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The Relationship of Exchange Rate Volatility and Indonesia's Export Proceeds from Country Partners

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Abstract

This study analyzes the impact of the risk of exchange rate volatility on export proceeds (DHE) as well as the relationship of partner countries to Indonesia's potential DHE receipts. This research using panel data method uses a monthly period from January 2012 to December 2018 with 38 types of commodities and 191 partner countries. This study reveals that the impact of exchange rate volatility has a negative effect, while high-income export partner countries have a positive effect on DHE receipts. This study supports the optimization of DHE acceptance policies in Indonesian banks to ensure the availability of foreign exchange supply. The impact of the risk of exchange rate volatility on DHE receipts can be anticipated by increasing the cooperation of more advanced and high-income partner countries.

Keywords
foreign exchange from exports; volatility; exchange rates; partner countries

I. Introduction

After the global financial crisis (GFC), the global economy, including Indonesia, Recently, it has faced various challenges triggered by increasing global uncertainty. This led to an imbalance in global trade which also triggered the widening of the current account deficit (CAD). The trade balances of developing countries are also affected by the global trade imbalance because most of the exports of developing countries are directed to developed countries. Because of this, changes in developing country exports are also related to changes in the GDP of developed countries (Shelburne, 2010).

Financial literacy is understood as mastery of a set of knowledge, attitudes and behaviors, it has assumed the fundamental role of the likelihood of people to make responsible decisions as they strive to achieve financial prosperity. Financial inclusion as all efforts aimed at eliminating all forms of price and non-price barriers to public access in utilizing financial services. The Otoritas Jasa Keuangan (2016) defines financial inclusion as the availability of access to various financial institutions, products and services in accordance with the needs and abilities of the community in order to improve public welfare. OECD, Organization for Economics Co-operation Development (2016) has developed questions on the questionnaire that can be used to measure the level of financial inclusion. (Lubis, A. et al. 2019)

Although exports have many challenges, countries in the world generally maintain various types of export-oriented businesses because exports are important for the country's economic growth. Export activities encourage economic growth, especially in the utilization and transfer of technology as part of the positive externalities of free trade between countries (Keesing 1967; Balassa 1978; Tan 2019). Positive export performance is expected to improve the current account deficit and generate state revenue in the form of foreign exchange. Foreign exchange originating from export activities is called Export Proceeds (DHE), which

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is then expected to be able to become an adequate and sustainable source of funds for national economic development.

DHE, which is placed through banks in the Indonesian financial system, can provide an optimal contribution nationally. DHE can be useful in supporting efforts to maintain stability in the value of the rupiah and create a healthier financial market. In addition, DHE is useful as an adequate and sustainable supply of foreign exchange to meet national development needs. To date, it has been noted that most of the foreign exchange supply comes from foreign portfolios that are vulnerable to risk of reversal of fund flows so that DHE is expected to be a source of sustainable foreign exchange supply.

The potential of DHE as a source of foreign exchange supply will not be optimal if there is a risk of leakage of DHE receipts because the storage is not carried out in domestic banks. Based on banking reports to Bank Indonesia in 2011 that there is a fact that not all DHE enters the country. As a result, the domestic foreign exchange market experienced a structural shortage of supply, which was eventually met by short-term (hot money) foreign capital inflows. With this condition, supervision of DHE receipts becomes important. Therefore, a policy on foreign exchange flows in particular for monitoring DHE can be formulated as an instrument to monitor foreign exchange originating from export activities as regulated in Bank Indonesia Regulation Number 21/14/PBI/2019 Foreign Exchange Proceeds Exports and Foreign Exchange Payments for Imports. This policy is expected to have a positive impact on the national economy, including increasing the national banking foreign exchange surplus and assisting the authorities in controlling monetary affairs.

In its development, the implementation of the DHE receipt policy in the observation period, namely from January 2012 to the period of December 2018 showed a significant increase in compliance with reporting DHE receipts. This is reflected in the compliance level of DHE receipts, which was originally only 56.6% in October 2012 and increased to 99.6% in December 2018. This shows that during this period the implementation of the provisions for DHE receipts has been able to encourage business actors, especially exporters to report that DHE entered the Indonesian financial system. In addition, DHE information also shows that business actors can import DHE into the country. However, because of the free foreign exchange traffic system adopted by Indonesia, the monetary authority does not have the authority to keep DHE stored in the country. This is stated in Law Number 24 of 1999 which regulates foreign exchange traffic and the exchange rate system.

In order to map and find out the actual condition of the amount of foreign exchange earnings obtained from the sale of export products, it is also important to conduct a study on DHE receipts and study their contribution in terms of their placement in Indonesian banks in the Indonesian financial system. The use of the DHE variable in the study can prove that the implementation of reporting on DHE receipts has succeeded in achieving reporting compliance of 99.6% so it can be believed that there is a large enough foreign exchange potential from export proceeds. The information can then encourage the government to implement policies that can trigger business actors to store DHE domestically. Meanwhile, based on research on supporting documents reporting exporters on DHE receipts, 86.9% is an inflow of funds and 12.

In export activities there are risks faced by exporters, including exchange rate risk and market risk. Exchange rate risk can be seen from the volatility of the exchange rate and the real effective exchange rate, as well as market risk can be observed from various perspectives, but in this study the perspective of country conditions is taken based on the variables of distance and income of partner countries. Exchange rate risk on export performance can be anticipated by ensuring that all foreign exchange earnings from export proceeds enter the Indonesian financial system. Optimal foreign exchange earnings from

exports (DHE) will increase the domestic foreign exchange supply. Until now, to the best of the author's knowledge, there has been no research examining whether the potential for DHE revenue is influenced by exchange rate volatility and export partner countries.

This research needs to be done to find out the impact of exchange rate volatility on Export Proceeds (DHE) receipts from Indonesia's export partner countries on oil and gas and non-oil and gas commodities on the potential for increasing DHE receipts in Indonesia. This research is expected to provide a new perspective in terms of DHE receipts which is able to provide information for the government to formulate policies related to DHE receipts in the Indonesian financial system that is able to attract business actors (exporters) to invest funds from the results of domestic export activities.

The study was conducted on export activities in Indonesia to all export destination countries and DHE receipts for the period January 2012 to December 2018. The value of Export Proceeds (DHE) receipts is the DHE value obtained from reports on DHE receipts by exporters reported to Bank Indonesia. The DHE value does not pay attention to the realization of DHE receipts, but the DHE value comes from exporter reports that have passed document validation. The author does not pay attention if there is DHE that is not paid or is not reported by the exporter.

II. Review of Literature

Trading nternational cooperation can occur because it is supported by an open economic system. In international trade, countries often transact goods rather than services. The goods traded include manufactured goods, mineral products, agricultural products, and petroleum as the main components and remain an important part of world trade.(Krugman, International Trade Theory, 2015). There are two factors that correlate with the implementation of an open economy, namely the first is the influence of foreign exchange traffic from international trade and investment activities and, the second is the influence of the exchange rate (Warjiyo & Juhro, 2016).

Exports are part of foreign demand which refers to domestic goods. Foreign income will affect exports where when foreign income is higher then foreign demand for goods, both foreign and domestic will also be high. Therefore, higher foreign income leads to higher exports. In addition, exports also depend on the real exchange rate where the higher the price of domestic goods in the form of foreign goods, the lower foreign demand for domestic goods. Therefore, the higher the real exchange rate, the lower the export income.

$$X=X(Y^*,\in)$$

Where X is the export and Y is the output. Enhancement_income_foreign, Y* causes_exports increased. An increase in the real exchange rate, , causes exports to decline∈(Blanchard & Johnson, 2013).

In his book on macroeconomics, (Mankiw, 2015) explains the balance of the goods market and the money market through the IS-LM curve approach for a closed economy. This theory is re-explained by (Warjiyo & Juhro, 2016) by adding open economic relations so as to create a model based on an analysis of balance in the goods market, money market and forex market. The goods market equilibrium (IS) is shown by the equation

$$Y= C+ I + G + NX$$

Where: Y=output in the form of gross domestic product, C=consumption, I=investment, (C and I depend on interest rates (r) and output) G=government expenditure, NX=net exports influenced by foreign GDP (Y*) and the exchange rate Q=E[P/SP*], where S is the nominal exchange rate and P is the domestic price level and P* is the foreign price level. Furthermore, the money market balance (LM curve) is shown by the equation:

$$M^d/\mathrm{P} = \mathrm{L(y,r)} \text{ And } M^d = \mathrm{Ms} = \mathrm{M}$$

On the LM curve, the Md line represents the demand for money, Ms represents the money supply, M represents the money supply, and r is the nominal interest rate. On the other hand, the FE curve describes the balance of payments balance which is related to the balance of the foreign exchange market. In practice, the balance of payments (BoP) consists of the trade balance (CA), capital account (CP), and changes in foreign exchange reserves (OR), so BoP = CA + CP + OR, in this model OR is assumed to exist, so the BoP equation Becomes:

$$\mathrm{BoP} = \mathrm{CA} + \mathrm{KA}$$
$$\text{With } \mathrm{CA} = \mathrm{NX} = \mathrm{PX} - \mathrm{SP^*}\ \mathrm{Z} \text{ and } \mathrm{KA} = \mathrm{K(rr^*-E(\Delta S))}$$

Where r* is the foreign interest rate, and E(ΔS) is the expected nominal exchange rate depreciation (Krugman, Exchange Rate and Open Economy Macroeconomics, 2015).
Exchange rate movements play an important role in international trade. There are many empirical studies that confirm the positive effect of exchange rate depreciation on the trade balance. The deviation of the exchange rate from the fundamentals as measured by the REER led to an increase in world trade of about 1%. This study was conducted using panel data on 100 countries in the period 2000 – 2009 (Nicita, 2013).

However, not all studies show that exchange rate depreciation will increase exports and exchange rate appreciation will decrease exports. This happened in research on the volatility of the rupiah exchange rate with the export performance of Indonesia and Japan. The results of this study indicate that the depreciation of the rupiah against the Japanese yen actually reduces the performance of Indonesia's exports to Japan. The opposite happened to Indonesia's exports to the United States. In this study, fluctuations in the rupiah against the United States dollar were positively related to an increase in Indonesian exports to the United States (Fitriani, 2017).

Gravity modelscan be used to examine the influence of partner countries on export performance. Research with the application of a gravity model using a fixed component to examine the trade flow of coal, crude oil and iron ore states that with this model it can be predicted that the trading volume of coal, crude oil and iron ore commodities can be predicted.(Babri, Jørnsten, & Viertel, 2017). The gravity model theory emphasizes that trade between two countries is also determined by the amount of state income and the distance between the two countries. The formulation model is written as follows (Krugman, 2012):

$$T_{ij} = A\ x\ Y_i^a\ x\ Y_j^b\ /\ D_{ij}^c$$

The relationship between export destination countries and export performance can be observed from and analyzed based on the variables of distance between countries, GDP of export destination countries, and dummy consistency, OECD membership by using gravity model. The distance factor also causes higher shipping costs for longer distances, so that it has a negative effect on exports. State income has a positive effect on the value of exports because the higher the economic level of the country. Consistency shows that countries that

import consistently and/or in large quantities have a higher tendency to import from their partner countries (Vido, 2003).

Several empirical studies around the world (Bahmani-Oskooee, Harvey, & Hegerty, 2014), (Auboin & Rut, 2011), (Chaudhary, Hashmi, & Khan, 2016), and (Cheung & Sengupta, 2012), as well as empirical studies in Indonesia (Fitriani, 2017), (Adam & Rosnawintang, 2017), and (Sugiarti, 2020) have confirmed that there is a relationship between exchange rate volatility and economic growth as reflected in export performance. In more depth, a literature study was conducted on several previous studies to find the model in this study. Based on the literature study, information was obtained about the relationship between the exchange rate and export performance as well as the relationship between export destination countries and export performance based on the gravity model theory (Vido & Prentice, 2003) and (Babri, Jørnsten, & Viertel, 2017).

III. Research Method

In this study, the data structure used is panel data and two separate models are used. The first model is to see the impact of exchange rate volatility on DHE receipts and the second model is to see DHE receipts from export partner countries, specifically based on region so that the potential DHE revenue can be investigated based on export partner countries. The time variable used is monthly data starting from January 2012 to the end of December 2018. Sections in the first model panel data are commodities grouped by Bank Indonesia's monitoring category for DHE receipts consisting of 38 types of commodities. Sections in the second model panel data are export partner countries consisting of 191 countries.

3.1. Measurement of Exchange Rate Volatility with the EWMA Metode Method

The EWMA method is denoted as follows:

$$\sigma = \sqrt{1 - \lambda \sum_{t-1}^{T} \lambda^{t-1} (r_t - \bar{r})^2}$$

Where is the standard deviation, is the decay factor, 0.94 for daily data (Morgan, 1995), T is the number of days, is the daily return at time t, and is the average return.$\sigma r_t \bar{r}$

$$\sigma_t^2 = (1 - \lambda)\, \epsilon_{t-1}^2 + \lambda \sigma_{t-1}^2 \qquad (2)$$

Where:

ϵ_{t-1}^2 is an unexpected return at t-1

$\lambda^i$is smoothing factor, 0.94 for daily data (Morgan, 1995)

σ_{t-1}^2 is the volatility at t-1

Recursion starts with the equation $\epsilon_0 = \sigma_0^2 = var(\epsilon_t)$

3.2. Exchange Rate Volatility Model

The empirical model chosen to estimate the impact of exchange rate volatility on DHE receipts based on commodities was adopted from research on the impact of exchange rate volatility on Indonesia's leading export commodities to the five main destination countries (Sugiarti, 2019). The empirical model is modified by adding a commodity price control variable, so that the empirical model becomes as follows:

$$Xit = f(Volt, REERt, IIPt, OPt, CPOPt) \quad (3)$$

and;

$$DHEit = f(Volt, REERt, IIPt, OPt, CPOPt) \quad (4)$$

$$LDHEijt = +\beta 1Volit+\beta 2REERit+ 3LIIPit+ 4LOPit + 5LCPOPit + eit$$

Where Xit is the export of commodity i, at time t, DHEit is the receipt of DHE (export proceeds) of commodity i, at time t, Volt is the nominal volatility of the IDR/USD exchange rate at time t, REERt is the Real Effective Exchange Rate at time t, IIPt is the Index of Industrial Production at time t, OPt is the world oil price at time t, and CPOPt is the world CPO price at time t.

3.3 Gravity Model

The empirical model chosen to estimate that the export destination country will have an impact on export performance and DHE revenue. This model was adopted from the research (Vido & Prentice, 2003) by modifying the logarithm of the equation so that the regressed values are equivalent as follows:

$$LDHE_{jt} = \alpha+\beta_1 LDis_{jt}+\beta_2 LGDP_{it}+ \delta_1 D_{1jt}+ \delta_2 D_{2jt} + \delta_3 D_{3jt} + \delta_4 D_{4jt} + \delta_5 D_{5jt} + \delta_6 D_{6jt} + \delta_7 D_{7jt} + \delta_8 D_{8jt} + \delta_9 D_{9jt} + e_{ijt} \quad (5)$$

Where DHE_{ijt} is DHE receipts from country j, at time t, Disjt is the sea distance between country j and Indonesia, at time t, GDPjt is the income of the destination country at time t (GDP), $\delta^1 D_{1jt}$ is the dummy classification of countries based on rich countries or poor countries; 1 if incorporated in the OECD and 0 if not, $\delta_2 D_{2jt}$ is a dummy for the consistency of product imports from Indonesia; 1 if it is consistent every month and 0 if it is not every month, $\delta_3 D_{3jt}$ is a dummy cash flow of DHE receipts; 1 if DHE receipts are received from the same country as the export destination country and 0 if not, $\delta_4 D_{4jt}$ is a dummy for the country's region in South Asia; 1 if the partner country is in South Asia and 0 otherwise, $\delta_5 D_{5jt}$ is the regional dummy of the country in East Asia; 1 if the partner country is in East Asia and 0 otherwise, $\delta_6 D_{6jt}$ is the regional dummy of countries in North, West and Central Asia; 1 if partner countries are in North, West and Central Asia and 0 otherwise, $\delta_7 D_{7jt}$ is the regional dummy of countries in America; 1 if the partner country is in America and 0 otherwise, $\delta_8 D_{8jt}$ is a dummy country region in Africa; 1 if the partner country is in Africa and 0 otherwise, $\delta_9 D_{9jt}$ is the country region dummy in Australia - Oceania; 1 if partner country is in Australia - Oceania and 0 otherwise. Countries in ASEAN are used as a base. Most European countries have also been represented by the OECD, so that if European countries are used as dummy it will cause multicollinearity problems because of the repetition of the independent control variable model.

IV. Result and Discussion

4.1. Exchange Rate Volatility

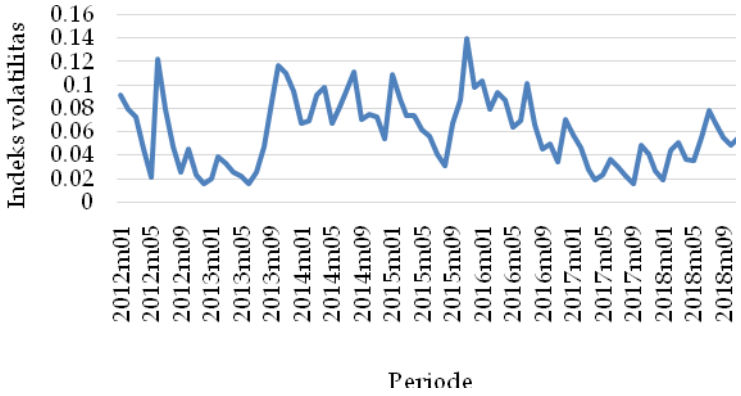
Exchange rate volatility is calculated by the method Exponentially Weight Moving Average(EWMA) on a monthly basis. This method is adapted from the RiskMetrics method developed by JP Morgan and Reuters. EWMA is a derivative model and measurement of volatility using the GARCH method. In his research(Ding & Meade, 2010), proving that of the three methods tested, namely the SV, GARCH, and EWMA methods, it was found that

the EWMA method is the most reliable method for measuring exchange rate volatility. Therefore, this study tries to measure the volatility of the exchange rate using the EWMA method.

The use of the EWMA method in this study is to consider that export transaction data are displayed on a monthly basis where exports occur throughout the monitoring period, from the beginning of the month to the end of the month. Payments for exports are assumed to be made at any time based on agreements and business mechanisms carried out by exporters and buyers abroad, so it is necessary to pay attention to the volatility of the exchange rate. Meanwhile, the exchange rate variable has daily data because the volatility data used comes from daily nominal exchange rate data, where changes in exchange rates can occur every day. Therefore, to be used as a variable equivalent to the export variable, the authors take a sample of the exchange rate data on a monthly basis. In this case, the exporter's decision to export and determine the invoice for exports is also through consideration of the impact of historical exchange rate movements that can occur throughout the period in the month of observation. Therefore, it is assumed that the movement of the exchange rate in the previous period is also a consideration for exporters' decisions in exporting their products and billing buyers for exported products.

Exporter decisions based on exchange rate movements indicate risk mitigation behavior, especially on the risk of returning producers' profits from selling their products. The decision to mitigate exchange rate risk is based on information on the current account balance and interest rates. This is in line with the statement made by Blanchard (2013), that news regarding the current account balance and current and future domestic and foreign interest rates may affect the exchange rate. This shows that the central bank's policies that have an impact on the exchange rate will affect the behavior of exporters in export sales.

In previous studies, the EWMA method was considered to produce more accurate estimates than GARCH (Ding & Meade, 2010); (Winata, 2019). Based on observations, the monthly volatility data collection is by selecting the volatility value taken on the first Wednesday of each week instead. The results of the observation of volatility can be observed in Figure 1 as follows.



Source: Bank Indonesia, processed

Figure 1. *Monthly Rupiah Exchange Rate Volatility*

From Figure 1, it can be seen that the volatility of the exchange rate varies greatly. The shift from low to high volatility is more sudden, while the shift from high to low volatility tends to be more gradual. For example, during the period of June 2012, volatility suddenly increased, after previously decreasing gradually from January to May 2012. Volatility suddenly rose again in September 2013 and November 2015. Meanwhile, in other periods, it

tended to be more stable, occurring gradually, both at the time of the decline to the level of lower, as well as when it increased to a higher level in September 2017 to December 2018.

4.2. Estimated Results

The independent variables that are assumed to represent the conditions of global uncertainty tested in model 1 and model 2 shows a significant relationship and influence on DHE acceptance. Several variables have a negative relationship to DHE receipts, which means increasing the risk of uncertainty in DHE receipts such as volatility and the distance between partner countries and Indonesia.

The regression results are written as follows.

$$LDHE_{it} = -9.298 - 1.042Vol_t - 0.0108REER_t + 2.783LIIP_t + 0.0748LOP_t + 0.234LCPOP_t$$

and

$$LDHE_{ijt} = 58.92 - 7.894LDis_{jt} + 0.699\,LGDP_{it} + 3.744D_{1jt} + 0.672D_{2jt} - 1.293D_{3jt} + 0.155D_{4jt} - 2.560D_{5jt} + 1.740D_{6jt} + 6.232D_{7jt} + 4.363D_{8jt} - 1.348D_{9jt} + e_{ijt}$$

The effect of the independent variable on DHE receipts due to the risk of exchange rate volatility is negative, i.e. every 1% increase in volatility will reduce DHE receipts by -1.042% DHE. The effect of the REER independent variable on DHE receipts is that if the rupiah depreciates by 1%, it will reduce DHE revenues by 0.0108% from exports of oil and gas and non-oil and gas commodities.

The receipt of DHE, especially in its placement in the Indonesian financial system, is very important in contributing to national development. Therefore, based on this study, because the increase in exchange rate volatility has an effect on DHE receipts, the central bank in maintaining the stability of the rupiah exchange rate has a very important role. According to Chutarispanich & Yetman (2015) the central bank can intervene but still pay attention to the goals to be achieved.

When DHE receipts fall, it also means that export performance declines. This can have an impact on the condition of the balance of payments increasingly experiencing a deficit. On the other hand, if volatility decreases, which also means that the rupiah exchange rate is more stable, the risk of declining DHE receipts is reduced. Optimistically, this reflects the improving export performance. According to Boediono (1993) an increase in exports corrects the balance of payments deficit and if the balance of payments experiences a surplus, it means that there is foreign exchange entering the country, this means that there is an increase in the money supply. This relationship also shows the influence of REER on DHE receipts.

On the other hand, IIP has no significant effect on DHE receipts. This could be due to the fact that the performance of Indonesia's manufacturing exports has not been optimal. Not many companies have taken part in the development of the global value chain (GVC). According to ADB (2019) Indonesia's participation in GVC is 21.5% of the total value added. This measure is not significant enough compared to exports of commodities which are primary products. However, based on his research,(Tan, Duong, & Chuah, 2019)revealed that in the context of GVC, exports depend on imported raw material inputs, so as to reduce trade effects due to the risk of exchange rate volatility. In addition, currently exporters/exporters are still more focused on exports of primary products than exports of manufactured products.

This is in line with research (Sugiarti, 2020)who stated that Indonesia's trade pattern accounts for more than 50% of total exports of raw materials and semi-finished goods (mainly resource-based), prices are more volatile, and are more sensitive to changes in prices and global demand. Trade as a percentage of GDP in Indonesia declined from 55% in 2006 to

nearly 40% in 2017, both as the role of local consumption increased but also due to lower exports.

This research is important because DHE receipts for primary commodities that are sensitive to exchange rates also imply that Indonesia's main exports also have the same sensitivity to exchange rates. This is in line with Fitriani's research (2017) which examines the effect of the exchange rate which causes a decline in Indonesian exports in the short term and Sugiarti (2020) which compares how exchange rate volatility affects exports of main products to China, India, South Korea. The reason for the sensitivity of Indonesian exports to the exchange rate is that the trade balance is under pressure.

The effect of the independent variable on the value of exports and receipts of DHE due to market risk arising from the condition of the location of the partner country is negative, i.e. every 1% of miles the country is further away will reduce DHE receipts by -7,894 percent. Meanwhile, the partner country's income variable has a positive relationship with DHE receipts. Every 1% increase in real GDP of partner countries will increase DHE receipts by 0.699 percent. Exports to partner countries with the best conditions have the potential to receive 3,744 DHE higher. Likewise with the consistency dummy which shows a significant effect. Exports to consistent partner countries have the potential to receive 0.672 DHE higher than those to inconsistent countries. Consistent is meant to differentiate larger import markets from smaller ones. According to Vido & Prentice (2003) in their research, consistency shows that countries that import consistently and/or in large quantities have a higher tendency to import from partner countries.

Meanwhile, state income has a positive effect on the value of exports because the higher the economic level of the country (Vido & Prentice, 2003), the lower the risk of default. This can be observed, for example, in Indonesia's exports to the United States. The United States has the highest real GDP of any partner country. The United States' exports accounted for 9.7% of total exports and was consistent as a DHE sending country with a 9.8% share of total DHE receipts. The United States occupies the third position based on export share after China and Japan, and the third position as a sending country based on the share of total DHE receipts after Singapore and Japan. The ratio of DHE receipts from exports to the United States reached 100%.

Dummy The cash flow of DHE receipts has a negative and significant effect at the 0.01 level of -1.293. This shows that the potential for reduced DHE receipts is greater if DHE receipts only come from the same export destination country as the DHE sending country. There are countries that are export destinations but do not send DHE, so there is an allegation that DHE was sent by other countries. For example, Guinea, during the observation period, there were 31 periods not sending DHE, but from the distribution of data on DHE shipments for exports to Guinea, Japan, America and Singapore did. Export payments may originate from other countries that may have affiliation with the export destination country.

The estimation results on the OECD dummy show that exports to partner countries that are members of the OECD will have the potential to receive 3,744 DHE higher than exports to non-OECD countries. The estimation results on the consistency dummy show that the welfare of export partner countries can reduce the potential risk of DHE being not accepted. exports to partner countries that have consistently imported Indonesian products will have the potential to receive 0.672 DHE higher than exports to partner countries that are inconsistent.

Regional dummy variables show mixed results. Potential DHE revenues from exports to the Americas and Africa are 6,232 and 4,363 respectively, higher than other regions. The regions of East Asia and North, West, and Central Asia have a significant effect on the 0.1 level of -2,560 and 1,740, respectively. The ASEAN region was chosen as the basis indicated by a constant which showed a positive influence at the 0.05 level of 58.92. This shows that

Indonesia's trade with partner countries has the potential for diverse DHE revenues. for the ASEAN region. America, Africa, North, West, and Central Asia show a positive relationship to DHE acceptance. Meanwhile, the East Asia region shows a negative relationship. China, which is located in the East Asia region, is an export destination country with a share of 15.179,429,869,274), but as a DHE sending country only has a share of 8.9% (USD97,719,666,168)of the total DHE receipts in the observation period.

Based on this description, exchange rate volatility still has a significant impact on DHE receipts. The risk of volatility is still quite high, although Indonesian exports are quite optimistic about the partnership relations that have been built with partner countries. Therefore, the purpose of this study to see the impact of exchange rate volatility on DHE receipts based on oil and gas and non-oil and gas commodities and the relationship of partner countries to the potential for increasing Indonesian exports has been fulfilled.

V. Conclusion

The results obtained quantitatively in this study state that there is an influence on the receipt of DHE due to the risk of exchange rate volatility and market risk displayed by the conditions of the partner country. The impact on DHE receipts due to the risk of exchange rate volatility is negative. REER also has a significant negative effect on DHE receipts. The condition of the location of the partner country as measured by the distance between the country and Indonesia shows a negative relationship, while the income of the partner country shows a positive relationship to DHE receipts. The consistency dummy variable and partner country membership in the OECD show a significant positive effect. Dummy cash flow receipt of DHE has a negative and significant effect. The regional dummy variable showed significant results and varied relationships.

Based on the results of this study, there are policies implications are as follows. First, this research supports the optimization of foreign exchange traffic control in export and import transactions, particularly DHE receipts in the Indonesian financial system in order to maintain the availability of foreign exchange supply. Second, to reduce the impact of the risk of exchange rate volatility on exports and receipts of DHE, it is necessary to consider increasing cooperation with more developed money partner countries such as OECD member countries to increase the contribution of export-oriented industries in the global value chain (GVC). Third, in terms of monetary policy, the central bank can intervene in policies to maintain exchange rate stability. In this case, DHE receipts can be taken into consideration as foreign exchange inflows in addition to considering the estimation of an adequate level of foreign exchange reserves in accordance with developments in economic conditions. Fourth, in order to increase export potential and DHE receipts from partner countries, it is necessary to consider increasing exports to more developed partner countries, such as OECD member countries. Fifth, in encouraging technology-based export growth, it is necessary to consider the consequences at the macro level due to high-tech industries, such as labor efficiency.

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