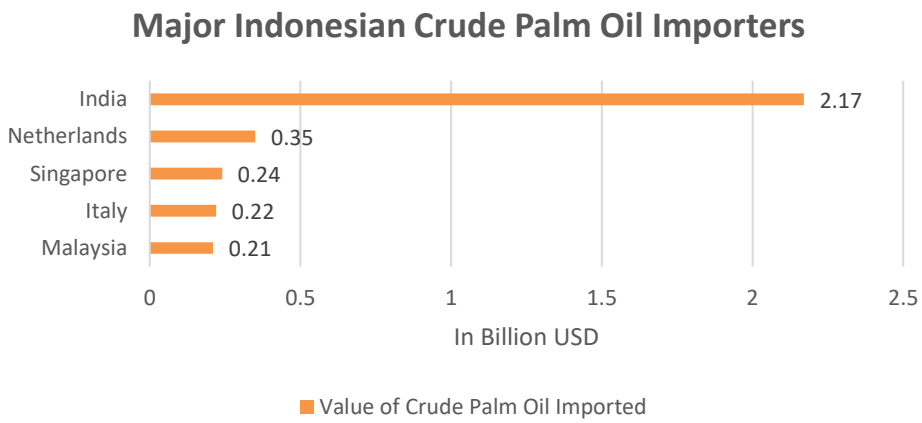

Figure 16: Major Indonesian Crude Palm Oil Importers by Value in 2018
Source: Author via ITC (2019)

3.4. Indonesian Crude Palm Oil Shipment

In general, container vessels or general cargo vessels could transport crude palm oil by transferring it into drums. This alternative can be done if the volume for one shipment in a small volume. However, if the volume for one shipment is large or in bulk, then utilizing specialized vessel is more effective. Moreover, all of Indonesian crude palm oil export always shipped in bulk form and using chemical tanker with various size under the group of tanker (GAPKI, 2018).

3.4.1. Incoterms for Crude Palm Oil Export

Commonly, there are two conditions of trade contract agreement which have been implemented by some of the largest palm oil companies in Indonesia. Firstly, when Indonesia is an exporter and transports the export products to importing country, Indonesia could manage all kinds of purpose such as the cargo, trading, and transport. Nevertheless, Indonesian crude palm oil exports are currently operated by foreign vessels under FOB incoterm. Secondly, Indonesia is a provider of crude palm oil, but the trading and transport are managed by other country, for instance Malaysia or Singapore as the re-exporter of Indonesian crude palm oil. Therefore, the crude palm oil trading from Indonesia to Malaysia or Singapore will use FOB term and foreign vessels. Reversely, Indonesian crude palm oil from Malaysia or Singapore would be re-exported to other countries under CIF term and will be shipped by both country's flagged vessels (GAPKI, 2018).

3.4.2. Crude Palm Oil Shipping Market

Most of Indonesian crude palm oil exports are transported using tanker. This is due to the large volume and in order to keep the quality of crude palm oil exported which means transporting using container is not suitable since to ship by using container vessel needs to be transferred to drums first that could reduce the quality of crude palm oil if not handled properly (GAPKI, 2018). Various tankers with different size are utilized for shipment of Indonesian crude palm oil as shown on Table 6.

Type of Tanker	Size
Handysize	< 10,000 DWT
General Purpose Tanker	10,000 – 24,999 DWT
Medium Range Tanker	25,000 – 44,999 DWT
Large Range 1	45,000 – 79,999 DWT
Large Range 2	80,000 – 159,999 DWT
VLCC	160,000 – 319,999 DWT
ULCC	More than 320,000 DWT

Table 6: Type of Tanker for Indonesian Crude Palm Oil Exports
Source: Ministry of Transportation (2018)

According to Indonesian Ministry of Transportation (2018), there were 2335 shipments of crude palm oil export transported using various size of tankers. As shown on Figure 17, most of Indonesian crude palm oil was transported by General Purpose Tanker with 46.5 per cent of total crude palm oil export shipments or 1085 shipments. Thereafter, Handysize Tanker carried 30 per cent or 700 shipments, followed by Medium Range Tanker and Large Range 1 Tanker with 15.2 per cent or 355 shipments and 7.1 per cent or 166 shipments respectively. The least proportion of Indonesian crude palm oil shipment held by Large Range 2 Tanker, VLCC, and ULCC.

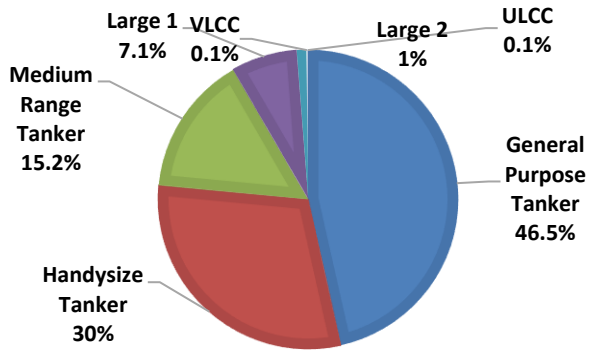

Figure 17: Indonesia Crude Palm Oil Export Shipment by Tanker Size
Source: Ministry of Transportation (2018)

3.4.3. The Availability of Indonesian Fleet

In order to clarify the availability of Indonesian fleet to serve Indonesian crude palm oil export shipment, the current condition of Indonesian-flagged tanker fleet is presented on Table 7. According to INSA (2018), there were 572 units of

Indonesian-flagged tankers. However, most of Indonesian tankers were designed to oil products carriage, which are not suitable to transport crude palm oil. In addition, the only suitable vessel for Indonesian crude palm oil shipment for export purposes is chemical tanker which is only accounted 24 units or 4.2 per cent of total Indonesian-flagged tankers.

Type of Tanker	Unit	%
Tanker	448	78.3
Crude Oil Tanker	89	15.5
Chemical Tanker	24	4.2
LPG Tanker	6	1.2
LNG Tanker	5	0.8
Total	572	100

Table 7: Indonesian-flagged Tankers
Source: INSA (2018)

In addition, World Bank (2016) has estimated that in order to serve major importing countries of Indonesian coal, the national shipping industry should have at least 536 thousands DWT or 32 units of chemical tanker. Therefore, it can be concluded that in current condition, Indonesia is still lack of chemical tanker to transport coal export.

Chapter 4 Competitive Analysis

This chapter provides competitive analysis for Indonesian coal and crude palm oil exporters using Porter's Five Forces model in order to evaluate the position of both commodities exporters in global market as well as to clarify the effects of changing FOB to CIF incoterms on coal and crude palm oil freight costs from Indonesia

4.1. Porter's Five Forces Model

To assess the competitive position of Indonesian coal and crude palm oil exporters, Porter's Five Forces model is used. This model is a framework for analysis of industry and development of business strategy as well as determining the competitive intensity and attractiveness of a market (Porter, 1980). Attractiveness is in accordance with overall productivity of industry while unattractiveness drives down the productivity. Porter has recognized five competitive forces that shape every industry and every market. These forces determine the intensity of competition and hence the profitability and attractiveness of an industry.

a. Threat of New Entrants / Barriers to Entry. Potential competitors might influence the profitability in an industry. The key factor to analyse the threat of new entrants is the entry barrier in an industry. Moreover, new entrants will not only bring new producing ability and new resource, but also could occupy the market which belongs to other existing companies. Threat of potential entrants is reflected by two factors, barriers to entry and reaction of enterprises in the industry with potential entrants (Dagmar, 2001). The main entry barriers include the scale economy, product differences, capital requirements, sales channels development, and government behaviour and policy (Porter, 1989).

b. Threat of Substitutes. The threat that substitute products affect to an industry's profitability depends on buyer propensity to substitute, relative price performance of substitutes, buyer switching costs, perceived level of product differentiation, technology change and product innovation. The more substitute products exist, the more alternative customers, and then the demand and the prices of products will become more elastic (Yunna & Yisheng, 2014).

c. Bargaining Power of Suppliers. The strength of the supplier mainly depends on what they have to offer to the purchaser. It refers to the ability of bargaining power that implies the ability to raise prices and controlling power of resources that reflects the difficulty of other enterprises obtain this kind of resources (Karagiannopoulous, et al., 2005). Moreover, the supplier has powerful bargaining when the supplier has relatively stable market position, products or services have own certain characteristics hence the buyer is difficult to transform, and the supplier can easily form strategic alliances (Houqiang & Zaoxuan, 2013).

d. Bargaining Power of Buyers / Customers. Buyers power implies that buyers always want to push down the price of product and need good service requirements to enhance the quality of products and services in the industry. Furthermore, buyers have powerful bargaining when they need to buy products but only fewer buyers available, simple switching, extremely insignificant product, price sensitive customers, and ability to backward integration (Karagiannopoulous, et al., 2005).

e. Competitive Rivalry. Intensive competition between established companies in an industry generally constitute a robust threat of profitability. The intensity of rivalry occurs as the presence of several factors such as industry competitive structure, industry demand and capacity to fulfil the demand differentiation among companies and the level of barriers to exit the market (Yunna & Yisheng, 2014).

According to the aforementioned descriptions, the competitive analysis then will be conducted based on the actors that involving in Indonesian coal and crude palm oil trade such as the exporters, importers, and providers of vessel to transport the commodities. In order to clarify whether the freight costs might change due to the changing of incoterms from FOB to CIF for Indonesian coal and crude palm oil exports as the consequence of enactment of beyond cabotage policy by Indonesian government.

4.2. Competitiveness: Indonesian Coal Exporters

a. Threat of New Entrants / Barriers to Entry

In general, coal mining industry has relatively high barriers to entry for the new entrants. This is due to dearth of natural resources there is very limited capacity and supply which restricts new entrants to enter the global market. Moreover, in the market of global coal export, it is considered high as well since the largest coal reserves in the world are only located in certain countries that also being major coal exporters such as Australia, Indonesia, Russia, United States, and Colombia. Therefore, it is unlikely for other countries that were being coal importers to re-export their coal commodity to enter the global market of coal export which already acquired by major exporting countries for over periods since they have to fulfil their domestic demand first for coal.

b. Threat of Substitutes

The threat of substitute products for coal could be considered low. This is due to coal is the single largest and cheap source of energy to generate electricity worldwide especially in developing countries. It is also supported by the growing demand of coal in China and India as major importing countries of coal as well as the worldwide coal reserves that could last in average for hundred years with millions of tonnes under the ground. Moreover, powerful companies that backed by powerful governments, often in the form of subsidies, are in a rush to grow their markets before it is too late.

However, climate and air quality regulations, divestment campaigns, phase out policies, declining cost of renewable energy sources and more abundant gas could potentially putting pressure on coal industry in the future, since coal is the most polluting energy source due to its high proportion in carbon (IESR, 2018).

c. Bargaining Power of Suppliers / Shipping

As already discussed on previous chapter, all of Indonesian coal export shipments to exporting countries are carried by dry bulk carrier. This means that Indonesian coal export is highly dependent on seaborne transportation. Therefore, there are negligible substitutes available to transport the coal export

which enhance the strong bargaining power of suppliers, in this term shipping line and dry bulk carrier.

Indonesian coal export mostly traded under the FOB incoterms that all transportation matters will be arranged by the importers that use capable foreign-flagged dry bulk vessels as well as the foreign shipping lines. This implies that the shipments of export of Indonesian coal are depends on foreign-flagged seaborne transportation. Therefore, enforcing the shift of incoterms from FOB to CIF through beyond cabotage policy while there is still lack of Indonesian-flagged dry bulk vessels to transport the coal cargo would lead to an increase in shipping cost. This is due to several factors that could arise from enactment of the policy that in turns increase the freight rates such as:

- The volume of Indonesian coal export does not meet with the capacity of Indonesian-flagged dry bulk vessel
- None of Indonesian-flagged dry bulk vessel has acquired contract for international freight, therefore if it were unable to find cargo for the return trips, shipping companies could demand higher freight costs
- The competition of coal export shipment is limited only for Indonesian shipping lines

In addition, if coal export shipment is transported under CIF terms, exporter is still possible to use foreign-flagged dry bulk though it has to be operated by domestic shipping company, the increased freight rates would still be applied by them to compete with other Indonesian shipping companies.

d. Bargaining Power of Buyers / Importers

According to APBI (2018), currently the global coal market for export is in buyers' market condition. Therefore, the bargaining power of coal importers has been considered strong. This is due to the increasing price of coal and the condition of the global coal market which is oversupply as the rapid growing of coal production in several Indonesian competitors such as Australia, Colombia, and Russia. Moreover, the exporters from United States have also already enter the market in Asia which is the emerging market for Indonesian coal exporters since the major of Indonesia coal importers are countries in Asia. Hence, the importers have more options to purchase coal.

Most of Indonesian coal export currently traded using FOB incoterms. Thus, considering the market condition, enforcing the change of incoterms from FOB to CIF through beyond cabotage policy will likely give negative impacts for Indonesian exporters. This is due to under the CIF terms, exporter acts as an agent to the importer, hence the shipping cost will be included to the sale price. Since the shifting of incoterms most likely will increase the freight cost, the importers will have to pay more expenses than they already spent under the FOB terms. Therefore, importers that have high bargaining power might shift their coal import from Indonesia to other exporting countries.

e. Competitive Rivalry

The current competition of global coal market for export is considered medium to high as the rapid growing of coal production among the major exporting countries and the increasing price of coal. The oversupplying global coal market has put Indonesian exporters to enhance their production quality and quantity to maintain their position as the major coal exporter. However, since the exit barriers are high, the competition is limited within existing exporters. The major exporting countries might battle for larger market share.

Nevertheless, the changing from FOB to CIF incoterms could give counter-productive effects for Indonesian coal exporters in order to retain the competitive position in global coal market. This is due to the strong bargaining power of importers that could shift their import to coal produced by other exporting countries as the consequence of high shipping cost. Moreover, such condition will enhance the government of other exporting countries to increase their exports by providing subsidies to carriers to obtain lower freight costs as stated by Ishikawa & Tarui (2017). Therefore, Indonesian coal export could be outpaced by other exporting countries that have larger coal reserves such as Russia and United States.

4.3. Competitiveness: Indonesian Crude Palm Oil Exporters

a. Threat of New Entrants / Barriers to Entry

Crude palm oil industry is an industry that highly dependent on the availability of palm plantation resources. Moreover, palm plantation can only grow in several tropical countries in Asia and several countries in South America and Africa. Based on this condition, the threat of new entrants in this industry is considered low due to the limited available resources. The world's largest palm plantation can be found in Indonesia and Malaysia that also the main exporting countries.

However, Thailand as the new crude palm oil exporter can be considered as potential threat for Indonesian crude palm oil exporter, since it has considerable good bargaining position and land spaces to develop palm plantation although it still has much lower production capacity than Indonesia (Widyaningtyas & Widodo, 2016).

b. Threat of Substitutes

The growth of an industry will enhance the development of substitution products. In crude palm oil industry, the availability of soybeans oil and vegetables oil could be considered as the threat of substitute products. According to Haowei, et al (2016), the supply growth of vegetables oil has been pushed the price of the commodity, hence it could have a competitive price with palm oil. It can be said that the main potential substitution of palm oil is vegetables oil which in turns give strong pressure to palm oil as substitution products.

The threat of economically competitive biotechnology is also a point to watch into the future, where healthy commercially-viable alternatives are being developed (Widyaningtyas & Widodo, 2016).

c. Bargaining Power of Suppliers / Shipping

As already discussed on previous chapter, all of the shipments of Indonesian crude palm oil export to exporting countries are transported by the chemical tanker under the group of tanker. This implies Indonesian crude palm oil export is highly dependent on marine transportation. Thus, there are negligible substitutes available to transport the coal export which enhance the strong bargaining power of suppliers, in this term shipping line and tanker.

The majority of Indonesian crude palm export is traded under the FOB incoterms that all transportation matters will be arranged by the importers that use capable foreign-flagged tankers as well as the foreign shipping lines. This means that the shipments for Indonesian crude palm oil export are depends on foreign-flagged marine transportation. Thus, enforcing the shift of incoterms from FOB to CIF through beyond cabotage policy while there is still lack of Indonesian-flagged chemical tankers to transport the coal cargo would lead to an increase in transportation cost since most of Indonesian tankers are dedicated to ship oil products. This is due to several factors that could arise from enactment of the policy that in turns increase the freight rates such as:

- The volume of Indonesian crude palm oil export does not meet with the capacity of Indonesian-flagged chemical tankers
- Indonesian-flagged chemical tankers have lack of contract acquired for international freight, therefore if it were unable to find cargo for the return trips, shipping companies could demand higher freight costs
- Limited competition for Indonesian shipping lines for crude palm oil export carriage

Furthermore, if the shipment of crude palm oil export is transported under CIF terms, exporter is still possible to use foreign-flagged tanker or chemical tanker though it has to be operated by Indonesia shipping line. In order to compete with other domestic shipping lines, it will still charge the shipper with the increase freight costs.

d. Bargaining Power of Buyers / Importers

Indonesian crude palm oil industry is considered have a low bargaining power of importers. This is due to the vast number of consumers or importers that purchase the crude palm oil industry's product and limited producer of this commodity. Currently, the production of crude palm oil is mainly concentrated in Indonesia and Malaysia.

Nonetheless, enforcing the shifting of incoterms from FOB to CIF for Indonesian crude palm oil export might still give counter-productive effect although the importers have low bargaining power, because under the CIF terms, the shipping cost will be included to the sale price. As the shifting of incoterms most likely will increase the freight cost, the importers will have to pay more expenses than they already spent under the FOB terms. Therefore, importers might shift their crude

palm oil to Malaysia which is the Indonesian biggest competitor or other exporting countries. Moreover, the importers could also change their focus imported products from crude palm oil to vegetables oil as the substitute product due to the increased costs they should spend for importing crude palm oil.

e. Competitive Rivalry

The intensity of competition in global crude palm oil for export is considered low since the strong competition over periods has been shown only between Indonesia and Malaysia exporters. However, the growing supply from other exporter countries such as Guatemala, Papua New Guinea, Colombia, and new entrant, Thailand should not be ignored. This is due to the fluctuation of volume of crude palm oil exported between Indonesia and Malaysia, while other exporting countries are steadily growing though they have less production than Indonesia and Malaysia.

In addition, the counter-productive effects for Indonesian crude palm oil exporters as the consequence of changing incoterms from FOB to CIF could give potential gain from other exporting countries. Moreover, as explained on coal competitive analysis, this condition could also lead to the government in other exporting countries to initiate giving subsidies on shipping companies to transport the exported products in order to enhance their exports. For instance, Malaysia as the big producer as well as exporter of crude palm oil and also re-export Indonesian crude palm oil could gain more from the global crude palm oil trade, since the increased freight costs from Indonesia would not really affect them due to the close distance. Therefore, Malaysian exporters could attract more importers to purchase their crude palm oil.

4.4. Conclusion of Competitive Analysis

Indonesian exporters have different bargaining positions within two different industries. This is due to between coal and crude palm oil industries have different level of competition intensity and different obstacles.

The bargaining position of Indonesian coal exporters over the suppliers or shipping companies have been considered low as their export activities mainly depend on the availability of dry bulk vessels to transport coal overseas. In addition, they also have low bargaining position over the importers due to the current global coal market is in oversupply condition. Similar to coal exporters, Indonesian crude palm oil exporters are highly dependent on seaborne transportation by using tankers. This means that Indonesian crude palm oil exporters have low bargaining position over suppliers. However, the bargaining position of Indonesian crude palm oil over the suppliers have been considered high.

To conclude, based on the competitive analysis conducted in this chapter and by considering several factors, enforcing the shift of incoterms from FOB to CIF through beyond cabotage policy will result on negative effects on Indonesian coal and crude palm oil exporters and potentially give shocks on both commodities global trades.

Chapter 5 Research Methodology and Data

This chapter presents methodological approach to measure the economic and trade impacts, which in this case employ the GSIM model. Data description and argumentation that will be used in the model are also provided as well in this chapter. Moreover, the development of scenarios that could cover the potential effects of changing the incoterms from FOB to CIF as the consequence of beyond cabotage policy enforcement will be explained further.

5.1. Introduction

Enforcing protectionist measures such beyond cabotage policy which led to change of incoterms from FOB to CIF for Indonesian coal and crude palm oil exports while the domestic shipping industry is still lack of capability and capacity could bring higher transportation costs. As stated by Hummels & Lugovskyy (2003), the rise of transport costs could be represented as the increase in non-tariff equivalent. Therefore, in order to measure the potential effects of the policy on coal and crude palm oil trades, the appropriate model that can cover the issues should be employed. There are several modelling tools that can be implemented in this research, namely the gravity model, Computable General Equilibrium (CGE) modelling, and Global Simulation (GSIM) model. Each possible model will be compared and the most suitable model for the context of research can be determined.

The gravity model introduced by Tinbergen (1962) implies the same principles as Newton's gravity theory which predicts bilateral aggregate trade flows between two countries related positively to countries' income and negatively related to distance between them (Baldwin & Taglioni, 2007). However, this model requires a policy that has been implemented for a sufficient period of time hence the effects could be observed (Mele & Baistrocchi, 2012). Therefore, this implies that gravity model needs historical data or the *ex-post* evaluation. Meanwhile, the scope of this research requires an *ex-ante* approach or projection of future effects as there is no appropriate factual effect available of changing incoterms for Indonesian coal and crude palm oil exports. Thus, the gravity model is irrelevant to this research.

In order to simulate the projection of policy effects, General Equilibrium (GE) or Partial Equilibrium (PE) evaluation could be utilized as an economic analysis. In GE models, it is assumed that every market has an effect on every other market, hence all markets need to be modelled at the same time. An example of GE models is the Computable General Equilibrium (CGE) model that contains the comparative static framework using computer to evaluate the effect of a change in trade policy. It disaggregates world merchandise trade by sectors and explicitly accounts all the links between sectors of an economy (Raihan, 2017). In reverse, the PE models assume the effects on one market have no effects on other markets. An example for PE models is the Global Simulation (GSIM) model which is industry focused but can be global in scope. It focuses on one or multiple specific products or markets by neglecting the links between factor incomes and expenditures (Berden, 2019). To further clarify the difference between GE and PE analysis, several advantages and disadvantages of both analysis are presented on Table 7 below.

	General Equilibrium	Partial Equilibrium
Advantages	• More realistic • More sectoral detail and sector interactions • Models the second or third order effects • Interdependence matters • For large policy shocks where interaction effects matters	• Simpler • Change easier to implement • Small shocks difference with GE small • Much less data required • Cheaper and faster to run • Interdependence does not matter • For focused and detailed policy questions
Disadvantages	• Complex • Changes hard to implement • Large data requirement • Expensive and time consuming to run • Assumptions are required to get stable outcomes • Very detailed sectors and shocks	• Less realistic • Large shocks difference with GE big, as markets interact so PE is not suitable • Inadequate to model the second or third order effects • Interdependence matters

Table 8: General Equilibrium vs Partial Equilibrium
Source: Berden (2019)

The CGE model seems attractive because it provides more concrete welfare analysis that influence real policy making. The model possesses sufficient structural features and able to analyse large, discrete, policy changes that are far away from the baseline. Moreover, it is considered useful to build a bridge between economists and policy makers by providing them with a base for dialogue (Raihan, 2017). However, the CGE model is complex to be implemented and typically requires a considerable amount of data. Moreover, the result of this model is highly dependent on key economic parameters on which uncertainties remain and subsequently generates too many unnecessary possibilities (Taylor & von Arnim, 2006).

On the other hand, the GSIM model has main advantage with less complexity in terms of data and calculation requirements compared to the CGE model in regards with the limitations of the observed sectors. However, it is still managed to provide relatively prompt and broad results of simultaneous economic assessment of the impacts on policy changes, mainly in the form of trade effects, welfare effects (i.e. producer surplus, consumer surplus, and changes in tariff revenue), and output effects. Therefore, the aforementioned results will properly answer the addressed main question in this research. Considering the change in tariffs or NTMs, the possible results of Indonesian beyond cabotage policy would not be very large. For these reasons, the GSIM model is employed as the trade simulation tool in this research.

Further description regarding the GSIM model procedure and formulation will be provided in the next section.

5.2. The Global Simulation (GSIM) Model

The GSIM model was developed in 2003 by Joseph Francois and H. Keith Hall as a simulation tool for PE analysis. The model aims to provide calculated effects of trade policy changes that are relevant for importers, exporter, and governments alike (Francois & Hall, 2003). The GSIM model is relatively easy to be used, due to its minimum requirement of inputs and calculation needs, makes it the most reasonable method to conduct this research. In accordance with the relatively narrow research context and limited availability of information.

The GSIM model is formed over the relative difference in export-import trade correlations. The model consists of three main input matrices. Firstly, the trade values of goods from the origin to the destination. Secondly, the initial tariff and quantified NTMs before the shock. Lastly, the final tariff and quantified NTMs after the shock provided in third matrix. On top of that, to run the model elasticities inputs, namely composite demand, supply, and substitution elasticities are also required. Moreover, the GSIM model will generates five outputs such as change in output, consumer surplus, producer surplus, net welfare effect and change in price.

The model uses national product differentiation as a basic assumption which means that imports are imperfect substitutes for each other. The elasticities for substitution across goods from different sources and demand in aggregate are remained constant. The model's basic calculation structure comprises the development of relevant elasticities, both own and cross prices, and the inclusion of these terms in global supply and demand definitions and market clearing conditions. The structure then used to calculate the welfare effects on producers, consumers, and governments. (Francois & Hall, 2003).

Therefore, several main mathematical elements of the GSIM model, as developed by Francois & Hall (2003), will be presented next. Additionally, the formula elaborations will be grouped corresponding to the model's elements in order to faithfully clarify the model mechanism.

Elasticities

A substantial element of the model approach is the underlying own and cross price demand elasticities. To obtain these values, the model assumes that within each importing country, import demand defined as a function of industry prices and total expenditure on the product category (Francois & Hall, 2003).

First, the import demand modelled as follows:

$$M_{(i,v),r} = f\ (P_{(i,v),r}, P_{(i,v),s\neq r}, y_{(i,v)}) \quad \text{..... (1)}$$

Where,

$M_{(i,v),r}$ = import demand of country *v* for product *i* from country *r*
$y_{(i,v)}$ = total expenditure on imports of *i* in country *v*
$P_{(i,v),r}$ = internal price for goods from region *r* within country *v*
$P_{(i,v),s\neq r}$ = price of other varieties

By differentiating equation (1), taking advantage of the zero-homogeneity property of Hicksian demand and applying the Slutsky decomposition of partial demand, the own and cross price elasticities then can be derived (Francois & Hall, 2003). As

defined on equation (2) and (3) indicating the own-price elasticities and cross-price elasticities respectively:

$$N_{(i,v),(r,r)} = \theta_{(i,v),r}E_m - \sum_{s \neq r} \theta_{(i,v),s}E_s = \theta_{(i,v),r}E_m - (1 - \theta_{(i,v),r})E_s \ldots\ldots\ldots \quad (2)$$

$$N_{(i,v),(r,s)} = \theta_{(i,v),s}(E_m + E_s) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (3)$$

Where,

$N_{(i,v),(r,r)}$ = own-price demand elasticity
$N_{(i,v),(r,s)}$ = cross-price elasticity
$\theta_{(i,v),r}$ = expenditure share of good *i* in country *v* from exporting country *r*
$\theta_{(i,v),s}$ = expenditure share of good *i* in country *v* from exporting country *s*
E_m = elasticity of aggregate import demand in country *v*
E_s = elasticity of substitution

National Demand and Supply Equations

As the own-rice and cross-price elasticities are having defined, then the demand for national product diversities will be determined. Additionally, the national supply functions will be required in order to specify the full market clearing (Francois & Hall, 2003).

The composite demand for national product varieties and national supply functions are determined using the following equations:

$$P_{(i,v),r} = \left(1 + t_{(i,v),r}\right)P_{(i,r)}{}^{*} = T_{(i,v),r}P_{(i,r)}{}^{*} \ldots\ldots\ldots\ldots\ldots\ldots \quad (4)$$

Where,

$P_{(i,v),r}$ = internal price for the same good
$P_{(i,r)}{}^{*}$ = export price received by exporter *r* on world market
$T_{(i,v),r}$ = proportional price mark-up achieved by tariff *t*

$$X_{i,r} = ks_{i,r}(P^{*}{}_{(i,r)})^{es_{(i,r)}} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (5)$$

Where,

$X_{i,r}$ = export supply of *i* from country *r* to world markets
ks = constant term
es = elasticity of supply

By differentiating equations (1), (4), and (5) and manipulating the results, the following can be derived:

$$\hat{P}_{(i,v),r} = \hat{P}_{i,r}{}^{*} + \hat{T}_{(i,v),r} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (6)$$

$$\hat{X}_{i,r} = E_{X(i,r)}\hat{P}_{i,r}{}^{*} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (7)$$

$$\widehat{M}_{(i,v),r} = N_{(i,v),(r,r)}\hat{P}_{(i,v),r} + \sum_{s\neq r} N_{(i,v),(r,s)}\hat{P}_{(i,v),s} \ldots\ldots\ldots\ldots\ldots\ldots (8)$$

Where ^ denotes a proportional change, thus $\hat{x} = \frac{dx}{x}$

An essential remark to make here is that when the discussion is concentrated in the text around production for export, domestic production can be included as domestic consumption within the framework. This implies that, when data on domestic production are available, domestic industry effects can be included through modelling home market trade in addition to foreign trade, using a non-nested import and domestic demand structure (Francois & Hall, 2003).

Global Equilibrium Conditions

From the aforementioned system of equations, in order to arrive at applicable model defined in terms of world prices, further substitutions need to be made. In this manner, equations (6), (2), and (3) are substituted into equation (8) and sum over import markets. Hence, yields following equation:

$$\begin{aligned}\widehat{M}_{i,r} \quad &= \sum_v \widehat{M}_{(i,v),r} = \sum_v N_{(i,v),(r,r)}\hat{P}_{(i,v),r} + \sum_v \sum_{s\neq r} N_{(i,v),(r,s)}\hat{P}_{(i,v),s} \\ &= \sum_v N_{(i,v),(r,r)}\left[P_r^{\,*} + \hat{T}_{(i,v),r}\right] + \sum_v \sum_{s\neq r} N_{(i,v),(r,s)}\left[\hat{P}_s^{\,*} + \hat{T}_{(i,v),s}\right] \ldots\ldots (9)\end{aligned}$$

Then, equation (9) can be set as equal to the modified version of equation (7). Hence, the global market clearing condition for each export variety can be yielded as follows:

$$\widehat{M}_{i,r} = \hat{X}_{i,r} \Rightarrow$$

$$\begin{aligned}E_{X(i,r)}\hat{P}_{i,r}^{\,*} &= \sum_v N_{(i,v),(r,r)}\hat{P}_{(i,v),r} + \sum_v \sum_{s\neq r} N_{(i,v),(r,s)}\hat{P}_{(i,v),s} \\ &= \sum_v N_{(i,v),(r,r)}\left[P_r^{\,*} + \hat{T}_{(i,v),r}\right] + \sum_v \sum_{s\neq r} N_{(i,v),(r,s)}\left[\hat{P}_s^{\,*} + \hat{T}_{(i,v),s}\right] \ldots. (10)\end{aligned}$$

Where,

$\hat{P}_{i,r}^{\,*}$ = internal price for goods from country *r*
E_X = elasticity for export supply

Equation (10) can be used for any set of *R* trading countries to define *S*≤*R* global market clearing conditions (for *R* exporters). Furthermore, if domestic production is also modelled, then exact *R*=*S* market clearing conditions is acquired (Francois & Hall, 2003).

Welfare and Revenue Effects

To calculate national welfare and revenue effects, the GSIM model has provide basic sets of prices. Combination of price and quantity effects with partial equilibrium measures of the change in producer (i.e. exporter) surplus ΔPS and net consumer (i.e. importer) surplus $\Delta CS_{i,v}$ can be used as rough measurements of welfare effects (Francois & Hall, 2003).

Conceptually, the measurement of producer surplus is presented by the following equation:

$$\Delta PS = R^0_{(i,r)}\hat{P}_{(i,r)}{}^{*} + \frac{1}{2}R^0_{(i,r)}\hat{P}_{(i,r)}{}^{*}\hat{X}_{i,r} = \left(R^0_{(i,r)}\hat{P}_{(i,r)}{}^{*}\right)\left(1 + \frac{E_{x(i,r)}\hat{P}_{i,r}{}^{*}}{2}\right) \ldots\ldots (11)$$

Where,

$R^0_{(i,r)}$ = benchmark export revenues valued at world prices

Then, to determine the consumer surplus, composite goods function should be defined first as modelled below:

$$Q_{i,v} = A_v\left[\sum_{i=1}^{r}\gamma_{(i,v),r}M^{\rho}_{(i,v),r}\right]^{1/\rho} \ldots\ldots\ldots\ldots\ldots\ldots (12)$$

On account of the price of composite goods is determined as 1 in the benchmark equilibrium, hence, the proportional change in the price of Q can be modelled as follows:

$$\hat{P} = \frac{dP}{P} = \sum_{i=1}^{r}\theta_{(i,v),r}\hat{P}_{(i,v),r} = \sum_{i=1}^{r}\theta_{(i,v),r}\left[\left(1 + \hat{P}_{i,r}{}^{*}\right)\frac{T_{1,(i,v),r}}{T_{0,(i,v),r}}\right] \ldots\ldots\ldots (13)$$

Ultimately, the change in consumer surplus can be determined by the change in the area between demand curve for the composite goods and the price of composite goods, as perceived by the consumers (Francois & Hall, 2003). This is can be represented by the following equation:

$$\Delta CS_{(i,v)} = \left(\sum_r R^0_{(i,v),r}T^0_{(i,v),r}\right)\left(\frac{1}{2}E_{M,(i,v)}\hat{P}_{(i,v)}{}^{2}.sign\left(\hat{P}_{(i,v)}\right) - \hat{P}_{(i,v)}\right) \ldots\ldots\ldots (14)$$

$$where\ \hat{P}_{(i,v)} = \sum_r \theta_{(i,v),r}\hat{P}_r{}^{*} + \hat{T}_{(i,v),r}$$

Where,

$P_{(i,v)}$ = price for composite imports
$R^0_{(i,r)}\,.\,T^0_{(i,v),r}$ = initial expenditure at internal prices

Combination of change in producer surplus, consumer surplus, and import tariff revenues can be utilized to make an approximation of welfare changes (Francois & Hall, 2003).

5.2.1. Non-Tariff Measures

Based on analysis conducted on Chapter 4, the enactment of beyond cabotage policy that will force the shifting of incoterms from FOB to CIF could increase the transportation costs for shipment of Indonesian coal and crude palm oil exports. This is due to several factors mentioned in accordance with the lack of availability of Indonesian fleet. According to Anderson & van Wincoop (2004), transportation costs are one of the major components of trade costs along with border costs and distribution costs. Moreover, the main channel of international trade such as logistics and international transportation as well as the non-fiscal government control over the international movement of goods have been considered as the reason of the presence of non-tariff measures (NTMs) (Veenstra, 2015). Therefore, in this

research, the trade costs are being considered as the NTMs. This is due to the trade costs have also been the trade barriers for trading across borders other than ordinary customs tariff (UNCTAD, 2013). Hence, a more extensive approach to trade barriers should be developed.

In order to quantifying the trade costs as the NTMs, this research then employs the total trade costs methodology conducted by Anderson & van Wincoop (2004). The total trade costs are given as the product of the border costs, distribution costs, and transportation costs, defined by the following equation as modified by Karpenko, et al (2019):

$$TC_{x,i} = (1 + B_{Cost_{x,i}})(1 + D_{Cost_i})(1 + T_{Cost_{x,i}}) \quad \text{..... (15)}$$

Where,

$TC_{x,i}$ = total trade cost perceived by the exporter *x* to the importer *i*
$B_{Cost_{x,i}}$ = border related costs borne by the exporter *x* trading with importer *i*
D_{Cost_i} = distribution cost within the importer's border *i*
$T_{Cost_{x,i}}$ = transportation cost perceived by the exporter *x* to the importer *i*

Border costs are disaggregated into policy barriers (i.e. tariffs and non-tariff measures), costs incorporated with the use of different currencies, costs arising from language barriers, and information costs. Meanwhile, distribution costs are the costs associated with the distribution services within the border of buyer or importer. In addition, the transportation costs can be defined as shipping expenses of internationally traded good from origin point to destination point. These costs are including the freight rates and insurance (Anderson & van Wincoop, 2004).

5.2.2. Data Requirements

As previously discussed, the GSIM model is an attractive simulation tool to analyse policy changes and their effects on trade due to the limitation of data required to successfully run the model. In specific, the inputs needed to run the GSIM model are comprise as follows: (1) bilateral trade flows, (2) tariff figures, (3) quantified estimates for NTMs figures, (4) elasticities for composite demand, substitution, and supply (Francois & Hall, 2003).

For an accurate assessment on the global coal and crude palm oil trade effects of changing incoterms from FOB to CIF for Indonesian exports due to beyond cabotage policy, several major exporting and importing countries for both commodities were selected. For GSIM analysis in regards with global coal trading, the following countries were chosen: Indonesia, Australia, United States, China, India, Japan. Meanwhile, for GSIM analysis in accordance with global crude palm oil trading, the countries comprise as follows: Indonesia, Malaysia, Guatemala, Papua New Guinea, India, Netherlands, Kenya, Mexico. According to ITC (2019), these countries are considered as the main actors in global coal and crude palm oil trades whether as the exporter or importer. Together with Rest of World (ROW), these samples are adequate to simulate the model.

Bilateral Trade Flows

The bilateral trade data were retrieved from the UN Comtrade and ITC datasets, based on the 2018 data that is currently available, or in the case of unavailability of it, will be substituted with 2017 figures. Trade flows are in the form of value terms at

world prices of HS commodity codes. For the purpose of the research, the HS codes used were 2701 and 151110 for coal and crude palm oil respectively.

Tariff and Non-Tariff Measures

The tariffs for the identified countries were collected from the TRAINS database, accessible through WITS platform of all actual imposed tariffs for the HS code 2701 and 151110. Under the TRAINS database, there are three types of tariffs exist, namely bound tariffs, most favoured nation (MFN) tariffs, and preferential tariffs. To ensure that the tariffs were accurately applied, then the effectively apply tariffs were employed. On TRAINS tariff classification system, the effectively applied tariff results in the application of the lowest available tariff. Meaning that if a preferential tariff exists, it will be taken as the effectively applied tariff. Otherwise, the MFN applied tariff will be utilized.

As for the non-tariff measures, the calculated trade cost equivalents derived from equation (15) will be treated as the NTMs. To ascertain the calculation, several data are acquired from various sources and studies. In regard to border costs, the policy barrier term represents the combined effect of tariffs and NTMs, however the tariffs only account for 5 per cent of the total trade costs (Anderson & van Wincoop, 2004). Furthermore, as the tariffs are already included in the GSIM model, the tariffs term was dropped from the policy barrier effect on border costs. Therefore, the national average of *ad valorem* of core NTMs were collected individually from Kee, et al (2009) which indicate NTMs such as voluntary export restraints and quotas.

For the distribution cost, this research employs the average distribution costs in industrialized countries that amount to 55 per cent on a tariff equivalent basis as estimated by Anderson & van Wincoop (2004). In case the corresponding countries are not industrialized countries, as for the simplicity and limited data available, the distribution costs were also fixed at 55 per cent. However, this did not seem plausible for the estimation of distribution costs for the rest of the world. Therefore, this research turned to use the estimation from Karpenko, et al (2019) that the distribution costs account for 73 per cent of the total trade costs on a tariff equivalent basis in the rest of the world.

Regarding the transportation costs, due to the absence of detailed data of transport charges for coal and crude palm oil around the world, then the CIF/FOB ratios as transport cost equivalents were utilized. The data were derived from OECD platform under the HS codes applied for commodities researched. According to several studies such as Limao & Venables (2001), Hummels & Lugovskyy (2003), Gaulier, et al (2008), and Miao & Fortanier (2017), the ratio CIF/FOB is relevant as it provides the measure of transport costs in *ad valorem* terms (include the freight rates and insurance) on trade between each pair of countries. Moreover, because of its availability and coverage, the ratio is also applicable to assess the effect of transportation costs on trade.

Elasticities

The last types of data required to run the GSIM model are the demand, substitution, and supply elasticities. Since this research applying GSIM model for two different industries, then different elasticities derived from various sources for the models are applied. For the coal industry, a demand elasticity of 5.0 has been used, as a standard average elasticity demand for coal that provided by Ghodsi, et al (2016). Regarding the coal supply elasticity, the average value of 3.0 was derived from

Graham, et al (1998). While, the substitution elasticity was using the standardized value of 10.0 from the GSIM model as applied by Fries (2011) and Kampa (2011) for petrochemical and mining industries.

In regard to crude palm oil industry, the demand elasticities were derived from Arifin (2010) with values ranging from 0.56 to 1.96 for different countries. Meanwhile, the supply elasticities were collected from Siregar & Yulismi (2007) with different values between countries ranging from 0.4 to 0.97. Moreover, the substitution elasticity for crude palm oil industry taken from Qiu (2014) with average value of 3.22.

5.2.3. GSIM Model Scenarios

Based on competitive analysis conducted before, it can be concluded that the main issue regarding the enactment of beyond cabotage policy is the potential occurrence of higher freight costs to transport coal and crude palm oil products from Indonesia that consequently will enhance the government of other competitors to increase their exports through subsidizing the carriers which in turns lower the freight costs from their countries. In order for the model to be implemented and to look into the potential impacts of beyond cabotage policy, this research will perform two different scenarios for each commodity modelled by GSIM.

However, as such policy have not been imposed yet and due to limited data available on the guidelines of the policy, the assumption regarding the incremental of risen transportation costs for the scenarios will be based on estimation conducted by Indonesian coal mining association and Indonesian palm oil association which are authorized stakeholders that involved in Indonesian coal and crude palm oil export activities. They stated that enforcing beyond cabotage policy which in turns change the FOB to CIF incoterms could increase the freight costs for shipment of coal and crude palm oil exports up to 15 per cent while domestic shipping industry is still lacking in capacity and capability to transport both commodities.

Coal and Crude Palm Oil Scenario 1

Indonesian Freight Costs Increase, others are Stable

In this scenario, it is simulated where Indonesian beyond cabotage policy would already take effect on Indonesian coal and crude palm oil exports while the national shipping industry is not ready to serve the export activities. Therefore, the assumptions to be made here are the freight costs to transport both commodities from Indonesia using domestic vessels or domestic shipping companies are increased by 15 per cent, meanwhile the freight costs in other countries to transport coal and crude palm oil are remain unchanged or stable.

According to Hummels & Lugovskyy (2003), increased 50 per cent in transport costs implies the increase in *ad valorem* transport costs by 3 per cent. Thus, in this research it is assumed that the 15 per cent increment in transportation costs could implied as increase in CIF/FOB ratio by 1 per cent. Concretely, the scenario then look as follows:

- Indonesian freight costs: +15% (+1% in CIF/FOB ratio)
- exporting countries: no change
- importing countries: no change

Coal and Crude Palm Oil Scenario 2

Indonesian Freight Costs Increase, Competitors' are Reduced

In the second scenario, simulation regarding the Indonesian freight costs will be similar to scenario 1. However, in this scenario, the government in other exporting countries will start the initiation to enhance their exports quantity by providing subsidies for the carriers to reduce the freight costs. In this manner, it is assumed that subsidy from the government would reduce 10 per cent freight costs from their countries which implied as decreasing in CIF/FOB ratio by 0.6 per cent. Moreover, for the importing countries the freight costs are remain unchanged as they do not take part in global market of coal and crude palm oil exports. To clarify, the scenario is described as follows:

- Indonesian freight costs: +15% (+1% in CIF/FOB ratio)
- exporting countries: -10% (-0.6% in CIF/FOB ratio)
- importing countries: no change

Chapter 6 Results and Data Analysis

In order to have preliminary overview of the potential impacts of Indonesian beyond cabotage policy enactment on Indonesian coal and crude palm oil exporters as well as both commodities trades, the competitive analysis conducted in Chapter 4 were used to develop the model scenarios. Incorporated with the output of calculated trade costs and the aforementioned bilateral trade flows, tariffs, elasticities data, the GSIM model has been run. Accordingly, this chapter will describe and analyse the overall results obtained from the simulation of GSIM model based on two developed scenarios for coal and crude palm oil commodities.

6.1. GSIM Result: Coal

This section describes the analysis for the potential economic and trade impacts of the Indonesian beyond cabotage policy on global coal trade based on selected major exporting and importing countries in terms of trade effects and welfare effects.

6.1.1. Potential Trade Effects

By adding the 1 per cent increment of CIF/FOB ratio on *ad valorem* trade cost equivalents for Indonesian coal export in scenario 1 and 2 as well as the 0.6 per cent reduction of CIF/FOB ratio in scenario 2 as the final NTMs figures in the GSIM matrix, the trade effects have been generated for Indonesia and other top exporting and importing countries. Due to the higher freight costs to transport coal from Indonesia, various shifts are expected to take place on the global coal trade. Moreover, the expected percentage increase or decrease in trade flows for each scenario between major countries involved in global coal trade are presented in Figure 18.

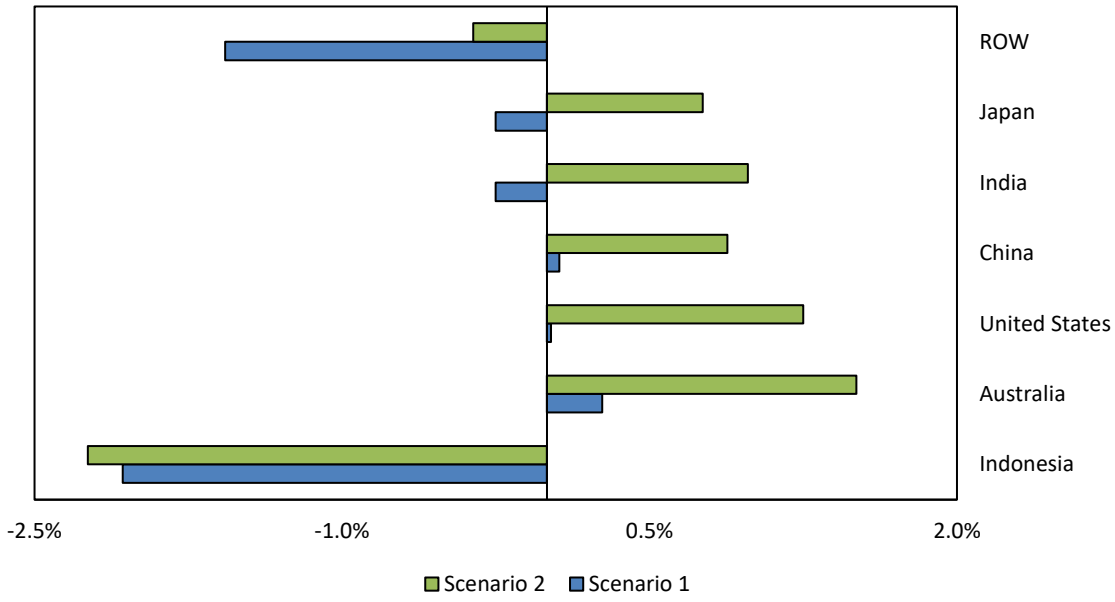

Figure 18: GSIM Model Coal Percentage Change in Output
Source: Author

From two scenarios simulated, it is obvious that Indonesia has the most to loss in global coal trade with more than 2 per cent decrease in output due to higher costs

incurred. Under scenario 1, other main exporting countries such as Australia and United States have a slight increase in their coal exports with 0.27 per cent and 0.02 per cent respectively, as the consequence of higher transport costs from Indonesia, the importers will seek the alternative coal products other than that produced by Indonesia. It is also supported by the low bargaining position of Indonesian exporters over the importers. Although China is the main coal importer, it shows larger gain in output than United States. This is due to China has been considered as the country with large reserves for coal production which means that the country is not only importing coal but also produce by itself. Therefore, as the higher costs to import coal from Indonesia, China will start to allocate their domestic production to be exported to minor importing countries, especially in Asia that depends heavily on coal from Indonesia. In addition, coal production in Japan and India shows tolerable decrease in their production because they are depending heavily on coal from Indonesia.

In scenario 2, the government in main exporting countries have involved by enhancing their coal exports by lowering the freight costs through subsidy. Hence, Australia and United States have the most significant gain for their coal exports with 1.51 per cent and 1.25 per cent respectively. With the higher costs from Indonesian coal, they will get better competitive position in the global coal market over Indonesian exporters. In addition, United States will start to substitute Indonesia to serve coal products in emerging market in Asia. The main importing countries such as China, Japan, and India will also start to gain significantly rather than in scenario 1. This is due to their coal production have been sufficiently supplied by the major exporting countries that provide lower costs than Indonesia.

6.1.2. Potential Welfare Effects

This section provides welfare effects in terms of changes in producer surplus and consumer surplus. Figure 19 and 20 present the results for the two scenarios and specified per country.

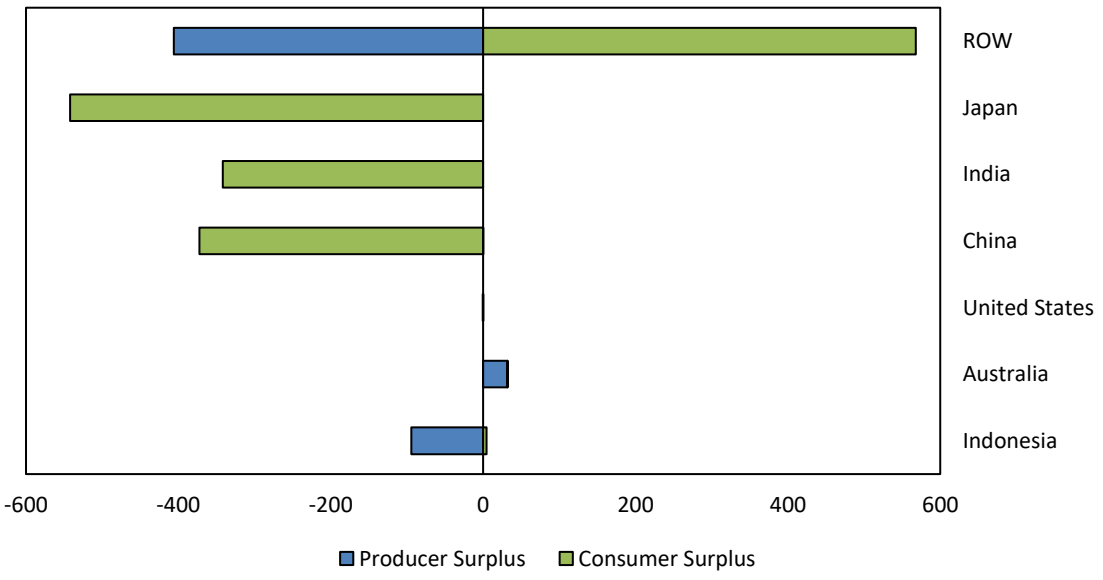

Figure 19: Scenario 1 Change in Consumer and Producer Surplus (in million USD)
Source: Author

In scenario 1, Indonesia experience the largest decrease in producer surplus by losing around $94 million, because of the higher costs for exporting coal from the country would make Indonesian coal less attractive for the importing countries. In contrast, Australia gains the most in producer surplus by obtaining around $127 million as it has more access to lucrative markets in Asia due to several importers who were initially import coal from Indonesia will seek other exporters that provide costs not as high as Imposed by Indonesian exporters. Moreover, United States' exporters also gain slightly with $462 thousands in producer surplus, because the global coal market will open up for them to serve the supply gap in the market that being left by Indonesia. From the importers' side, the main importing countries such as China, India, and Japan are witness significant decrease in consumer surplus. This is due to the costs incurred to buy Indonesian coal have exceed the costs that they are willing to pay. In addition, Japan has the most loss in consumer surplus by losing around $542 million as it is not producing country of coal and depends heavily on Indonesian coal for its industries.

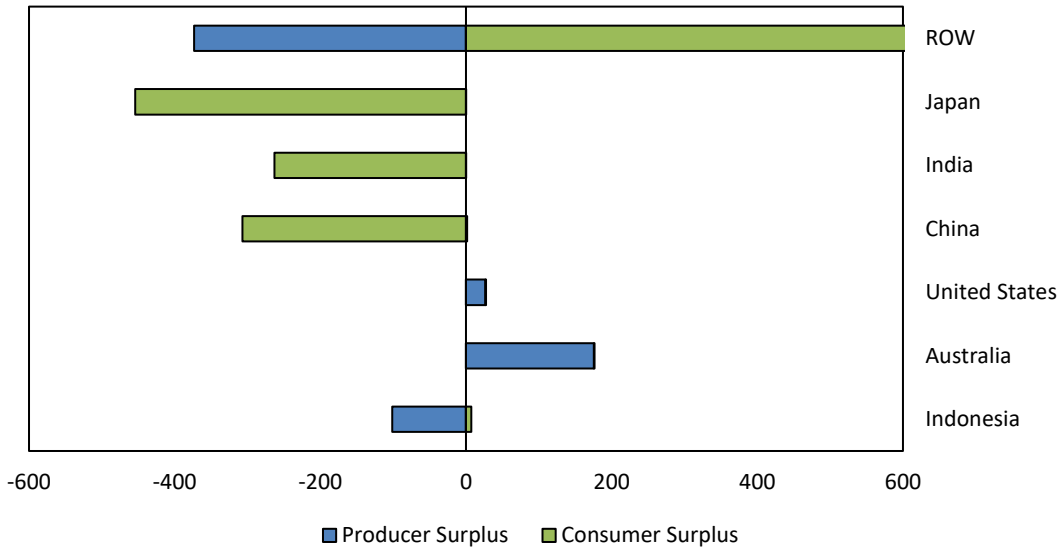

Figure 20: Scenario 2 Change in Consumer and Producer Surplus (in million USD)
Source: Author

As in the scenario 2 the government of other exporting countries have initiated to reduce the freight costs for their coal exports, the loss in producer surplus experienced by Indonesian exporters have increased more with $101 million due to the importers of Indonesian coal will shift their coal demand to other exporting countries that provide lower costs than Indonesia. Accordingly, countries such as Australia and United states will gain more considerable amount in producer surplus with $175 million and $26.5 million respectively compared to scenario 1. In addition, as Australia has been already the world's largest coal exporter, by lowering the transport costs for its coal export, could strengthen its competitive position in global coal trade. In importers' perspective, importing countries such as China, India, and Japan are still significantly loss in consumer surplus. However, under this scenario, the losses are slightly reduced as they started to import coal from exporting countries that provide lower costs than imposed by Indonesia.

6.2. GSIM Result: Crude Palm Oil

This section provides analysis for the potential economic and trade impacts of the Indonesian beyond cabotage policy on global crude palm oil trade based on selected major exporting and importing countries in terms of trade effects and welfare effects.

6.2.1. Potential Trade Effects

Similar to the GSIM model conducted for coal commodity, in analysing crude palm oil trade, scenario 1 and 2 will be added by the 1 per cent increase of CIF/FOB ratio on *ad valorem* trade cost equivalents for Indonesian crude palm oil export and specifically the 0.6 per cent reduction of CIF/FOB ratio will also be added for scenario 2 as the final NTMs figures in the GSIM matrix. Subsequently, the trade effects have been generated for Indonesia and other top exporting and importing countries. As the effect of the higher freight costs to transport crude palm oil from Indonesia, various shifts are expected to take place on the global crude palm oil trade. Figure 21 depicts the expected percentage increase or decrease in trade flows for each scenario between major countries involved in global crude palm oil trade.

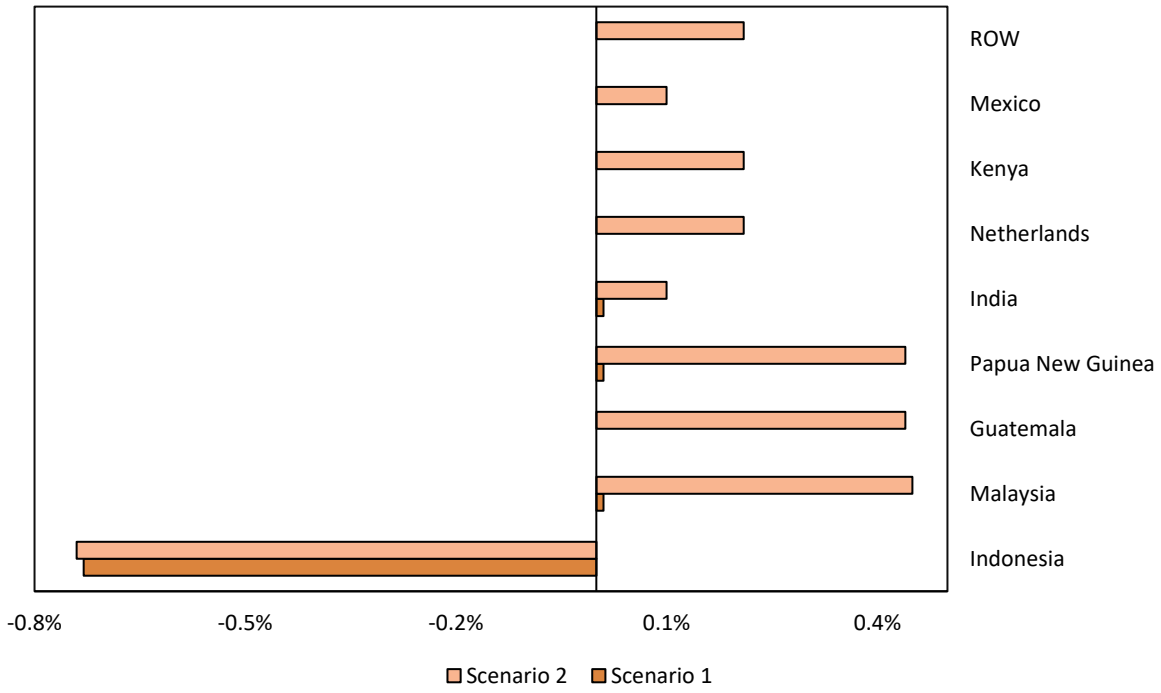

Figure 21: GSIM Model Crude Palm Oil Percentage Change in Output
Source: Author

Based on conducted scenarios, it is clear that Indonesia has the most to loss in global crude palm oil trade with around 0.7 per cent decrease in each output as the consequence of higher costs imposed. In first scenario, the main exporting countries such as Malaysia and Papua New Guinea gain very slightly with 0.01 per cent of each in their crude palm oil exports, while Guatemala does not gain or have not changed in its individual output. These findings appear to be logical as Malaysia and Papua New Guinea are located closer to the crude palm oil market in Asia that

mainly supplied by Indonesia. Therefore, they can easily fill in the supply gap, although its small, that being left by Indonesia. Moreover, Malaysia and Papua New Guinea only gain very slightly due to their crude palm oil productions are not as large as Indonesia. For instance, Malaysia is not only considered as a large exporter from its own production of crude palm oil but also re-export the crude palm oil from Indonesia, hence its production is indirectly depending on Indonesian crude palm oil production. The production of crude palm oil in importing countries mainly have not changed due to the higher costs of Indonesian crude palm oil might shift their import focus to substitute products of palm oil such as soybean oil and vegetables oil.

In second scenario, the enhancement of crude palm oil export in other exporting countries through subsidy of freight costs from the government, give significant increase in their exports compared to scenario 1. Malaysia, Guatemala, and Papua New Guinea gain almost equal percentage with more than 0.4 per cent in their outputs. Given the hampered crude palm oil export from Indonesia caused by higher costs incurred, these countries could supply the importing countries that previously import crude palm oil from Indonesia by providing lower costs. Consequently, the major importing countries such as India, Netherlands, Kenya, and Mexico would gain slightly in their crude palm oil production as the exporting countries substitute Indonesia to supply their demand.

6.2.2. Potential Welfare Effects

The welfare effects in terms of changes in producer surplus and consumer surplus will be provided in this section. In addition, the results of conducted scenarios are depicted on Figure 22 and 23 and specified per country.

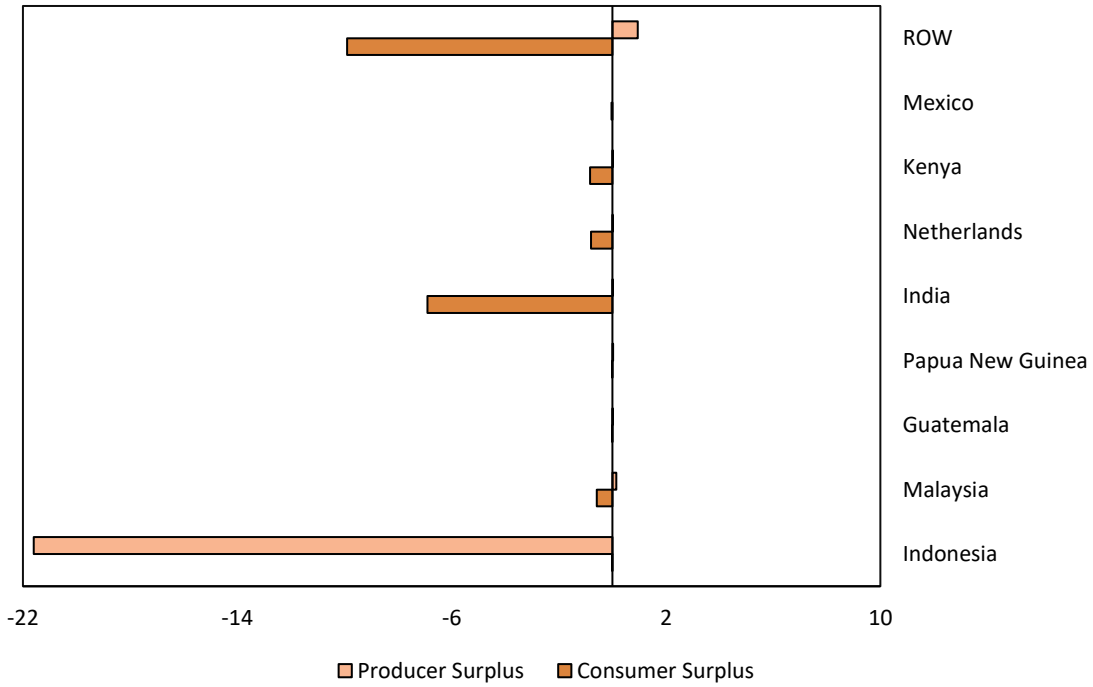

Figure 22: Scenario 1 Change in Producer and Consumer Surplus (in million USD)
Source: Author

Based on the results of scenario 1, it is obvious that the largest decrease with $21.6 million in producer surplus experienced by Indonesian crude palm oil exporters as

the consequence of higher costs for exporting coal from the country that leads to Indonesian crude palm oil less interesting and the importing countries will tend to buy from other countries or shift their initial import focus to other substitute products of palm oil. Among other exporting countries there are no significant gains in producer surplus. Even though they have more access to crude palm oil market due to Indonesian export condition, their crude palm oil production capacities are much lower than Indonesia has. It is also supported by the strong competitive position of Indonesia in global crude palm oil market. However, Malaysia is surprisingly experience quite large decrease in its consumer surplus. This is due to Malaysia is also import crude palm oil from Indonesia, then re-exporting the commodity. From the importer's side, India witnesses the most significant decrease in its consumer surplus as the consequence of higher costs incurred to import Indonesian crude palm oil and the country's demand for crude palm oil highly depended on Indonesian crude palm oil production.

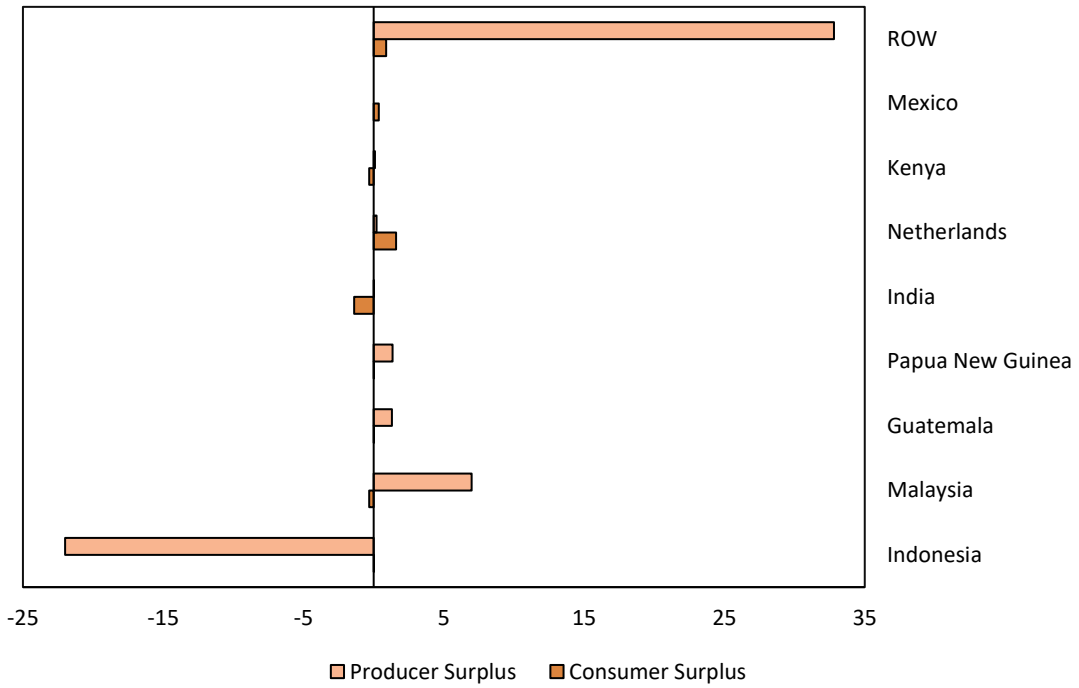

Figure 23: Scenario 2 Change in Producer and Consumer Surplus (in million USD)
Source: Author

In regard to the scenario 2, the loss in producer surplus witnessed by Indonesian exporters has slightly increased from scenario 1 with value around $22 million due to the competitor countries have been subsidized by their government to enhance their crude palm oil exports with lower freight costs that leads to main Indonesian crude palm oil importers to buy the product from those countries. Subsequently, major exporting countries such as Malaysia, Guatemala, and Papua New Guinea will gain significant amount in their producer surplus. Moreover, Malaysia gains the most in producer surplus with value around $7 million because the country is also re-export crude palm oil from Indonesia, and it is believed that higher freight costs from Indonesia would not significantly affect its crude palm oil trade due to the close distance to Indonesia. In major importing countries, the losses in consumer surplus are slightly decreased compared to the first scenario as they have been importing crude palm oil with lower costs from other exporting countries.

Chapter 7 Conclusions

This final chapter provides conclusions by summarizing the key findings of the research and the implications of said findings. Furthermore, some limitations of the research and its methods will also be discussed as well as recommendations for further research related to the topic and field of study.

7.1. Key Findings

Implementation of Indonesian beyond cabotage policy for coal and crude palm oil exports should look at several factors to be considered. The critical factors are the readiness of Indonesian shipping industry to serve the export activities and the position of Indonesian exporters in global coal and crude palm oil markets as such policy could force the change of contract agreement between Indonesian exporters and the importers of both commodities from FOB to CIF.

In this current condition Indonesia is still lacking dry bulk carriers and chemical tankers which have operated by using its flag or by domestic shipping companies. Moreover, the vast majority of Indonesian coal and crude palm oil are shipped under the FOB incoterms. Therefore, enforcing the policy and change the contractual agreement from FOB to CIF could potentially hamper the export activities of coal and crude palm oil as well as changing the global trade of both commodities since Indonesia has been considered as the major player in the markets.

In the case of Indonesian coal and crude palm oil exporters, the competitive analysis using Porter's Five Forces model has proven that the enactment of beyond cabotage policy could increase the freight costs for shipment of coal and crude palm oil from Indonesia. This is due to lower bargaining position of Indonesian exporters over the suppliers which are the shipping companies and several factors that could arise from imposing such policy. Furthermore, changing the incoterms also could give counter-productive effects of the commodity exports as the consequence of lower bargaining position and the threats in the markets for Indonesian exporters.

In addition, the GSIM model has allowed to look at initial overview of the potential economic and trade impacts on global coal and crude palm oil following the enforcement of changing FOB to CIF incoterms through beyond cabotage policy by Indonesian government. By considering the results from competitive analysis and assumptions, two scenarios were developed to assess the impacts of Indonesian high freight costs on global coal and crude palm oil trades. On both scenarios it is clear that Indonesian coal and crude palm oil exporters will suffer the most as the consequence of higher transportation costs from Indonesia with respectively more than 2 per cent and 0.7 per cent decreased in their exports. In terms of welfare effects, Indonesian coal and crude palm oil exporters also witness significant decrease in their producer surplus with more than $90 million and $20 million respectively.

Initially, in regard to Indonesia condition, under the first scenario for global coal trade major exporting countries such as Australia and United States will gain slightly in their coal exports and producer surplus. Meanwhile, the major importing countries will experience significant loss in their coal production and consumer surplus. On second scenario, after the coal exports in major exporting countries have been enhanced by the government, Australia and United States start to gain more significantly in their exports and producer surplus. Consequently, the loss in coal

production and consumer surplus suffered by the major importing countries will be reduced.

For the impacts on global crude palm oil trade, on first scenario there are almost nothing changed in the outputs on whose gains or losses for both exporting and importing countries. Only Malaysia and Papua New Guinea that gain very slightly in regard to Indonesia condition as they are located close to Asian market that usually supplied by Indonesia. In terms of welfare effects, Malaysia suffer slight decrease in its consumer surplus as it is also import Indonesian crude palm oil to be re-exported. Moreover, India is suffering the most in consumer surplus as it depends heavily on crude palm oil produced by Indonesia. Under the second scenario, as the government in exporting countries initiate to lowering the freight costs for their crude palm oil, the major exporting countries such as Malaysia, Papua New Guinea, and Guatemala will significantly gain in their crude palm oil exports as well as the increase in their producer surplus. Consequently, India that was suffering the most loss in its consumer surplus will be reduced significantly.

7.2. Implications

The implications of these findings should have been considered by Indonesian government before they already imposing the beyond cabotage policy. The current condition of Indonesian shipping industry is still lacking feasible fleet to serve coal and crude palm oil exports and the low bargaining position of Indonesian coal product in the market as well as the potential threats of substitute products faced by crude palm oil should not be neglected. Therefore, in order to enhance domestic shipping industry by imposing beyond cabotage policy without disrupting Indonesian coal and crude palm oil exports, the government could give subsidy to domestic carriers avoid the higher freight costs for transporting coal and crude palm oil products. Accordingly, the counter-productive effects that might occur to Indonesian coal and crude palm oil exports due to beyond cabotage policy can be avoided as well. Instead, coal and crude palm oil industries and shipping industry in Indonesia will strongly grow together.

7.3. Limitations of Research

There are several limitations that should be kept in mind in order to fully appreciate and interpret the results, even though the results of this research are telling. Firstly, this research employs the partial equilibrium analysis using GSIM model instead of general equilibrium analysis using CGE model. This is due to the GSIM model allows to analyse changes in trade policy with limited factors accounted in simpler and faster way. Therefore, the ability to accurately model inter-industry effects and secondary income effects is lost.

Secondly, the model was partly populated with assumed data, as specific data of freight rates and insurance costs of global coal and crude shipments were difficult to obtain to calculate the transportation costs. Therefore, instead of calculating the precise transportation costs, this research opted for translating easily accessible data to into an estimation of transportation costs by using CIF/FOB ratio data from OECD platform which is already include the aggregated *ad valorem* forms of freight rates and insurance costs. The accuracy of the outcomes in this research might be affected by this.

Lastly, while there are news and articles regarding the plan of beyond cabotage policy, and this research assumed the policy effects accordingly, there is a severe lack of academic sources in this field. This is due to the beyond cabotage policy is still part of initiation of Indonesian government and not imposed yet. Hence, the population of sources is not large enough to prove the costs effect of beyond cabotage policy implementation in a statistically significant way.

7.4. Suggestion for Further Research

As this research concerns on deriving initial overview on potential impact of Indonesian beyond cabotage policy based on current condition of domestic shipping industry and state of Indonesian coal and crude palm oil exporters in the global markets, there are several directions in which this research could be taken further. Firstly, this research has mainly focused on coal and crude palm oil sectors while Indonesian beyond cabotage policy is also planning to be imposed on rice import. Therefore, it would also be interesting to conduct similar research on this sector since Indonesia have been importing considerable amount of rice from other countries. In addition, it could also be worthwhile to have more realistic analysis on the impacts of beyond cabotage policy on all mentioned commodities when the policy is already taking on effect in Indonesia.

Apart from the commodity trade analysis, as the main objective of beyond cabotage policy is to enhance growth of Indonesian shipping industry, it could also be interesting to conduct thorough assessment regarding the maritime infrastructure in Indonesia to comply with the planned policy. Moreover, when the beyond cabotage policy is already enacted, the analysis on the impacts of this policy on global shipping sector, particularly on dry bulk carriers and tankers, could be done as well. Since the beyond cabotage policy will exclude foreign-flagged vessels and foreign shipping companies to transport the compulsory commodities mentioned in the policy.

Bibliography

Agama & Alisigwe, 2018. Cabotage Regimes and their Effects on States' Economy. *NAUJILJ,* IX(1), pp. 71-82.

Akpan, A., 2019. *Maritime Cabotage Law.* New York: Routledge.

Anderson, J. E. & van Wincoop, E., 2004. Trade Costs. *Journal of Economic Literature ,* Volume XLII, pp. 691-751.

Anugrah, E., 2016. *Asas Cabotage Menghadapi Program Masyarakat Ekonomi Asean,* s.l.: Lambang Mangkurat - Law School.

APBI, 2018. *PEMETAAN TERM OF DELIVERY (TOD) EKSPOR INDONESIA.* [Online]
Available at: http://www.apbi-icma.org/news/1434/pemetaan-term-of-delivery-tod-ekspor-indonesia
[Accessed 29 July 2019].

Aprilianto, R., Hakim, A. & Hayat, A., 2014. IMPLEMENTASI ASAS CABOTAGE DALAM KEBIJAKAN PELAYARAN INDONESIA. *Jurnal Administrasi Publik (JAP),* II(4), pp. 758-764.

Arifin, 2010. *An Analysis of Indonesia Palm Oil Position in the World,* s.l.: s.n.

Arsana, I. M. A., 2013. *Archipelagic Sea Lanes: Current and Future.* [Online] Available at: http://www.madeandi.staff.ugm.ac.id
[Accessed 15 June 2019].

Asrofi, M., 2017. *Cabotage Full Implementation vs Cabotage Relaxation.* [Online] Available at: www.frost.com/prod/servlet/market-insight-print.pag?docid=236707803
[Accessed 15 June 2019].

Baldwin, R. & Taglioni, D., 2007. Trade Effects of the Euro: a Comparison of Estimators. *Journal of Economic Integration,* XXII(4), pp. 780-818.

Berden, K., 2019. *Partial Equilibrium analysis.* Rotterdam, MEL International Economics Course.

BPS, 2019. *Badan Pusat Statistik Indonesia: Ekspor - Impor.* [Online] Available at: https://www.bps.go.id/subject/8/ekspor-impor.html#subjekViewTab3
[Accessed 23 July 2019].

British Petroleum, 2017. *BP Statistical Review of World Energy,* s.l.: British Petroleum.

Dagmar, R., 2001. *Porter's 5 Forces.* [Online] Available at: http:www.themanager.org/models/P5F_2.htm
[Accessed 1 August 2019].

Francois, J. & Hall, H. K., 2003. *Global Simulation Analysis of Industry-Level Trade Policy,* s.l.: s.n.

Fries, M. A., 2011. *The repeal of ecoomic sanctions against Iran: Global economic implications and opportunities for the chemical tanker sector,* Rotterdam: MEL Thesis Repository.

GAPKI, 2018. *Indonesia Delays Implementing Cabotage Rule.* [Online] Available at: https://theinsiderstories.com/indonesia-delays-implementing-cabotage-rule-till-next-two-yrs/
[Accessed 20 July 2019].

GAPKI, 2019. *Palm Oil Continues to Makes Significant Contribution to Indonesian Economy: Gapki.* [Online] Available at: https://jakartaglobe.id/context/palm-oil-continues-to-makes-significant-contribution-to-indonesian-economy-gapki/
[Accessed 28 July 2019].

Gaulier, G., Mirza, D., Turban, S. & Zignago, S., 2008. *International Transportation Cost Around the World: a New CIF/FOB rates Dataset,* s.l.: CEPII.

Ghodsi, M., Grübler, J. & Stehrer, R., 2016. *Import Demand Elasticities Revisited,* Vienna: The Vienna Institute for International Economic Studies .

Graham, P., Thorpe, S. & Hogan, L., 1998. *Noncompetitive market behavior in international coking coal trade.* Armidale, Australian Agricultural and Resource Economics Society.

Hackston, D., English, G., Taylor, R. & MacDonald, J., 2005. *Research study on the Coasting Trade Act- Final report.* [Online] Available at: http://www.acpa-ports.net/advocacy/pdfs/cta-e.pdf
[Accessed 15 June 2019].

Haowei, D., Pay, M., Yan, H. & Prasad, N., 2016. *Fundamental Analysis Department Palm Oil Industry Report,* Singapore: NUS Investment Society.

Haryana, A., 2018. Cabotage dan Beyond Cabotage. *WARTA PENGKAJIAN PERDAGANGAN,* I(5), pp. 32-33.

HFW, 2018. MURKY WATERS: SIX KEY MARITIME ISSUES TO UNDERSTAND BEFORE DOING BUSINESS IN INDONESIA.

Houqiang, W. & Zaoxuan, X., 2013. *Analyzing how companies respond to competition in an industry,* s.l.: Halmstad University.

Hummels, D. & Lugovskyy, V., 2003. *Usable Data? Matched Partner Trade Statistics as a measure of International Transportation Costs,* Indiana: Purdue University.

ICCT, 2019. *International policy and market drivers of Indonesian Palm Oil Demand,* s.l.: The International Council on Clean Transportation.

IEA, 2018. *Coal Analysis and Forecasts,* s.l.: International Energy Agency.

IESR, 2018. *Indonesia's Coal Dynamics,* Jakarta: Insttiute for Essential Services Reform.

Index Mundi, 2019. *Palm Oil Production by Country.* [Online] Available at: https://www.indonesia-investments.com/business/commodities/palm-oil/item166
[Accessed 29 July 2019].

Indonesian Ministry of Transportation, 2008. *Indonesian Transportation Statistics 2008,* Jakarta: Indonesian Ministry of Transportation.

Indonesian Ministry of Transportation, 2018. *Indonesian Statistics of Transportation 2018,* Jakarta: Indonesian Ministry of Transportation.

INSA, 2016. *Asas Cabotage Demi Kedaulatan Negara.* [Online] Available at: https://insa.or.id/asas-cabotage-demi-kedaulatan-negara/ [Accessed 15 June 2019].

INSA, 2018. *Data Kapal Nasional untuk Ekspor.* [Online] Available at: http://kontan.co.id/news/data-kapal-nasional-untuk-ekspor-belum-sesuai-spesifikasi [Accessed 28 July 2019].

Ishak, N. & Prameswari, M., 2018. Implementation of Cabotage Principle in Indonesia Territory and Its Implication for Shipping: A Study from Law Perspective. *Proceeding of Marine Safety and Maritime Installation ,* pp. 31-38.

Ishikawa, J. & Tarui, N., 2017. *Effects of the backhaul problem on global trade.* [Online] Available at: https://voxeu.org/article/effects-backhaul-problem-global-trade [Accessed 5 August 2019].

ITC, 2019. *List of Coal and Crude Palm Oil Trade.* [Online] Available at: https://trademap.org/ [Accessed 25 July 2019].

Kampa, E., 2011. *The chinese demand for iron ore and its effect on freight rates,* Rotterdam: MEL Thesis Repository.

Karagiannopoulous, G. D., Georgopoulos, N. & Nikolopoulos, K., 2005. Fathoming Porter's five forces model in the internet era. *Journal Policy Regul Strategy Telecommun,* VII(6), pp. 66-76.

Karpenko, A., Gu, J., Palanivelu, S. & Azranda, M. G., 2019. *Partial Equilibrium Analysis Estimating the Impact of Blockchain Implementation on Trade Cost within the Global Container Shipping Industry,* Rotterdam: MEL International Economic Course.

Kee, H. L., Nicita, A. & Olarreaga, M., 2009. Estimating Trade Restrictiveness Indices. *The Economic Journal,* CXIX(534), pp. 172-199.

Kularbwong, K., 2018. *Coastal Shipping in Thailand and Regional Cooperation on Coastal Shipping,* Bangkok: Thailand Ministry of Transport.

Kurmanalieva, E., 2006. *Transport Costs in International Trade,* Tokyo: National Graduate Institute of Policy Studies (GRIPS).

Kurniasari, N. K., 2011. Connecting Indonesia's Maritime Cabotage and the 1982 United Nations Convention on the Law of the Sea. *Indonesian Journal of International Law,* Issue 75, pp. 715-733.

Limao, N. & Venables, A. J., 2001. Infrastructure, Geographical Disadvantage, Transport Costs, and Trade. *The World Bank Economic Review,* XV(3), pp. 451-479.

Mele, M. & Baistrocchi, P. A., 2012. A Critique of the Gravitational Model in Estimating the Determinants of Trade Flows. *International Journal of Business and Commerce ,* II(1), pp. 13-23.

Miao, G. & Fortanier, F., 2017. Estimating Transport and Insurance Costs of Internationa Trade. *OECD Statistics Working Paper,* Issue 80, pp. 1-35.

New York Times, 2018. *The World Needs to Quit Coal. Why Is It So Hard?.* [Online] Available at: http://www.nytimes.com/2018/11/24/climate/coal-global-warming.amp.html
[Accessed 2 August 2019].

Nurcahyani, M., Masyhuri & Hartono, S., 2018. THE EXPORT SUPPLY OF INDONESIAN CRUDE PALM OIL (CPO) TO INDIA. *Agro Ekonomi,* XXIX(1), pp. 18-31.

Oeko-Institut, 2019. *Production of Palm Oil in Indonesia,* Freiburg: Oeko-Institut.

Olowookere, G. B. B., 2011. *The Effects of Cabotage Regime on Indigenous Shipping in Nigeria,* Malmo: World Maritime University.

Porter, M. E., 1980. *Competitive Strategy: Techniques for Analyzing Industries and Competitors.* New York: Harvard Business School.

Porter, M. E., 1989. *Strategy in deal-based industries.* Cambridge, HBS Real Estate Symposium.

Qiu, 2014. *The substitution effect between soybean oil and palm oil,* s.l.: s.n.

Raihan, S., 2017. *An Introduction to Computable General Equilibrium Modelling.* Bangkok, ARTNeT-GIZ Capacity Building Workshop.

Reuters, 2018. *Coal buyers spooked by Indonesia's new shipping rules: Assoc.* [Online]
Available at: https://www.reuters.com/article/us-indonesia-shipping-cabotage/coal-buyers-spooked-by-indonesias-new-shipping-rules-assoc-idUSKBN1FS192
[Accessed 20 July 2019].

Rosyid, F. A. & Adachi, T., 2016. Forecasting on Indonesian Coal Production and Future Extraction Cost: A Tool for Formulating Policy on Coal Marketing. *Natural Resources,* VII(12).

Siregar, H. & Yulismi, 2007. Determinant Factors of Indonesia Palm Oil Export to Major Importing Countries. *Economics and Finance in Indonesia,* LV(1), pp. 65-88.

Siregar, M. & Asnawi, M. I., 2012. Cabotage Principle Pada Regulasi Jasa Angkutan dalam Perairan Indonesia dari Prespektif Sistem Perdagangan Multilateral WTO/GATS. p. 19.

Taylor, L. & von Arnim, R., 2006. *Modelling the Impact of Trade Liberalisation,* New York: Oxfam International Research.

UNCTAD, 2013. *NON-TARIFF MEASURES TO TRADE: Economic and Policy Issues for Developing Countries,* Geneva: United Nations Publication.

Veenstra, A. W., 2015. Maritime transport and logistics as a trade facilitator. In: D. Song & P. M. Panayides, eds. *Maritime Logistics - A guide to contemporary shipping and port management.* s.l.:Kogan Page Limited, pp. 11-26.

Vianna, G., 2010. *Shipping in 32 Jurisdictions Worldwide.* [Online] Available at: http://www.kincaid.com.br/pdfs/brazil.pdf [Accessed 15 June 2019].

Wartsila, 2017. *Dry Bulk Shipping.* [Online] Available at: https://www.wartsila.com/encyclopedia/term/dry-bulk-shipping [Accessed 28 July 2019].

Widyaningtyas, D. & Widodo, T., 2016. Analisis Industry's Competitiveness Pada Crude Palm Oil Indonesia. *Journal of Applied Business and Economics,* III(1), pp. 50-61.

World Bank, 2016. *Evaluating the Shift in Incoterms for Indonesian Export Products,* Surabaya: World Bank.

Yunna, W. & Yisheng, Y., 2014. The competition situation analysis of shale gas industry in China: Applying Porter'sfive forces and scenario model. *Renewable and Sustainable Energy Reviews,* Issue 40, pp. 798-805.

Appendix

Annex 1 Calculation of Trade Costs for Coal (Initial NTMs)

	Indonesia	Australia	US	China	India	Japan	ROW
Indonesia	1.5500	2.3704	2.3597	2.2348	2.3852	2.3450	2.5325
Australia	2.4262	1.5500	2.3640	2.2934	2.3473	2.3033	2.5325
US	2.4898	2.3265	1.5500	2.3834	2.3894	2.3429	2.5325
China	2.4569	2.3792	2.4449	1.5500	2.3053	2.3179	2.5325
India	2.4657	2.3660	2.2234	2.3436	1.5500	2.3325	2.5325
Japan	2.4547	2.4143	2.2277	2.2473	2.3579	1.5500	2.5325
ROW	2.5930	2.5967	2.5196	2.4756	2.4885	2.4683	2.5325

Annex 2 Calculation of Trade Costs for Coal Scenario 1 (Final NTMs)

	Indonesia	Australia	US	China	India	Japan	ROW
Indonesia	1.5500	2.3941	2.3833	2.2571	2.4091	2.3685	2.5578
Australia	2.4262	1.5500	2.3640	2.2934	2.3473	2.3033	2.5325
US	2.4898	2.3265	1.5500	2.3834	2.3894	2.3429	2.5325
China	2.4569	2.3792	2.4449	1.5500	2.3053	2.3179	2.5325
India	2.4657	2.3660	2.2234	2.3436	1.5500	2.3325	2.5325
Japan	2.4547	2.4143	2.2277	2.2473	2.3579	1.5500	2.5325
ROW	2.5930	2.5325	2.5325	2.5325	2.5325	2.5325	2.5325

Annex 3 Calculation of Trade Costs for Coal Scenario 2 (Final NTMs)

	Indonesia	Australia	US	China	India	Japan	ROW
Indonesia	1.5500	2.3941	2.3833	2.2571	2.4091	2.3685	2.5578
Australia	2.4117	1.5500	2.3498	2.2796	2.3333	2.2895	2.5173
US	2.4748	2.3125	1.5500	2.3691	2.3751	2.3289	2.5173
China	2.4569	2.3792	2.4449	1.5500	2.3053	2.3179	2.5173
India	2.4657	2.3660	2.2234	2.3436	1.5500	2.3325	2.5173
Japan	2.4547	2.4143	2.2277	2.2473	2.3579	1.5500	2.5173
ROW	2.5774	2.5173	2.5173	2.5173	2.5173	2.5173	2.5173

Annex 4 Calculation of Trade Costs for Crude Palm Oil (Final NTMs)

	Indonesia	Malaysia	Guatemala	Papua New Guinea	India	Netherlands	Kenya	Mexico	ROW
Indonesia	1.5500	2.1569	2.3359	2.1189	2.3074	2.4340	2.3439	2.0708	2.3824
Malaysia	2.3057	1.5500	2.3231	2.1189	2.2948	2.4183	2.3290	2.0708	2.3824
Guatemala	2.1917	2.0445	1.5500	2.1189	2.1034	2.4273	2.1328	2.5471	2.3824
Papua New Guinea	2.1917	2.2060	2.1313	1.5500	2.2927	2.4408	2.1328	2.0708	2.3824
India	2.3890	2.2223	2.3209	2.1189	1.5500	2.4138	2.1328	2.0708	2.3824
Netherlands	2.3933	2.2162	2.1313	2.1189	2.2863	1.5500	2.1328	2.0708	2.3824
Kenya	2.1917	2.0445	2.1313	2.1189	2.1034	2.4183	1.5500	2.0708	2.3824
Mexico	2.1917	2.0445	2.1313	2.1189	2.1034	2.2475	2.1328	1.5500	2.3824
ROW	2.3232	2.1671	2.2591	2.2460	2.2296	2.3824	2.2608	2.1950	2.3824

Annex 4 Calculation of Trade Costs for Crude Palm Oil Scenario 1(Final NTMs)

	Indonesia	Malaysia	Guatemala	Papua New Guinea	India	Netherlands	Kenya	Mexico	ROW
Indonesia	1.5500	2.1785	2.3592	2.1400	2.3304	2.4584	2.3674	2.0915	2.4062
Malaysia	2.3057	1.5500	2.3231	2.1189	2.2948	2.4183	2.3290	2.0708	2.3824
Guatemala	2.1917	2.0445	1.5500	2.1189	2.1034	2.4273	2.1328	2.5471	2.3824
Papua New Guinea	2.1917	2.2060	2.1313	1.5500	2.2927	2.4408	2.1328	2.0708	2.3824
India	2.3890	2.2223	2.3209	2.1189	1.5500	2.4138	2.1328	2.0708	2.3824
Netherlands	2.3933	2.2162	2.1313	2.1189	2.2863	1.5500	2.1328	2.0708	2.3824
Kenya	2.1917	2.0445	2.1313	2.1189	2.1034	2.4183	1.5500	2.0708	2.3824
Mexico	2.1917	2.0445	2.1313	2.1189	2.1034	2.2475	2.1328	1.5500	2.3824
ROW	2.3232	2.1671	2.2591	2.2460	2.2296	2.3824	2.2608	2.1950	2.3824

Annex 4 Calculation of Trade Costs for Crude Palm Oil Scenario 2 (Final NTMs)

	Indonesia	Malaysia	Guatemala	Papua New Guinea	India	Netherlands	Kenya	Mexico	ROW
Indonesia	1.5500	2.1785	2.3592	2.1400	2.3304	2.4584	2.3674	2.0915	2.4062
Malaysia	2.2918	1.5500	2.3091	2.1061	2.2810	2.4038	2.3150	2.0584	2.3681
Guatemala	2.1785	2.0322	1.5500	2.1061	2.0907	2.4127	2.1200	2.5318	2.3681
Papua New Guinea	2.1785	2.1927	2.1185	1.5500	2.2789	2.4261	2.1200	2.0584	2.3681
India	2.3890	2.2223	2.3209	2.1189	1.5500	2.4138	2.1328	2.0708	2.3681
Netherlands	2.3933	2.2162	2.1313	2.1189	2.2863	1.5500	2.1328	2.0708	2.3681
Kenya	2.1917	2.0445	2.1313	2.1189	2.1034	2.4183	1.5500	2.0708	2.3681
Mexico	2.1917	2.0445	2.1313	2.1189	2.1034	2.2475	2.1328	1.5500	2.3681
ROW	2.3093	2.1541	2.2456	2.2325	2.2162	2.3681	2.2472	2.1819	2.3681