

Analysis of Competitiveness and Factors Affecting Indonesia's Selected Commodity Exports to Developing Eight Countries (D-8)

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ABSTRACT

Indonesia's exports to major trading partners show a declining trend in recent years. So that market diversification is important so that exports do not fully depend on the main trading partners. Looking at the development of Indonesia's exports to the Developing Eight Countries (D-8), this region can become a potential market to increase exports. This study aimed to analyze the competitiveness of commodities, and the factors that affect Indonesia's commodity exports to (D-8). The analysis period from 2009 to 2018 uses Revealed Comparative Advantage (RCA), Intra Industry Trade (IIT), Export Dynamic Product (EPD), and Gravity Model using panel data regression. Based on the results of RCA and EPD analysis, Indonesian commodities are able to compete and occupy a variety of positions, namely the Rising Star, Falling Star, Lost Opportunity, and Retreat positions. The IIT results show that most of Indonesia's trade relations with D-8 member countries are one-way (No Integration). Factors that influence exports are, GDP, real exchange rates, commodity prices, economic distances with different results for each commodity.

Keywords : Competitiveness, EPD, Gravity Model, IIT, RCA

I. INTRODUCTION

Indonesia is a country that adopts an open and active economic system in international trade, in recent years faced with problems in export activities, both negative issues and policies of export destination countries. This has spurred the Government to carry out strategies and anticipations to be able to survive in the current global crisis and the uncertainty of the current world economic conditions.

The Indonesian government through the Ministry of Trade is more focused on increasing non-oil and gas exports. This is because in recent years the oil and gas trade balance has tended to experience a trade deficit. In 2018, the oil and gas sector trade balance deficit will reach US \$ 12.4 billion. In contrast, in the non-oil and gas sector, Indonesia's trade balance experienced a surplus of US \$ 3.9 billion. In 2014 Indonesia's total

non-oil and gas exports amounted to US \$ 145.9 billion, increasing to US \$ 162.8 billion in 2018. However, the non-oil and gas trade balance showed a declining trend over the past five years, namely from the 2014 to 2018 period amounting to a negative 15.5 percent.

The import value that grows faster than the export value makes Indonesia's trade balance deficit for the first time in four years. Central Bureau of Statistic (BPS) in 2018 recorded the value of Indonesia's imports growing 20.2 percent to US \$ 188.7 billion while the value of exports only grew 6.7 percent to US \$ 180.2 billion. As a result, throughout 2018 the trade balance deficit was US \$ 8.49 billion.

Indonesia's non-oil and gas export destination markets are still dominated by the main trading partner groups namely China, Japan, the United States, India and

Singapore. These countries have the largest share of non-oil and gas export shares of all total Indonesian exports to the world, but in the period 2013 to 2017, non-oil and gas exports to these countries on average experienced a declining trend. Exports to China with a negative trend of 0.78 percent, Japan with a negative trend of 2.75 percent, India with a negative trend of 0.68 percent. Singapore became the country that experienced the biggest downward trend of the four major trading partners which experienced a decline of negative 3.36 percent.

Indonesia must also consider from the import side so that it does not become the main export destination country for other countries, therefore the government through the Ministry of Trade has launched a new strategy called Market Diversification. Through this strategy, it is hoped that export destination markets that previously focused on major trading partner countries will switch to a number of countries that provide significant market potential to be developed, such as markets in ASEAN member countries, countries in the Latin American region, Asian regions, The Middle East, Africa and the European Region.

The Government's commitment to open and enhance trade cooperation with nontraditional trading partner countries is one of them with the member countries of the Developing Eight Countries (D-8). Developing Eight Countries (D-8) was established through the Istanbul Declaration produced by the D-8 1st Summit on June 15, 1997 in Istanbul, Turkey. D-8 member countries consist of Bangladesh, Egypt, Indonesia, Iran, Malaysia, Nigeria, Pakistan and Turkey. When viewed in terms of population and economy, these countries have great potential. The total population of D-8 reaches 1 (one) billion, this is a promising market potential.

Total trade which includes exports and imports between Developing Eight (D-8) countries in 2009 was US \$ 67.24, and increased to US \$ 110.9 billion in

2018 or only 6.35 percent of total D-8 trade to the world. This is far from being determined that trade between D-8 countries is targeted at US \$ 500 billion and reaching 20 percent of total trade to the world. This indicates that trade between countries D-8 has not been maximized.

Trade liberalization has encouraged many countries to open trade cooperation with other countries both bilaterally, regionally and multilaterally with the aim of gaining greater profits in trade. Preferential Trade Arrangement (PTA) is an agreement between countries to reduce trade barriers that occur between them and distinguish them from those that apply to foreign countries that are not member countries (Salvatore 1996).

Shuai and Wang (2011) state that the level of competitiveness of Chinese agricultural products has decreased, while the structure of exports has increased since China joined the WTO. Serin and Civan (2008) which measure the extent to which Turkey has a comparative advantage in the tomato, olive oil and fruit juice industries, the results conclude that Turkey is a country for competitors in the EU market. The expansion of the European Union market and new competitors for the Turkish agro-food industry can further reduce Turkey's competitiveness. Fakhruddin (2011) mentioned that Chinese products have higher competitiveness than Indonesia. Nevertheless, some Indonesian products have good competitiveness besides CPO. Export competitiveness significantly contributes to export growth (Siddique, 2016).

Indonesia's non-oil and gas exports to the world in 2018 based on commodities are still controlled by animal & vegetable fat & oil products of US \$ 20.34 billion with an 11% share of total trade to the world. The commodities with the highest export value of Indonesia's total exports to D-8 in 2018 based on 2-digit HS are animal / vegetable fat and oil products

(24.77%), mineral fuel products (22.90%), vehicles and parts (4.19%), and paper products (4.07%).

Based on the facts of trade that occur and in order to diversify the market and support the efforts made by the government, it is necessary to analyze the competitiveness and factors that influence Indonesia's exports to Developing Eight Countries (D-8). The objectives of this study are: (1) Analyzing the competitiveness of selected commodities and the integration of Indonesian exports to D-8. (2) Analyzing the factors that influence the export of selected commodities from Indonesian exports to D-8.

II. METHODS AND MATERIAL

The data used in this study is secondary data from various sources. Sources of trade data which include exports come from complementary sources such as the Ministry of Trade, Trademap, WITS (World Integrated Trade Solution), UNCTAD, and the World Bank. The use of four-digit HS is done to facilitate the breakdown of types of research commodities. Macro data such as Gross Domestic Gross (GDP) and real exchange rates are taken from the World Bank website, while data related to gravity models such as distance are taken from the CEPII website (Center dEEtudes Prospectives et dInInformations Internationales).

Some methods used to answer research questions are competitiveness level analysis using Revealed Comparative Advantage (RCA) value, analysis of market integration level with Intra Industry Trade (IIT), identifying the market position of a commodity using Export Product Dynamic Analysis (EPD). Meanwhile, to look at the factors that influence Indonesia's Commodity Exports to Developing Eight Countries (D-8) using gravity panel data regression analysis.

The time series data used are annual data for 10 years from 2009 to 2019 to analyze the RCA, IIT, EPD and Gravity models. Crosssection data used are 7 (seven) D-8 member countries, namely Bangladesh, Iran, Malaysia, Egypt, Nigeria, Pakistan and Turkey.

Revealed Comparative Advantage (RCA)

The Revealed Comparative Advantage (RCA) method is used to see the competitiveness or comparative advantage of a country's commodity. In this study, the performance of an Indonesian commodity to total Indonesian exports to the world market is compared to the share of the value of world commodity exports to the total value of world exports, using the RCA formula, namely:

$$RCA = \frac{X_{kj}/X_j}{X_{kw}/X_w} \quad (1)$$

Where X_{kj} is the value of Indonesia's commodity exports to country j and X_j is the value of Indonesia's total exports to country j while X_{kw} is the value of world commodity exports to country j and X_w is the value of total world exports to country j . If a country's RCA value for a particular commodity is greater than one (1), then that country has a comparative advantage in the world average for that commodity. Conversely, if it is smaller than one (1), it means that the comparative advantage for the commodity is low, below the world average. The greater the value of the RCA, the higher the level of comparative advantage. The export share of a commodity does not have to be higher even though it has a higher RCA value. This is because the RCA value comes from two relative values of exports, namely the relative value of the country's exports and the relative performance of world exports (Arip *et al.* 2013).

Intra Industry Trade (IIT)

Intra Industry Trade Analysis (IIT) is a method used to determine the level of trade integration which includes exports and imports between countries. IIT results indicate the degree of integration that indicates whether there is a two-way or one-way trade. There are several ways to calculate the IIT index. The most commonly used method is through the Grubel-Lloyd Index which is formulated as follows:

$$IIT_{ij}^k = \frac{(\sum X_{ij}^k + \sum M_{ij}^k) - |\sum X_{ij}^k - \sum M_{ij}^k|}{(\sum X_{ij}^k + \sum M_{ij}^k)} \times 100 \quad (2)$$

or

$$1 - \frac{\sum |X-M|}{\sum (X+M)} \times 100 \quad (3)$$

Where, IIT_{ij}^k is intra-industrial trade of product k between country i and country j . X_{ij}^k is Export of product k from country i to country and j . M_{ij}^k is Import of product k by country i from country j .

IIT value ranges from 0 to 100. If a country only exports or imports only, the value of IIT is 0. If the amount exported is equal to the amount imported for a product, the value is 100. The level of integration is determined according to the classification of the range of IIT values listed in the following Table 1.

TABLE I
INTRA INDUSTRY TRADE (IIT) CLASSIFICATION

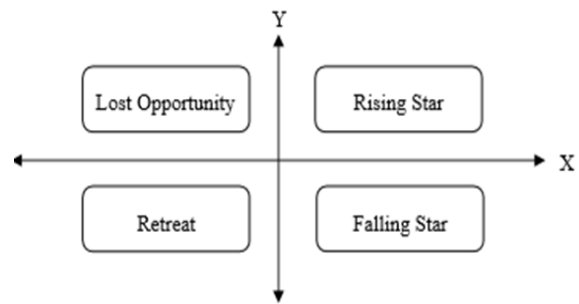
| Intra Trade | Industry | Classification |
|-------------|----------|-------------------------------|
| 0.00 | | No Integration |
| 0.00-24.99 | | Weak Integration |
| 25.00-49.99 | | Mild Integration |
| 50.00-74.99 | | Moderately strong Integration |
| 75.00-99.99 | | Very Strong Integration |

Source: Austria 2004

Export Product Dynamic (EPD)

The Dynamic Product Export (EPD) method can be used to identify the market position of a commodity in a particular market destination and also to determine the performance of the commodity, whether it has dynamic growth in the sense of rapid growth or not. EPD analysis can be used to determine external and internal factors that affect performance and competitiveness. External factors are related to market access and influencing import demand, while internal factors are related to supply side conditions that are affected by conditions of natural resources, human, access to capital and the role of government through conducive trade policies.

In the EPD matrix method that shows the dynamics of a particular country's commodity. The matrix consists of market appeal which is calculated based on the growth of demand for a product for a particular market destination and information on business strength which is calculated based on the growth of a country's market share in a particular market destination. The position of EPD competitiveness can be seen in Figure 1.



Source: Esterhuizen (2006)

Figure 1. Matriks of *Export Product Dynamic* (EPD)

The x-axis in this quadrant illustrates an increase in a country's export market share in world trade or also called business power, while the y-axis in this quadrant represents an increase in the market share of commodities in world trade or also known as market attractiveness.

The most ideal or most desirable market position is Rising Star because it has the highest market share in its products as well as the country's export market share. This shows that the country has a good export market share in their rapidly growing products. Furthermore, the Falling Star market position shows an increase in export market share in stagnant products. Lost Opportunity's market position shows a decline in the export market share in dynamic products. While the most undesirable market position is Retreat because it has the lowest market share in both its products and the country's exports. To determine the business strength and market appeal of a commodity so that it can determine its competitive position, mathematically the EPD method is formulated as follows:

X-axis formula: Growth in the country's export market share

$$\frac{\sum_{t=1}^t \left(\frac{X_{ij}}{W_{ij}}\right)_t \times 100\% - \sum_{t=1}^t \left(\frac{X_{ij}}{W_{ij}}\right)_{t-1} \times 100\%}{T} \quad (4)$$

The x-axis in figure 1 shows the growth of a country's export market to a destination country which is a calculation of the value of Indonesia's commodity exports to country j (X_{ij}) divided by the export value of product i from the world to country j (W_{ij})

Y-axis formula: Growth in the product market share

$$\frac{\sum_{t=1}^t \left(\frac{W_{ij}}{W_t}\right)_t \times 100\% - \sum_{t=1}^t \left(\frac{W_{ij}}{W_t}\right)_{t-1} \times 100\%}{T} \quad (5)$$

The y-axis in figure 1 shows the growth of the commodity i export market to the destination country which is a calculation of the value of commodity exports i from the world to country j (W_{ij}) divided by the total value of world exports to country j (W_t)

Gravity Model

Analysis of factors affecting exports is carried out using the Gravity Model method. This method is based on the gravitational theory of the attractive force between two objects discovered by Sir Isaac Newton in 1687. Jan Tinbergen suggested that more or less the same functional form could be applied to the flow of international trade (Telambanua, 2012). To answer the problem in this study, the specification of the model used in this study is a modified model based on the research of Abidin *et al.* (2013) and Boansi *et al.* (2014) as follows:

$$\ln X_{ijt} = \beta_0 + \beta_1 \ln(GDP_{jt}) + \beta_2 \ln(RER_{jt}) + \beta_3 \ln(EXPRICE_{ijt}) + \beta_4 \ln(ECODIST)_{jt} + \varepsilon_{ijt}$$

Where X_{ijt} is the value of commodity exports from Indonesia to the destination country j year to t (US \$). GDP_{jt} is nominal GDP measured from nominal GDP value at current prices (US\$). RER_{jt} is the real exchange rate of Indonesia to the importing country (Rupiah against Local Current Unit). $EXPRICE_{ijt}$ is the price of the commodity obtained from export value sharing (US \$) and export volume (Ton). $ECODIST_{ijt}$ is the distance of Indonesia's economy to the destination country (km).

III. RESULT AND DISCUSSION

Identification of Indonesia's Export Commodities to Market D-8

This research focuses on selected commodities for later analysis with the RCA and EPD methods. This study took as many as 5 (five) commodities sorted by the highest export commodity from Indonesia in the Developing Eight Countries (D-8) market over the past ten years and has data consistency from D-8 member countries from 2009-2018. The selected commodities are Palm oil and its fraction (HS 1511),

Soap; organic surface-active preparation for soap use (HS 3401), Industrial monocarboxylic fatty acid (HS 3823), New Pneumatic tyres, of rubber (HS 4011), Uncoated paper for writing, printing etc (HS 4802).

Revealed Comparative Advantage (RCA) Analysis

The results of the analysis based on Table 2 show that the majority of the RCA value of each commodity in the destination countries for ten years ie from 2009 - 2018 is above the value of 1 (one). RCA value which is classified as high with a value of more than 1 is

fulfilled in almost all commodities, but the results are mixed.

Each commodity has its own character based on its RCA value. For example a commodity that has the largest RCA value of 65.86 for the commodity palm oil and its fraction (HS 1511) shows that this commodity is highly competitive in the Turkish market. There is only one commodity with weak competitiveness, which is HS 4011 commodity in Pakistan market with an RCA value of 0.62, this means that the commodity does not yet have a comparative advantage in the Pakistani market.

Table 2 Analysis of the Revealed Comparative Advantage (RCA) Export commodity Indonesia to Developing Eight Countries (D-8) in 2009-2018

| Country | Commodity | | | | |
|------------|-----------------------|-------------------|-------------------------|--------------------|--------------------|
| | HS 1511 (Palm Oil) | HS 3401 (Soap) | HS 3823 (Fatty Acid) | HS 4011 (Tyres) | HS 4802 (Paper) |
| Bangladesh | 20.85 | 3.09 | 9.27 | 1.39 | 5.84 |
| Iran | 32.30 | 25.55 | 23.86 | 1.12 | 33.16 |
| Malaysia | 17.87 | 8.60 | 16.99 | 2.91 | 10.85 |
| Egypt | 40.84 | 16.82 | 15.77 | 4.38 | 8.09 |
| Nigeria | 22.80 | 27.11 | 23.89 | 1.59 | 30.09 |
| Pakistan | 9.66 | 7.57 | 4.98 | 0.62 | 15.32 |
| Turkey | 65.86 | 16.24 | 48.15 | 2.13 | 11.72 |

Source: WITS, 2019 (processed)

Intra Industry Trade (IIT) Analysis

The value of the IIT serves to measure the amount of intra-industry trade that occurs in a country or region. Through IIT analysis, it can be seen whether trade between Indonesia and D-8 member countries is only one direction or two directions. If trade is only one direction, then only one country carries out export or import activities with similar commodities.

While in the two-way trade flow there is an interaction of exports and imports of the two countries on similar commodities. Based on the results

of the analysis using the IIT in Table 3 shows that most of the trade relations between Indonesia and the D-8 member countries are one-way. An average IIT value of 0.00 indicates that one country acts as an exporter and the other country acts as an importer. Indonesia is an exporter country for all commodities for HS 1511, HS 3401, HS 3823, HS 4011, HS 4802.

Nevertheless, in certain commodities and countries such as Malaysia, Indonesia conducts two-way trade interactions with weak integration and mild integration. Whereas with the countries of Egypt, Nigeria, Pakistan and Turkey, they also conduct two-way trade with weak integration on certain commodities.

Table 3 Analysis of the average Intra-Industry Trade (IIT) Export commodity
Indonesia to Developing Eight Countries (D-8) in 2009-2018

| Country | Commodity | | | | |
|------------|-----------------------|-------------------|-------------------------|--------------------|--------------------|
| | HS 1511 (Palm Oil) | HS 3401 (Soap) | HS 3823 (Fatty Acid) | HS 4011 (Tyres) | HS 4802 (Paper) |
| Bangladesh | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Iran | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Malaysia | 2.75 | 25.53 | 40.37 | 19.05 | 3.00 |
| Egypt | 0.00 | 0.57 | 0.00 | 2.06 | 0.00 |
| Nigeria | 2.23 | 0.00 | 0.00 | 0.00 | 0.05 |
| Pakistan | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 |
| Turkey | 0.00 | 0.13 | 0.00 | 9.21 | 0.06 |

Source: WITS, 2019 (processed)

Analisis *Export Product Dynamic (EPD)*

The EPD method is used to describe the dynamics of exports and the position of Indonesian export commodities in the markets of destination countries. EPD analysis results show the dynamic level of export growth in a certain period which is categorized in four market positions, namely: Rising Star, Falling Star, Lost Opportunity, and Retreat. Although based on the results of the RCA analysis there are many commodities that have high competitiveness, but the results of the EPD show that some commodities and in a particular country's market occupy a market position that is not ideal. The results of the EPD analysis on the D-8 market show that Indonesia's export commodities are in various positions in the four market positions shown in Table 4.

Rising Star's position shows that the growth of the export market share of a commodity in the destination country increases in line with the increased demand for commodity exports. In Table 5, the EPD results of the HS 1511 commodity on the Egyptian, Pakistani, Turkish markets are in the Rising Star position. Followed by commodity 3401 in the markets of Bangladesh, Iran, Malaysia, Nigeria, Pakistan and Turkey. The HS 3823 commodity in the Bangladesh, Iran and Nigeria markets is in the Rising Star position.

While the HS 4011 commodity, the Rising Star position is in the Malaysian market. In the HS 4802 commodity, the Rising Star position is in the Iranian, Egyptian, Nigerian and Turkish markets.

Falling Star's position shows that the export market of a commodity continues to increase, but the demand for that commodity decreases. The commodities in the Falling Star position were HS 3823 commodities in the Bangladesh and Egypt markets. The HS 4011 commodity is in the Falling Star position in the Egyptian, Nigerian and Pakistani markets and the HS 4802 commodity in the Bangladesh market.

The Retreat's position shows that a decline in the export market share of commodities in the country is followed by a decrease in demand for these commodities. This retreat took place in HS 1511 commodities in the Bangladesh and Malaysia markets, HS 3823 commodities in the Pakistan Market and HS 4011 commodities in the Bangladesh market.

The commodities that are in the position of Lost Opportunity show the loss of commodity market share in the destination market and this occurs in HS 1511 commodities in the Iranian and Nigerian markets, HS 3401 Commodities in the Egyptian market, HS 3823 commodities in Malaysia and Turkey

markets, HS 4011 commodities in Iran and Turkey markets, commodities HS 4802 in Malaysia and Pakistan markets.

The position of lost opportunity or loss of export market share of HS 1511 Indonesia in the Iranian market is caused by the growth of export market share in 2012, 2014, 2015, 2016, 2017, and 2018 with negative values. In 2017, there was a change in the value of the composition of imports because Iran shifted most of its imports to Malaysia, and the United Arab Emirates. In 2018 exports of these commodities from Indonesia to Iran experienced negative growth reaching 86.67 percent and many shifted to Malaysia and partly to European Union countries.

The position of lost opportunity or loss of export market share of HS 1511 commodities in the Nigerian market is caused by the growth of export market shares in 2009, 2012, 2015, 2016, 2017, and 2018 which are negative. In 2012 the change in composition of imports of HS 1511 Commodities that occurred on the Nigerian market was due to that year, Nigeria imported more from Malaysia, Benin, Ivory Coast, and each country experienced positive export growth into the Nigerian market.

The position of lost opportunity or loss of Indonesia's export market HS 3401 in the Egyptian market is caused by the growth of export market share in 2013, 2014, 2015 and 2016 which is negative. In 2016, the lowest growth reached -80.38 percent from the previous year. Even though the average growth was negative, in 2017 and 2018, exports of the HS 3401 commodity to Egypt experienced positive growth. Malaysia is Indonesia's main competitor in exporting these commodities to the Egyptian market. Another factor that also causes the export composition to have a negative value is that Egypt has largely shifted its imports from other countries such as the UAE and European Union countries.

The lost opportunity position or loss of Indonesia's export market HS 3823 in the Malaysian market is caused by the growth of export market share in 2013, 2015 and 2018 which is negative. In 2015, the lowest growth reached -29.85 percent from the previous year. Indonesia is the country with the highest export value for this commodity to Malaysia, but during this period, Malaysia also actively carried out import transactions from other countries such as India, China, Thailand, Singapore, the US and other regional countries with fluctuating growth rates for each country.

The position of lost opportunity or loss of export market share of HS 3823 Indonesia in the Turkish market is caused by the growth of export market share in 2013, 2015, 2016 and 2019 which is negative. In 2016, the lowest growth reached -36.44 percent from the previous year. Malaysia is Indonesia's main competitor in exporting these commodities to the Turkish market. In 2016 the export of this commodity to Malaysia experienced the highest growth reaching 53.02 percent from the previous year. Another factor that also causes a negative export composition is that Turkey has shifted its imports to many other countries such as from Belgium, China, Germany, Spain, India, Russia and other countries, although with a smaller value.

The loss of Indonesia's market share or the position of lost commodity opportunity HS 4011 in the country of Iran is caused by negative export growth in 2012, 2014, 2016 and 2018. In 2018 negative growth reached 79.81 percent from the previous year. China is a country that has the highest export value for this commodity to Iran. Another factor is also influential because Iran is diverting its imports from other countries' markets, for example from Korea, India, countries belonging to the European Union, United Arab Emirates and other regions.

The loss of Indonesian market share or the position of lost opportunity for HS 4011 commodities in Turkey

was caused by the growth of Indonesia's exports which were negative in 2011, 2012, 2014, 2016 and 2017. The German country was the main exporter for these commodities to Turkey during the period 2009 to 2018 Apart from these factors also caused by Turkey importing this commodity from many countries in the world, including China, Korea, the Czech Republic, Egypt, India, Thailand, Malaysia and other EU members and from countries in other regions with dynamic growth.

The loss of Indonesia's market share or the lost opportunity position of HS 4802 commodity in Malaysia is due to negative export growth in 2013, 2014, 2015, and 2016. However, in 2017 and 2018, it rose again with positive growth of 4.14 percent and 10.15 percent from the previous year. Indonesia is a major exporter of this commodity to Malaysia but it competes with many countries such as China, Japan, Korea, Singapore, Thailand, India, European Union countries, Latin America and other Asian regions with fluctuating growth rates over the last ten years.

The loss of Indonesia's market share or the position of lost commodity opportunism HS 4802 in Pakistan was caused by negative export growth in 2014. Another factor that caused the growth of export market shares with negative value is that the total value of Pakistan's imports of these commodities from the world experienced very high growth dynamic, although Indonesia is a major exporter for HS 4802 to Pakistan. Countries that have consistently carried out commodity trading transactions in Pakistan for the past ten years include China, Spain, the United Kingdom, the European Union and other regions with fluctuating growth rates.

A greater effort is needed to increase the market share of the commodity, because the position of Lost Opportunity means the market share of export products from Indonesia is declining, while demand for these products is increasing. One effort that needs to be done is through innovation. In addition, it can also replace export commodities into other commodities that have more potential to be exported to destination countries.

Table 4 Results of Analysis of Export Product Dynamics (EPD) of Indonesian export commodities to Developing Eight (D-8) in 2009-2018

| Country | Commodity | | | | |
|------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| | HS1511 (Palm Oil) | HS3401 (Soap) | HS3823 (Fatty Acid) | HS4011 (Tyres) | HS4802 (Paper) |
| Bangladesh | <i>Retreat</i> | <i>Rising Star</i> | <i>Falling Star</i> | <i>Retreat</i> | <i>Falling Star</i> |
| Iran | <i>Lost Oportunity</i> | <i>Rising Star</i> | <i>Rising Star</i> | <i>Lost Oportunity</i> | <i>Rising Star</i> |
| Malaysia | <i>Retreat</i> | <i>Rising Star</i> | <i>Lost Oportunity</i> | <i>Rising Star</i> | <i>Lost Oportunity</i> |
| Egypt | <i>Rising Star</i> | <i>Lost Oportunity</i> | <i>Falling Star</i> | <i>Falling Star</i> | <i>Rising Star</i> |
| Nigeria | <i>Lost Oportunity</i> | <i>Rising Star</i> | <i>Rising Star</i> | <i>Falling Star</i> | <i>Rising Star</i> |
| Pakistan | <i>Rising Star</i> | <i>Rising Star</i> | <i>Retreat</i> | <i>Falling Star</i> | <i>Lost Oportunity</i> |
| Turkey | <i>Rising Star</i> | <i>Rising Star</i> | <i>Lost Oportunity</i> | <i>Lost Oportunity</i> | <i>Rising Star</i> |

Sumber: WITS, 2019 (diolah)

Analysis of Factors Affecting Indonesia's Selected Commodity Exports to D-8

Factors affecting the export of selected Indonesian commodities to Developing Eight Countries (D-8) use the gravity model method. In this research, it will be

seen the influence of variables that influence the export of selected commodities from Indonesia to D-8. The independent variables that are thought to affect the export value (X_{jt}) are the Gross Domestic Product of the importing country (GDP_{jt}), the real exchange rate (RER_{ijt}), Export Price ($EXPRICE_{ijt}$), and economic distance between countries ($ECODIST_{ijt}$). The results of a regression analysis of the factors affecting the export of selected Indonesian commodities to member countries (D-8) are shown in Table 5.

The GDP variable in this study reflects the ability of a country to pay or consume goods. While the exchange rate is obtained from the nominal exchange rate multiplied by the comparison of the CPI of the two countries. The price variable is produced by dividing the export value of a commodity by its volume. While the distance variable is a proxy of transportation costs in trade. In this study the distance used is the economic distance that compares the geographical distance with GDP.

Regression analysis for commodities HS 1511, HS 3401, HS 3823, HS 4011, HS 4802 gives the result that the

GDP of the destination country has a positive effect on all selected commodities, where each increase in the GDP of the destination country is one percent then the value of commodity exports in a row will increase by 2.66 percent, by 3.11 percent, 2.51 percent, 0.58 percent and 0.67 percent.

The variable real exchange rate of the rupiah against the destination country's currency has a positive effect on the three commodities namely HS 1511, HS 3823, and HS 4011, where each increase in the real exchange rate of the rupiah against the destination country is one percent, the export value of the commodity will increase by 0.79 percent, 0.61 percent and 0.30 percent. These results are consistent with the hypothesis that the increase in the real exchange rate of the destination country has a positive effect. Whereas the HS 4802 commodity had a negative effect with a coefficient of -0.14 meaning that each increase in the real exchange rate was one percent, then the export value of the commodity would decrease by 0.14 percent.

Table 5. Estimated Results of Factors Affecting Indonesia's Commodity Exports in Market D-8

| Independent Variable | Dependent Variable | | | | |
|----------------------|---|---------------------------|---------------------------------|----------------------------|----------------------------|
| | Commodity | | | | |
| | <i>HS 1511 (Palm Oil)</i> | <i>HS 3401 (Soap)</i> | <i>HS 3823 (Fatty acid)</i> | <i>HS 4011 (Tyres)</i> | <i>HS 4802 (Paper)</i> |
| LN_GDP | 2.6652*** ^a (0.0000) ^b | 3.1105*** (0.0000) | 2.5165*** (0.0036) | 0.5819** (0.0167) | 0.6711*** (0.0028) |
| LN REER | 0.7964*** (0.0000) | -0.0019 (0.9906) | 0.6155** (0.0184) | 0.3058 ** (0.0141) | -0.1405** (0.0311) |
| LN_EXPRICE | 0.2674 (0.1925) | -0.9565* (0.0998) | 0.3790 (0.4128) | 0.5971 (0.1378) | 0.1736 (0.5989) |
| LN_ECODISTTT | -2.1963*** (0.0000) | -1.1143* (0.0733) | -3.6411*** (0.0038) | -0.4069* (0.0617) | -0.3511 (0.1864) |
| Constanta | -42.9423 (0.0000) | -52.8445 (0.0036) | -32.3532 (0.0350) | -3.0336 (0.5748) | 1.50398 (0.7562) |
| R ² | 0.9163 | 0.3655 | 0.8194 | 0.2888 | 0.2204 |
| Adj R ² | 0.9021 | 0.3265 | 0.7888 | 0.2450 | 0.1724 |
| Prob (F-Statistic) | 0.0000 | 0.0000 | 0.0000 | 0.0001 | 0.0024 |

Notes: ^a: coefficient value; ^b: the probability ; ***, **, * significant at 1%, 5%, 10%

The variable price of exports has a significant and significant effect on the value of exports on commodity HS 3401, where the coefficient values are -0.95. The coefficient sign is negative according to the hypothesis which means that an increase in price by one percent will reduce the value of exports of HS 3401 commodity by 0.95 percent, ceteris paribus. Increased export prices make the costs incurred by destination countries higher, so the export demand for HS 3401 commodity will decrease.

The economic distance variable between Indonesia and the destination country has a negative effect on commodities HS 1511, HS 3401, HS 3823, and HS 4011. Where each increase in economic distance between Indonesia and the destination country is one percent, the export value of these commodities will decrease respectively 2.19 percent, 1.11 percent, 3.64 percent and 0.40 percent. The results of this study are in accordance with the hypothesis that economic distance is negatively related to export value. While on HS 4802 commodity economic distance variable has no effect. This is presumably because HS 4802 commodity is an important commodity in export destination countries.

IV. CONCLUSION

Commodity exports HS 1511, HS 3401, HS 4011, HS 4802 Indonesia to D-8 member countries during 2009 to 2018 showed good performance, which can be demonstrated through the results of RCA and EPD analysis in which many Indonesian export commodities are competitive and when viewed from market positions occupying strategic market positions and good performance. The level of Indonesian trade integration and D-8 is still included in the one-way trade category with the highest IIT value only at a moderate degree of integration.

Indonesia's export commodities to D-8 are influenced by the GDP of the destination country which has a positive and significant effect on all commodities.

Other variables that have a significant influence are the real exchange rate of the rupiah against the destination country, the price of each export commodity, the economic distance with a different value and level of significance for each commodity.

V. REFERENCES

- [1] Abidin ISZ, Bakar NZA, Sahlan R. 2013. The Determinants of Exports between Malaysia and the OIC Member Countries: A Gravity Model Approach. *Procedia Economics and Finance*.5(1):12-19
- [2] Arip MA, Feng TS, Yee LS. 2013. Assessing the Competitiveness of Malaysia and Indonesia Palm Oil Related Industry. *World Review of Business Research*. 3(4):138-145.
- [3] Austria MS. 2004. The Pattern of Intra-ASEAN Trade in the Priority Goods Sectors, *Final Main Report*,3/006e:1-176.
- [4] [BPS]. Central Bureau of Statistics. 2019. Laporan Perekonomian Indonesia 2018. Jakarta (ID):BPS
- [5] Boansi david, OdilonKounagbelokonon Boris, Appah John 2014. Determinants of Agricultural Export Trade: Case of Fresh Pineapple Exports from Ghana. *British Journal of Economics, Management & Trade*. 4(11):1736-1754
- [6] Esterhuizen D. 2006. *Measuring and Analyzing Competitiveness in the Agribusiness Sector: Methodological and Analytical Framework*. Pretoria (SA): University of Pretoria.
- [7] Fakhruddin U. 2011. The Competitiveness of Indonesian Product in Trade Relationship with China. *Buletin Ilmiah Litbang Perdagangan*. Vol.5 No 2.
- [8] [Kemendag] Indonesian Ministry of Trade. Various Publication [Internet]. [downloaded on March-May 2019]. Available on: <http://kemendag.go.id/>
- [9] Serin V, Civan A. 2008. Revealed Comparative Advantage and Competitiveness: A case study for

- Turkey towards the EU. *Journal of Economics and Social Research* .10 (2):25-21.
- [10] Shuai C, Wang X. 2011. Comparative Advantages and Complementarity of the Sino-US Agricultural Trade: An Empirical Analysis. *AGRIC ECON – CZECH*. 57 (3): 118-131
- [11] Siddique B, Rahul S, Shadana S. 2016. Australia-Thailand Trade; An Anaysis of competitiveness and effect of the bilateral FTA. *The Journal of Developing Areas*. Volume 50 No.5
- [12] Stephenson, S.M. 1994. The Uruguay Round and Its Benefit to Indonesia. Ministry of Trade Republic of Indonesia. Jakarta
- [13] Telambanua E.2012. Analisa determinan ekspor Provinsi Sumatera Utara: pendekatan gravity model. *Quantitative Economics Journal*.2(2):35-52
- [14] [WITS] World Integrated Trade Solution. Various Publication [Internet]. Available on: <http://wits.org/>. [downloaded on May-September 2019].

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