

# *The Influence of Exchange Rate on Indonesian Export Value*

1<sup>st</sup> Yulinda Tarigan  
dept. of Business Management  
Politeknik Negeri Batam  
Batam, Indonesia  
[Yulinda@polibatam.ac.id](mailto:Yulinda@polibatam.ac.id)

2<sup>nd</sup> Morgan Kindler  
University of St. Gallen (SG)  
Switzerland  
[morgan.kindler@gmail.com](mailto:morgan.kindler@gmail.com)

3<sup>rd</sup> Ella Elfira  
dept. of Business Management  
Politeknik Negeri Batam  
Batam, Indonesia  
[ellaelfira@gmail.com](mailto:ellaelfira@gmail.com)

4<sup>th</sup> Zainal Abidin Tarigan Silangit  
Universitas Sumatera Utara  
Medan, Indonesia  
[itszainaltarigan@gmail.com](mailto:itszainaltarigan@gmail.com)

**Abstract**— This study aims to determine the effect of exchange rates of rupiah against the value of oil gas and non-oil gas exports in Indonesia for the period 2010-2017. The population in this study is the values of oil gas and non-oil gas exports on Bank Indonesia website in 2010-2017 provided in quarterly form. The effect of independent variable of this study is rupiah exchange rates on the value of oil gas and non-oil gas exports in Indonesia was examined using panel data analysis methods. The result of this study indicate that the exchange rates significantly affects the value of oil gas and non-oil gas exports in Indonesia as much as 27,6%. The conclusion of this study is the exchange rate significantly affects the value of oil gas and non-oil gas exports in Indonesia. If the rupiah exchange rate rises then the exports value will be reduced by 3.52%.

**Keywords**— *Rupiah exchange rates, value of exports, oil gas and non-oil gas*

## I. INTRODUCTION

Export is the process of transporting goods or commodities from one country to another. This process is often used by companies with small to medium scale businesses as the main strategy to compete at the international level. The main concern of policy makers in companies that carry out export activities is how much the exchange rate affects the international prices of goods to be traded. Indonesia's oil and gas and non-oil and gas exports in May 2018 increased by 10.90% compared to April 2018 exports. Likewise compared to May 2017, it increased by 12.47%. Cumulatively, exports in May 2018 rose 9.25% compared to April 2018, as well as the cumulative exports of oil and gas and non-oil and gas in May 2017 rose by 11.58%.

Prosperous exports are a key factor to achieve sustainable economic growth and development in the country, which is the most important goal to implement policies in foreign trade. Basically, the volume of export goods for each country represents the income and strength of a country itself, and on the other hand shows the economic level of the country. Sector income is very important not only for developing countries but also for developed countries. Developed countries usually export finished goods, while developing countries usually carry out export activities which consist of mining industry goods, especially natural resources. In this case, economic studies and also the experience of developing countries, especially in Indonesia, show that exports can function as a force for economic growth and development (Khalighi & Fadaei, 2017)<sup>1)</sup>.

Changes in the exchange rate can change the relative price of a product to be more expensive or cheaper, so that the exchange rate is sometimes used as a tool to increase competitiveness to encourage exports. This change in export position is then used to improve the trade balance position. Understanding of the relationship between exchange rates and trade balance and output is important for economic policy making. Based on the many results of previous studies that are different from one another, the main background of the author conducted this study to see the effect of exchange rates (exchange rates) on the value of exports in Indonesia. This research is developing research conducted (Khalighi & Fadaei, 2017)<sup>1)</sup>. The difference between this research and Khalighi & Fadaei research, (2017) lies in (a) the research

period, namely 2010-2017; (b) objects of research, namely reports of changes in US Dollar exchange rates (rates) recorded at Bank Indonesia and reports on developments in the index of Indonesia's export value recorded at Bank Indonesia.

## II. LITERATURE REVIEW

Exchange Rate is the price of a foreign currency that must be paid in a certain amount of currency. A number of certain currency values are needed so that the currency can be used in economic activities. Each country has a different system of determining exchange rates in accordance with central bank policies and economic conditions. Indonesia uses an undermanaged floating exchange rate system. A controlled floating exchange rate system requires direct intervention from the government in its implementation, so that the exchange rate is not determined completely based on the demands and offers that occur in the market (Khalighi & Fadei, 2017)<sup>1)</sup>.

### A. Determination of Exchange Rate

There are several determinants that influence exchange rate movements:

Fundamental factors relate to economic indicators such as inflation, interest rates, and relative income differences between countries, market expectations and central bank intervention.

#### 1. Technical factors

Technical factors related to foreign exchange demand and supply conditions at certain times. If there is excess demand, while the offer remains, the price of foreign exchange will be appreciated, on the contrary if there is a shortage of demand, while the offer remains, the foreign exchange rate will depreciate.

#### 2. Market Sentiment

More market sentiment is caused by rumors or incidental political news, which can push foreign exchange prices up or down sharply in the short term. If the rumor or news is too much, then the exchange rate will return to normal (Madura, 2003).

### B. Currency Exchange System

There are several currency exchange systems that apply in the international economy, namely:

#### 1. Floating exchange rate system

This exchange rate system is determined by the market mechanism with or without stabilization efforts by the monetary authority. In the floating exchange rate system there are two types of floating exchange rates, namely:

- a. Floating freely (pure), namely the currency exchange rate is determined entirely by the market mechanism without any interference from the central bank / monetary authority. This system is often called the clean floating exchange rate, in this system foreign exchange reserves are not needed because the monetary authority does not attempt to determine or manipulate the exchange rate.
- b. Managed or dirty floating exchange rate where the monetary authority plays an active role in stabilizing the exchange rate at a certain level. Therefore, foreign

exchange reserves are usually needed because monetary authorities need to buy or sell foreign exchange to influence exchange rate movements.

#### 2. Pending Exchange Rate System (pegged exchange rates)

In this system a country associates the exchange rate of its currency with a currency of another country or group of currencies, which is usually the currency of the trading partner country which is the main "tethering" to a currency means that the currency exchange rate moves following the currency that becomes mooring. So actually tethered currencies do not experience fluctuations but only fluctuate against other currencies following the currency that becomes the mooring.

#### 3. Crawling pegs

In this system a country makes a slight change in the exchange rate of its currency periodically with the aim to move towards a certain value in a certain period of time. The main advantage of this system is that a country can adjust its exchange rate adjustment for a longer period than the tethered exchange rate system. Therefore, this system can avoid threats to the economy due to sudden and sharp revaluations or devaluations.

#### 4. Currency basket system (basket of currencies)

Many countries, especially developing countries, set their currency exchange rates based on a basket of currencies. The advantage of this system is that it offers the stability of a country's currency because currency movements are spread in a basket of currencies. Currency selection entered in the "basket" is generally determined by its role in financing certain countries' trade. Different currencies are given different weights depending on their relative role in the country. So a basket of currencies for a country can consist of several different currencies with different weights.

#### 5. Fixed exchange rate systems

In this system, a country announces a certain exchange rate in the name of its money and maintains this exchange rate by agreeing to sell or buy foreign currency in an unlimited amount of the exchange rate. Exchange rates are usually fixed or allowed to fluctuate within very narrow limits (Kuncoro, 2001)<sup>2)</sup>. Since 1970, the Indonesian state has implemented three exchange rate systems, namely:

##### a. Fixed Exchange Rate System (1970 - 1978)

In accordance with Law No.32 of 1964, Indonesia adopted an official exchange rate system of Rp. 250 / US dollars, while other money rates are calculated based on the rupiah exchange rate against the US dollar. To maintain exchange rate stability at a set level, Bank Indonesia intervenes actively in the foreign exchange market.

##### b. Controlled Floating Systems (1978 - July 1997)

At this time, the rupiah exchange rate was based on a basket of currencies. This policy was implemented in conjunction with the devaluation of the rupiah in 1978. With this system, Bank Indonesia established an indication (limiting) exchange rate and allowed the exchange rate to move on the market with a certain spread. Bank Indonesia only intervenes if the volatile

exchange rate exceeds the upper or lower limit of the spread.

- c. Floating Exchange System (August 14, 1997 - present)  
 Since mid-July 1997, the rupiah against the US dollar has weakened. In connection with this and in order to secure ever-decreasing foreign exchange reserves, Bank Indonesia decided to remove the range of interventions (a system of controlled floating exchange rates) and begin to adopt a free floating exchange rate system on August 14, 1997. Elimination this range of interventions is also intended to reduce the activities of Bank Indonesia's intervention on the rupiah and strengthen the implementation of domestic monetary policy (Ocktaviana, 2007)<sup>3</sup>).

### C. Export

Export is the expenditure of goods from Indonesian customs areas to be sent abroad by following the applicable provisions, especially regarding customs regulations (Tandjung, 2011)<sup>4</sup>. According to Mankiw (2009)<sup>5</sup> various factors that can affect a country's exports include:

- The taste of consumers for domestic and foreign manufactured goods.
- Price of goods at home and abroad.
- Exchange rate that determines the amount of domestic currency needed to buy foreign currency.
- Goods transportation costs between countries.
- Government policy regarding international trade.

International trade or exports can occur if there are differences in comparative advantages of each country. This comparative advantage can be achieved if a country is able to produce a number of goods with large volumes but at a lower cost compared to other countries, for example, in cases where Indonesia and Malaysia both produce coffee and tin. Indonesia with abundant natural resources can produce coffee at a lower cost than Malaysia. However, Indonesia is not capable of producing tin efficiently and cheaper than Malaysia. On the contrary, Malaysia was able to produce Timah cheaper than Indonesia, but was unable to produce coffee that was cheaper and more efficient. So it can be concluded that, Indonesia has a comparative advantage in terms of producing coffee compared to Malaysia, while Malaysia has a comparative advantage in terms of producing tin. In this case international trade between the two countries can take place if they exchange the two commodities. Namely Indonesia sends Coffee to Malaysia and vice versa Malaysia sends tin to Indonesia. This theory views that a country can generate many benefits by selling its comparative advantage to other countries. In addition, the income earned can also come from the specialization of production of goods or services that have high productivity and efficiency. In this case, of course the main determinant factor is the amount of natural resources and human resources that are able to process at a small cost but produce a larger volume than other countries (Ricardo, 1817)<sup>6</sup>.

There are four things that cause companies to compete with each other, leading to competition excellence. These four things include:

### 1. Conditions of Production Factors (Factor Conditions)

This condition is the position where countries in the factors of production (skilled labor, infrastructure and technology) are needed to compete with certain industries. In this case, to be able to win the competition, of course the existing production factors must be maximized in such a way, because if there is a minus value on one of the factors, it is impossible for you to produce a product that is able to compete in the global market. As we know that, to be able to enter the global market, of course you have to have the advantage compared to other companies. Considering the higher competition standards, then of course to be able to win it we must be able to maximize the existing production factors. There should be no mistakes and even mistakes that will result in our defeat in the competition for international markets (Porter, 1990).

### 2. Demand Conditions

This condition is a condition in which the nature of domestic demand for goods and services in certain industries is capitalized. This means that a product or service does not always have a high demand in the market. In this case before we are able to export, of course we must consider the domestic market conditions, where if the fulfillment of the product has been said to be sufficient for the domestic market, then of course the product or service can be exported out. In this case, sometimes the goods or services that are produced are not in demand by the domestic market. But it is different when the products and services are sold to the global market. In fact these products are in great demand. Of course in this case the ability to read the conditions of market demand must be relevant and in accordance with reality (Porter, 1990)<sup>6</sup>.

### 3. Related and Supporting Industries

In this case the existence and absence of industry suppliers and related industries that are internationally competitive in the country is also one of the influential things in exports. The existence of supplier and related industries will be very supportive, especially if the two industries are able to compete in the global market. Of course this opportunity can be used to establish cooperation in obtaining an increasingly broad and large market in international markets (Porter, 1990)<sup>6</sup>.

### 4. Strategy, Structure and Competition of the Company

It is a domestic condition that determines how companies are formed, organized and managed as well as the nature of domestic competition. In this case, the role of all corporate and government structures is closely related. In an effort to create a company that is able to compete domestically, so that it can win the competition and appear on global markets (Porter, 1990)<sup>6</sup>.

### D. Research Hypothesis

This study consists of two variables, where the variable X is the Exchange Rate as the dependent variable, while the variable Y is the Indonesian Export Value as an independent variable. Several studies have tried to examine how the exchange rate (exchange rate) affects the value of exports. Based on previous research conducted by Khalighi & Fadaei (2017)<sup>1</sup> there is a positive relationship between the exchange rate (exchange rate) on the number of exports in Iran. Based on the description, the hypothesis in this study:

H<sub>1</sub>: There is a significant influence in the exchange rate (exchange rate) on the export value.

**III. RESEARCH METHODS**

*A. Population and Samples*

The sample of this study is data on the exchange rate of the US Dollar against the rupiah and data on export values recorded quarterly at Bank Indonesia from 2010-2017 with a sample size of 32 quarters.

*B. Data Analysis Methods*

The data analysis technique used in this study was a simple linear regression analysis with the Eviews Version 10 program. Before linear regression analysis, the research data must first be carried out by descriptive statistical analysis. Data from the BI website was checked again by the number and completeness of the data, and then tabulated using Microsoft Excel 2016 tools. After recapitulation, the next step was processing data. The tools used to process data processing are Eviews version 10.

Initial data analysis used descriptive statistical analysis method. Then the panel data regression equation analysis is carried out. Panel data regression is a type of data combination between cross-data and time series data. Regression model by using panel data in the model analysis there are 3 approaches, namely the ordinary effect model, the fixed effect model, and the random effect model. After that, the chow test is performed, and the lagrange multiplier test (Lagrange multiplier test). Simple regression method will be carried out with the proposed model researchers using Software Eviews V10 to predict the relationship between 1 independent variable with 1 dependent variable. This study contained 1 independent variable, namely the rupiah exchange rate. The dependent variable in this study is the value of oil and gas and non-oil and gas exports in Indonesia. The simple linear regression model used in this analysis is:

$$EKS = \alpha + \beta_2 NT_t + \epsilon_{it}$$

Source: (Widarjono, 2009)

**IV. DISCUSSION AND RESULTS**

*A. Description of Variables*

The description of the variables contained in the regression equation above can be seen in the table below:

TABLE I. DESCRIPTION OF VARIABLE

Variable	Descriptions
EKS	The value of oil and gas and non-oil and gas exports
NT	The exchange rate of the rupiah against the US dollar

*B. Descriptive Statistic*

Descriptive statistical test results using Eviews 10 from the data that has been selected, the results are obtained to describe the mean, maximum, minimum and standard deviation, then described one by one of the variables in this study, both

dependent and independent variables. The results of the descriptive statistics test in this study can be seen in table 4.2 below:

TABLE 2 DESCRIPTIVE STATISTIC

Variable	Mean	Max	Min	Std.Dev
NT	11378.13	14730	8640	2019.807
EKS	131623.7	15492.7		102902.7
	15194.57			
N	32			

Description: This table presents the results of descriptive statistical tests. Variable value of exports in the form of millions of US dollars.

Based on the results of descriptive statistical tests in table 2 above, the results obtained are the average exchange rate variable worth 11378.13, which means the average exchange rate of the rupiah against the US dollar during the period 2010-2017 is Rp. 11,378.13, the maximum value of 14730 (Rp. 14,730) in the third quarter of 2015, and the minimum value of 8640 (Rp. 8,640) in the second quarter of 2011 which means that Indonesia has experienced a decline in the value of the rupiah each year.

The average export value is 131623.7 which means that the average value of Indonesia's oil and non-oil and gas exports is US \$ 131,623,700,000, the maximum value is 154927 which means that the highest value of Indonesia's oil and non-oil and gas exports in the third quarter of 2011 was \$ US 154,927,000,000. the minimum value is 102902.7 which means that the lowest value of Indonesia's oil and gas and non-oil and gas exports was experienced in the first quarter of 2010 which was valued at US \$ 102,902,700,000.

*C. Model Test*

*1. Chow Test*

Chow test is done to compare or choose a regression model which is the best between common effects and fixed effects by using the F test (chow test), where the significance level is 0.05. The results of the chow test in this study can be seen in table below:

Effect Test Statistic d.f Prob			
NT	Cross Section-F	1.110251	(3,27)
		0.3622	

Based on the table above the value of the probability of cross-section F on the exchange rate variable is 0.3622. The cross-section probability value of F is > 0.05. If the probability value is cross- section F <from the significance level of 0.05 then this study is more appropriate to use the fixed effect model, and vice versa if the probability value of the cross-section is F> from the 0.05 significance level then this study is more appropriate to use the common effect model . The results of the chow test above show that this study is more appropriate to use the common effect model compared to the fixed effect model. Then the lagrange multiplier test will be carried out.

**2. Lagrange Multiplier Test**

determine the best method in panel data regression between common effects or random effects, where the significance level is 0.05. The results of the lagrange multiplier test in this study can be seen in table below:

TABLE IV. LAGRANGE MULTIPLIER TEST RESULT

Test Hypothesis		
Cross Section Time Both		
NT	0.8397	0.0000 0.00000

Based on the table above the cross section value on the exchange rate variable is 0.8397, value of the cross section > 0.05. If the probability value is cross-section < from the 0.05 level of significance, this study is more appropriate to use a random effect model, and vice versa if the probability value is cross-section > from the 0.05 significance level, this study is more appropriate to use the common effect model. The results of the lagrange multiplier test above show that this research is more appropriate to use the common effect model

**D. Hypothesis Testing**

**1. Effect of Exchange Rate on Export Value**

Based on testing using Eviews to determine the right regression model in this study using the Chow Test and the Lagrange Multiplier Test, the regression model that is more appropriate to this hypothesis is Common Effect. The results of hypothesis testing can be seen in table 4.4.1 below: Dependent Variable: EKS

TABLE V. COMMON EFFECT OUTPUT RESULT

Variabel	Coefficient	Std. Error	t-Statistic
Prob			
C	171608.8	14364.95	11.94636
0.0000			
NT	-3.514209	1.244010	-2.823904
0.0088			

Description: This table presents the results of hypothesis testing. Variable value of exports in the form of millions of US dollars.

Based on the results of Eviews output in the table above, the regression equation model is as follows:

$$EKS = \alpha + \beta_1 NT + \epsilon$$

$$EKS = 171608.8 + -3.514209 NT + \epsilon$$

The results of the regression equation above can be seen as a constant value of 171608.8 which states that if the variable of the rupiah exchange rate is considered constant or zero, then the value of oil and gas and non-oil exports is \$ US 171,608,800,000. The exchange rate coefficient of - 3.514209 stated that if the rupiah exchange rate increased by one unit, the value of oil and non-oil and gas exports would be reduced by 3.52%. To determine the magnitude of the effect of the rupiah exchange rate on the export value, R-squares are used. R-squared value of 0.275478 or 27.6% indicates that the variable exchange rate of the rupiah is able

to explain the dependent variable of 27.6% while the rest is explained by other variables outside the variance of the rupiah exchange rate.

**2. Data Analysis**

Based on the results of statistical tests that have been conducted to test the hypothesis in this study, the results obtained are the significance value on the data that has been set that is 0.0088, which states that 0.0088 < from the 0.05 significance level, so the hypothesis is accepted and supported. The following table summarizes simple linear regression statistical tests in this study:

TABLE VI. SUMMARY OF HYPOTHESIS TEST RESULTS

Hypothesis	Sig	Result
Rupiah exchange rates affect the value of exports.	0,0088	Significant

Based on the results of this study indicate that the hypothesis has a significant effect, namely the exchange rate affects the value of oil and gas exports and non-oil and gas by 27.6%. The results of this study are similar to the research conducted by Khalighi & Fadaei (2017) which states that there is a significant influence at the exchange rate on the value of exports in Iran. This affects the level of exports for the following year.

**V. CONCLUSION**

This study aims to examine the effect of the rupiah exchange rate on the value of oil and gas and non-oil exports in Indonesia. This research period is 2010-2017 which is presented in quarterly form. Based on the results of the analysis that has been tested in Chapter 4 it can be concluded that the exchange rate variable significantly affects the value of oil and gas and non-oil and gas exports in Indonesia by 27.6%. If the value of the rupiah increases by one unit, then the export value will decrease by 3.52%, but on the contrary if the value of the rupiah weakens and decreases by one unit, then the value of Indonesia's exports will increase. When viewed from the development of the rupiah exchange rate from 2010-2017, it was concluded that the exchange rate of the rupiah against the US dollar decreased from year to year. This brings good news for exporters and can increase the value of oil and gas and non-oil exports in Indonesia.

**REFERENCES**

- [1] (2018, July 16). Retrieved July 28, 2018, from Badan Pusat Statistik: <https://www.bps.go.id/pressrelease/2018/07/16/1502/ekspor-juni-2018-mencapai-us-13-00-miliar--impor-juni-2018-sebesar-us-11-26-miliar-turun-36-27-persen- dibanding-mei-2018.html>
- [2] Chi.Junwook & Cheng.Seu Keow . (2016). Do Exchange Rate Volatility and Income Affect Australia's Maritime Export Flows To Asia? *Transport Policy*.
- [3] Florance.Bouvet, Ma.Alyson C, Assche.Ari Van (2017). Tariff and Exchange Rate Pass- Through for Chinese Exports. *China Economic Review*.
- [4] Ghozali, I. (2012). Aplikasi Analisis Multivariate dengan Program IBM SPSS 20. Yogyakarta: Universitas Diponegoro
- [5] Gujarati, D. (2003). *Ekonometri Dasar Terjemahan Zain*. Jakarta: Eralangga.
- [6] Hadi, N. (2011). *Corporate Social Responsibility*. Yogyakarta: Graha Ilmu

- [7] Hady, H. (2004). *Ekonomi Internasional, Teori dan Kebijakan Keuangan Internasional*. Jakarta : Ghalia Indonesia.
- [8] Khalighi, Leila, Fadaei, Mohsen Shoukat. (2017). A Study on The Effects of Exchange Rate and Foreign Policies on Iranian Dates Export. *Journal of the Saudi Society of Agricultural Sciences*.
- [9] Kuncoro, M. (2011). *Metode Kuantitatif: Teori dan Aplikasi untuk Bisnis dan Ekonomi* . Yogyakarta: UPP STIM YKPN .
- [10] Madura, J. (2003). *Financial Institution and Markets* . South Western : Division of Thomson Learning.
- [11] Mankiw, N.G. (2009). *Macroeconomics*, 7<sup>th</sup> Edition. New York: Worth Publisher.
- [12] Ocktaviana, A. (2007). Analisis Pengaruh Nilai Tukar Rupiah/US\$ dan Tingkat Suku Bunga SBI Terhadap Indeks Harga Saham Gabungan di Bursa Efek . *Skripsi*, Universitas Negeri Semarang.
- [13] Porter, M. E. (1990). *The Competitive Advantage Of Nation*. Harvard Bussiness.
- [14] Ricardo, D. (1817). *Principles of Political Economy and Taxation*. London: John Murray.
- [15] Sonaglio, Claudia Maria , Carvalho, Antonio , Braga, Marcelo Jose . (2016). Effects of Interest and Exchange Rate Policies on Brazilian Exports. *Economia*.
- [16] Sugiyono. (2004). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Bandung: Alfabeta CV.
- [17] Tandjung, M. (2011). *Aspek dan Prosedur Ekspor - Impor*. Jakarta: Salemba Empat.
- [18] Widarjono, A. (2007). *Ekonometrika Teori dan Aplikasi* . Yogyakarta: Ekonisia FE UII.
- [19] Widarjono, A. (2009). *Ekonometrika Pengantar dan Aplikasinya* (Vol. 3). Yogyakarta: Ekonesia.
- [20] Xu, Jiayun, Mao, Qilin, Tong, Jiadong . (2016). The Impact of Exchange Rate Movements on Multi-Product Firms' Export Performance. *China Economic Review*.