

## **CHAPTER I**

### **INTRODUCTION**

#### **1.1 Research Background**

Economy, in the everyday lives of peoples all over the world, is not an isolated or an unusual thing to be heard. Economy happens in every minutes of one's life, with or without realizing it. Life itself cannot happen without any intervention of economy, because every time someone does anything, the element of economy occurs. In Indonesia, where Indonesians live, happens one of the macro scale of economy. The economy of Indonesia must be kept well going, so that the people in it can survive. As a country, Indonesia must develop the velocity of resources and money to keep the economy of the country going well. How well the country cultivates the velocity of resources and money can be measured by the country's ability to purchase goods and services. A country's ability to purchase goods and services can be a reflection of the wellbeing of the country's economy. As well as any other thing, economy needs to grow to show and prove the existence of processes and developments that occur to Indonesia. With a growing economy, any country including Indonesia can prove that it is still able to stand and support the people who live in it. And in order to grow, the economy needs to be kept well going where the people living in a country has a high purchasing ability. In measuring a country's purchasing ability, there is one international finance theory that is mostly been used which is the Purchasing Power Parity. This theory seeks to see the relationship between inflation and exchange rates quantitatively (Madura, 2009). This purchasing power parity

theory is basically a way to predict the exchange rate, if a country experiences an imbalance in the balance of payments. When the inflation rate of one country rises relative to the inflation rate of another country, the demand for its currency decreases because its exports decline (following rising prices), on the other hand imports increase in other words, rising inflation will result in exchange rate pressures and increased imports. There are two form of the purchasing power parity, namely the absolute form and the relative form. The absolute form of purchasing power parity states that the price of the same products in two different countries should be the same if measured using the same currency, there will be changes in demand so that one price will approach the other price (Madura 2000). Meanwhile, the relative form of purchasing power parity theory states that the exchange rate will adjust from time to time to reflect the difference in inflation between the two countries so that the purchasing power of consumers to buy domestic products will be the same as the purchasing power of consumers to buy foreign products (Madura, 2009). With the relative form of purchasing power parity, we can see that the purchasing power parity theory is represented in the inflation rate where the exchange rate which is the reflection of the ability of a country to purchase is tightly adjusted to the country's inflation ratio.

In simple terms, inflation is defined as an increase in prices in general and continuously within a certain period (Bank Indonesia, 2020). An increase in the price of one or two items alone cannot be called inflation unless the increase is widespread (or results in a price increase) in other goods. Meanwhile, the opposite of inflation is called deflation. Based on the inflation rate of Indonesia in the last 5 years, we can evaluate whether the purchasing ability of the people living in it is

in a good state or not and we can also see what position Indonesia is in from an economic perspective which is the inflation rate. That's why the purchasing power parity – where in this case refers to the inflation rate, is one of the most important aspect to reflect Indonesia's ability to purchase goods and services.

**Table 1.1**

**Indonesia's Inflation Rate**

**Period 2015-2019**

Year	Inflation (% , YOY)
2015	3,35
2016	3,02
2017*	3,61
2018*	3,13
2019*	2,72

*Source: Bank Indonesia official website*

The table shows that Indonesia's inflation rate in the year of 2019 has the lowest rate of inflation in the latest 5 years, where we can see that the rate in 2018 decreased as much of 0.48% and it decreased for another 0.41% in 2019. This means that Indonesia's economy is growing to better state since the inflation rate is under control for the past 5 years.-

In order to measure the purchasing power parity theory using the inflation rate, there needs to be a strong-economy country in the comparison to Indonesia's inflation rate. Being a country with the strong economy, the United States of America is mostly being brought up to be compared with another country, so that the other country can evaluate their own economy with the benchmark of United States of America economy condition. The inflation ratio of Indonesia in

comparison with the inflation rate of United States of America can reflect the purchasing power parity of Indonesia.

**Table 1.2**

**United States of America's Inflation Rate Period 2015-2019**

Year	Inflation (% , yoy)
2015	0.7
2016	2.1
2017*	2.1
2018*	1.9
2019*	2.3

*Source: United States of America Inflation Calculator*

Based on the data shown in the table, United States of America's inflation rate is in a good rate in the latest 5 years with the highest rate not more than 2.3%. With these rates, we can clearly tell that the economy of United States is in a well condition with controlled inflation rate.

Economic activities not only occur within Indonesia. Just as all the countries in the world require other countries' help and interaction to make the life of the country itself, Indonesia certainly is not an exception. Thus, international interactions and transactions are needed. International transaction, is the means as why economic activities not only occur within Indonesia, but also beyond Indonesia. However, with the differences of every country, the international transactions between Indonesia and other countries cannot happen if there is no instrument to connect them. The instrument to make the transactions happen is none other than medium of exchange, which is money that differs for each country. That makes every country has their own currency, where Indonesia has

Rupiah. The foreign exchange is brought to life, to make any country (including Indonesia) able to do international transaction. “Foreign exchange is the foreign currency that functions as a means of payment to finance international financial economic transactions and also has an official exchange rate record at the central bank” (Hady, 2007). Concluding from the definition of foreign exchange, currencies alone can’t make the international transactions happen, because the value of the written nominal differs in each country which also explains that foreign exchange is not able to be used at random, since foreign exchange has official exchange rate record at the central bank. Exchange rate is the price of one currency in relation to another. It expresses the national currency’s quotation in respect to foreign ones (Azid et al., 2005). Similar to other prices in the economy determined by buyer and seller interactions, the exchange rate is also determined by the interaction between households, companies and financial institutions that buy and sell foreign exchange for international market (Kala, Masbar & Syahnur, 2018). Exchange rate is capable to transform one currency value to meet the equality of another currency value. Exchange rate makes it possible for Indonesian to buy things or products that are being sold using other currency. This interaction happens in everyday life, where we can see Indonesian oftenly be purchasing things online or maybe offline that are being sold in US Dollar. US Dollar is mostly being seen and known in the international interactions and transaction, since we can say that US Dollar is the world’s international currency. Thus, the exchange rate of the rupiah against the US dollar plays an important role in international trade, because the exchange rate of the rupiah against the US

dollar allows us to compare the prices of all goods and services produced from various countries (Murtala, Raja Masbar, Fajri, and Muhammad Nasir, 2017).

**Figure 1.1**  
**Exchange Rate: USD to IDR**  
**(Period 2015-2019)**



Source: <https://www.xe.com/currencycharts/?from=USD&to=IDR&view=5Y>

From the charts above, we can see that the exchange rate of Indonesia Rupiah on US Dollar fluctuates irregularly in the past 5 years (2015-2019). IDR experienced appreciation and depreciation toward USD unstoppably. These fluctuations unimaginably affect Indonesia' economy. If the value of IDR to USD drops, Indonesia purchasing ability will also drop and if it raises, then the purchasing ability will also raise.

Foreign exchange as a means of payment for international transactions constitute an important aspect of financial sector activities and arguably it is the largest and most extensive financial market in the world (Anyafu, 1999). As stated, being arguably the largest financial market in the world, the foreign exchange transactions may happen anytime and anywhere. This makes the foreign

exchange market booming. The booming, makes influence on countries, which the peoples do the foreign exchange transactions. One of the influence it made is the fluctuation of the country' foreign exchange. The more the peoples of the country perform the transaction, the more the country' foreign exchange fluctuates. Foreign exchange fluctuation to a good side causes good influence to the country, as people has more income –if they make profit from the transaction and moreover, the country can enhance their foreign exchange reserves.

**Table 1.3**  
**Indonesia's Foreign exchange Reserves Period 2015-2019**  
**(in Million USD)**

<b>Year</b>	<b>Amount</b>
2015	105,931
2016	116,362
2017	130,196.38
2018	120,654.27
2019	129,200

*Source: Biro Pusat Statistic*

Foreign exchange reserves are particularly important in international trade because they facilitate international transactions and increase the speed in which trade deals are finalized. Additionally, these reserves could contribute to the efficiency of international supply chains” (Riasi & Aghdaie, 2013; Riasi, 2015). Foreign exchange fluctuation is capable in making the foreign exchange reserves enhanced. However, as shown in the table, Indonsia’s foreign exchange reserves did not show positive growth in the year of 2018. The foreign exchange

transactions not only causing increase in foreign exchange reserves, but also causing decrease, because foreign exchange transactions are mostly depending on the exchange rate of the currency. These, may also be influencing the income of the country and furthermore causing a great influence on the purchasing ability of Indonesia.

Based on the explanation that has been presented in the previous paragraphs, the researcher is interested to do a research in the topic “**The Influence of Exchange Rate, Foreign Exchange Fluctuation and Foreign Exchange Reserves toward Purchasing Power Parity: Indonesia Rupiah on United States of America Dollar Period of 2015-2019**”.

## **1.2 Problem Statement**

1. How significant is the influence of exchange rate toward Indonesia’s purchasing power parity?
2. How significant is the influence of foreign exchange fluctuation toward Indonesia’s purchasing power parity?
3. How significant is the influence of foreign exchange reserves toward Indonesia’s purchasing power parity?
4. How significant is the influence of exchange rate, foreign exchange fluctuation and foreign exchange reserves toward Indonesia’s purchasing power parity?

## **1.3 Research Objective**

The objective of this research is to find out the significance of:



1. The influence of exchange rate toward Indonesia's purchasing power parity
2. The influence of foreign exchange fluctuation toward Indonesia's purchasing power parity
3. The influence of foreign exchange reserves toward Indonesia's purchasing power parity
4. The influence of exchange rate, foreign exchange fluctuation and foreign exchange reserves toward Indonesia's purchasing power parity?

#### **1.4 Research Limitation**

This research has some limitations, namely:

1. This research is only focusing on the exchange rate, foreign exchange fluctuation and foreign exchange reserves toward Indonesia's purchasing power parity
2. Writer only issue 3 variables to conduct the research on the influencing factors toward Indonesia's purchasing power parity.
3. Writer only used 5 years of data period to conduct the research.

#### **1.5 Research Benefit**

Beside limitations, this research also has benefits, that is:

### 1. For Academics

Provide knowledge contribution to economic education regarding the influence of exchange rate, foreign exchange fluctuation and foreign exchange reserves toward Indonesia's purchasing power parity

### 2. For other Researchers

Provide reference for conducting further research and can be a basis for expanding thoughts and research with topics related to the title that has been presented.

### 3. For the Community

Provide knowledge about Indonesia's purchasing power parity to help the community understand more about what influences the country's ability to purchase goods and services.

## CHAPTER II

### THEORETICAL FRAMEWORK

#### 2.1 International Finance

The modifier “international” is becoming increasingly redundant: today, with fewer and fewer barriers to international trade and financial flows, and with communications technology directly linking every major financial center, all finance is becoming “international”. Indeed, not only are domestic financial markets increasingly internationally integrated, but the problems faced by companies and individuals in different lands are remarkably similar.

Even though most if not all finance must be viewed at the international level, there are special problems that arise from financial and trading relations between nations. Many of these problems are due to the use of different currencies used in different countries and the consequent need to exchange them. The rates of exchange between currencies have been set by a variety of arrangements, with the exchange rate as well as the arrangements themselves subject to change. Movements in exchange rates between currencies can have profound effects on sales, costs, profits, asset, and liability values, and individual well-being. Other special, uniquely international financial problems arise from the fact that there are political divisions as well as currency divisions between countries. In particular the world is divided into nation-states that generally, but not always, correspond to the currency divisions: some nations share currencies, such as dollar that is the common currency for numerous American nations. Political barriers provide additional opportunities and risks when engaging in overseas borrowing and

investment. International finance has as its focus for the problems that managers face from these currency and country divisions and their associated opportunities and risks.

### **2.1.1 History of Exchange Rate**

Economic transactions conducted by the community can be ensured use money as a means of payment. The use of an eye money, initially only based on the agreement of the people who use. However, in modern society the usage currencies are generally regulated by law. For example, Rupiah is the prevailing currency in Indonesia and is set in Law No. 23 of 1999 which was amended with Law No. 3 of 2004 concerning Bank Indonesia; Ringgit is the official currency in Malaysia, Bath is the official currency in Thailand, American Dollars in the United States of America and Yen in Japan. In an open economy, the use of deep money is to facilitate unlimited transactions made only between residents, but it can also be done between residents of a country and country others using agreed upon currencies. Money usage with residents of other countries it is generally done for payment transactions for imports of goods and services to residents abroad or receipts from exports of service goods from abroad. In conducting transactions with residents of other countries, respectively the country will certainly face problems regarding tools payment used for the transaction, for example, currency which is used whether foreign currency or respective currencies country and how much the value of a transaction is determined in currency foreign. All issues related to a country's currency with other countries are usually known by the problem exchange rate.

In the history of the international monetary system, determination and system a country's exchange rate has a long evolution. In the beginning modern international monetary system in the 19th century, several countries use a fixed exchange rate system with reference to standards gold (Gold Standard). This system also experiences ups and downs so emerged the exchange rate system with reference to the Bretton agreement Woods. This system also cannot last long since 1970s, each country was given the freedom to determine the system exchange rate used. Recent developments show that the exchange rate system used by a country is not only limited to a fixed exchange rate system, but also a system of exchange rates floating (Flexible exchange rate) or variations of both systems. In addition, the latest developments that are not less interesting is the formation of a common currency of European Monetary members Union in 1999 and came into full force in 2002. In the era of globalization of the world economy, the movement of money interstate knows no boundaries anymore. Money moves quickly from one country to another and tends to go where it generates the biggest income. In addition, money is also traded as goods so that a country's currency is quite vulnerable to speculation activities. In line with these developments, the value of a country's currency is also greatly influenced by interstate capital flows and speculation activities. With this global development, countries that use a fixed exchange rate system or with variations are very vulnerable to capital flows and speculative activities. The exchange rate crisis that occurred in Latin American countries in the early 1990s and Asian countries in 1997/1998 was mainly caused by these two factors. Empirical data shows that the exchange rate crisis has a negative effect on a country's economy, as some Asian countries felt in 1997/98.

This exchange rate crisis not only cause prices to soar, but also resulting in a fairly deep economic contraction. The weakening of the exchange rate makes imported goods, such as raw materials, capital goods, and consumer goods more expensive and results in an increase in the prices of goods in the country. In addition, the weakening of the exchange rate resulted in increasingly large foreign debt obligations of companies so that the company's balance sheet and banks worsened. As described above, the exchange rate crisis can have a bad impact for the economy so the policy to stabilize the exchange rate is an important economic policy in several countries. For example, in Indonesia in accordance with Law No. 4 of 2003, given the task of Bank Indonesia to maintain and maintain the stability of the Rupiah value. In this sense, Bank Indonesia not only maintains and maintains the stability of the Rupiah's value so that the prices of goods and services (inflation rate) can be controlled, but also to maintain and maintain the stability of the Rupiah's value against foreign currencies.

### **2.1.2 Exchange Rate**

During the period of 1970-2016, the Government of Indonesia has implemented three exchange rate system. The first exchange rate system applied by the Indonesian government is a fixed exchange rate system (1970-1978) with an official rate of Rp250.00 / \$. In the period 1978- July 1997 the Government of Indonesia re-imposed a controlled floating exchange rate system with an average exchange rate of Rp2,000.00 / \$. However, the depreciative pressure has increased especially since early August 1997, where the rupiah broke through the figure of Rp2,650.00 / \$. In relation to that and in order to secure the ever-decreasing

foreign exchange reserves, on August 14, 1997, the government decided to abolish the range of intervention and adopt a free-floating exchange rate system (Bank Indonesia Report, 1998).

The exchange of a country's currency with other currencies is called foreign exchange transactions (Kuncoro, 2006). While the price of a currency against another currency is called the exchange rate or exchange rate / exchange rate. The exchange rate between the two countries is the price level agreed by the people of both countries to trade each other (Mankiw, 2007). In international trade, the exchange of goods and services between countries no longer uses the currency concerned, but uses a currency acceptable to all countries. The price of a country's currency against another country's currency is called the exchange rate or exchange rate. Exchange rates play a central role in international trade, because exchange rates allow us to compare prices of all goods and services produced by different countries (Krugman and Maurice, 2011).

### **2.1.3 Foreign Exchange Fluctuation**

Foreign exchange generally refers to foreign currency. Foreign exchange may also entail assets denominated in foreign currencies. Foreign assets that can be used to serve the functions of foreign money, i.e. a medium of international payments or exchange, medium of deferred payments for international transactions and a liquid store of internationally usable wealth, constitute foreign exchange (Lagat and Nyandema, 2016).

The fact that different currencies are used by different countries when they engage in transactions makes it necessary to have a measure of exchange for determining the relative conversion values for the goods and services expressed in different currencies of the respective countries where settlement in foreign exchange is required (Ngerebo, 2011).

Transactions in the foreign exchange constitute an important aspect of financial sector activities and arguably it is the largest and most extensive financial market in the world (Anyafu, 1999). A foreign exchange rate is the price at which one currency may be converted into another. An exchange rate is an important aspect in a nation's international trade, balance of payments and overall economic performance (Lagat and Nyandema, 2016).

Foreign exchange fluctuation is an important factor in international trade, because they are determined by a balance between demand and supply occurring in the market, given the large effect on the current account balance as well as on other macroeconomic variables. In addition, foreign exchange fluctuation can be used as a tool to measure the economic conditions of a country, in which case the exchange rate instability will affect the flow of capital or investment and international trade (Bakampung, 2013).

#### **2.1.4 Foreign Exchange Reserves**

Foreign exchange reserves are viewed by economic policymakers as 'money in the bank' – the more, the better. Reserves are a fundamental pillar of the macroeconomic toolkit. In countries that implement fixed or partially fixed



foreign exchange rate systems, they are used as a mean to keep the exchange rate at or near the official target or parity level. Beyond exchange rate stabilization, foreign exchange reserves are considered a key indicator of the strength of an economy, particularly of its exporting and importing industries. Regarding international trade, foreign exchange reserves are often a necessary requirement to finance imports of goods and services. Finally, foreign reserves reveal the financial strength of a country. “Foreign exchange reserves are particularly important in international trade because they facilitate international transactions and increase the speed in which trade deals are finalized. Additionally, these reserves could contribute to the efficiency of international supply chains” (Riasi & Aghdaie, 2013; Riasi, 2015).

The International Monetary Fund (IMF) defines foreign exchange reserves as the external stock of assets that a country's monetary authorities hold. They are composed of foreign banknotes, bank deposits in foreign currencies, and in foreign bonds, treasury bills, and other government securities.

Foreign exchange is as a means of payment abroad which, among others, can be in the form of gold, foreign banknotes and other bills in foreign currency to foreign parties (Rachbini, 2000). On the other hand Tambunan (2001), foreign exchange reserves are a number of foreign exchange reserved by the central bank for development financing and foreign liabilities which include import financing and other payments to foreign parties. Foreign exchange reserves are the sum of capital transactions and net exports (Murtala, Masbar, Fajri, and Nasir).

Foreign exchange reserves are a foreign currency deposit managed by the central bank and monetary authority. Deposits in question are in the form of central bank assets or assets stored in several reserve currencies such as the dollar, euro, yen, and other currencies held by the central bank. The currency is used to guarantee its obligations, namely the local currency of the Indonesian state which is issued and reserved various banks that are kept by the central bank (M. Ihsan, 2018). Foreign exchange reserves are used to finance imports, guarantees for payment of imports in the next three months, repay foreign debt and interest, supporting the stability of Rupiah (Atmadji, 2004).

The need of a central bank for international reserves is similar to an individual's desire to hold cash balances (currency and checkable deposits) (Carbaugh, 2004). A country's need for foreign exchange reserves is the same as an individual's need to hold cash, as a motive for transactions, precautionary motives and speculative motives (M. Aulia, 2016).

## **2.2 Purchasing Power Parity**

### **2.2.1 Definition of Purchasing Power Parity**

One very popular and controversial theory in international finance is the theory of purchasing power parity (PPP) which focuses on the inflation-exchange rate relationship. The PPP theory was first introduced by Gustav Cassel in 1918. This theory connects foreign exchange rates with commodity prices in local currencies on the international market, in example foreign exchange rates will tend to decrease in the same proportion as the rate of price increase. In essence,

PPP emphasizes the long-term relationship between foreign exchange rates and relative commodity prices (Kuncoro, 2001).

According to Madura (2000), PPP theory focuses on the relationship of inflation with exchange rates that the exchange rate will adjust from time to time to reflect the difference in inflation between two countries, consequently the purchasing power of consumers to buy products outside domestic will be the same as their purchasing power to buy foreign products. That is, the exchange rate of a currency will change as a reaction to differences in inflation between two countries and the purchasing power of consumers when buying domestic products will be the same as the purchasing power when importing from another country.

The difference between the Purchasing Power Parity theory and the law of one price applies to only one type of goods / service, but purchasing power parity applies to a basket of goods and services (basket of goods). PPP theory is basically a way to predict the exchange rate if a country experiences an imbalance in the balance of payments. PPP theory is a theory which states that the exchange rates between currencies of two countries will be in balance if a group of goods and services in the two countries are the same.

Purchasing Power Parity theory also predicts that an increase in the domestic price index reflects a decrease in the purchasing power of the domestic currency. This decrease in purchasing power will result in depreciation of the country's currency. Conversely, increasing the purchasing power of the domestic currency reflects the appreciation of the currency proportionately in the foreign exchange market.

This PPP concept can help in understanding changes in purchasing power over a number of years. PPP shows directly that changes in currency exchange rates are related to differences in inflation that apply from one country to another. This theory can also show a conflict between domestic price stabilization and exchange rate stabilization. Madura (2006) revealed that in PPP theory, exchange rates are not permanent but will change to maintain Purchasing Power Parity.

### **2.2.2 Form of Purchasing Power Parity**

There are several forms of PPP theory, namely absolute and relative forms.

#### **1. Absolute Form**

Absolute form of Purchasing Power Parity also called the law of one price states that the price of the same products in two different countries should be the same if measured using the same currency, there will be changes in demand so that one price will approach the other price (Madura 2000).

The absolute version of purchasing power parity theory is the equilibrium point of the exchange rate between two countries and the ratio of the price level of the two countries concerned. According to Amalia (2007), absolute purchasing power parity theory is basically a comparison of the value of a currency against other currencies determined by the level of prices in each country.

Absolute purchasing power parity assumes that without international barriers, prices of the same number of products in two different countries should be equal if measured in the same currency. Transportation costs, import duties and

trade quotas cause this absolute form of Purchasing Power Parity will not occur. This purchasing power parity shows the exchange rate calculated from the comparison of the level of domestic prices with the level of prices abroad. The equilibrium relationship applied in the absolute PPP version assumes perfect commodity arbitration between the two countries shown in the following equation:

$$S = \frac{P}{P^*}$$

Where:

S : exchange rate

P : domestic price rate

P\* : foreign price rate

## 2. Relative Form

The relative form of purchasing power parity is an alternative version that takes into account market imperfections such as transportation costs, tariffs and quotas. This version recognizes that due to the presence of these market imperfections, prices of the same products in different countries may not be the same if measured using the same currency. However, the relative form of PPP states that the rate of change in product prices should not be much different if measured using the same currency, as long as transportation costs and trade protection do not change (Madura, 2000). The relative form of purchasing power

parity considers that with market imperfections, such as import duties, transportation costs and different quotas from different countries, the prices of a number of products in different countries are not always the same if measured in the same currency. The relative purchasing power parity does not specifically help determine the current exchange rate, but the relative change in prices between the two countries during one period determines exchange rate changes during that period (Eiteman, Stonehill & Moffet, 2010).

Amalia (2007) revealed that in the relative version of PPP, if there is a change in prices in both countries, the exchange rate between the two countries also changes. For example, when the price level in Indonesia rises by 10% and the price level in the United States of America rises by 2% in the same year, the Rupiah will depreciate by 8% relative to the USD. This indicates that changes in the exchange rates between the two countries will adjust to changes in the price level between the two countries in the same period. The relative purchasing power parity version can also measure whether the currency is *overvalued* or *undervalued* (Eiteman, Stonehill & Moffet, 2010). Following is the formula of the relative version of purchasing power parity:

$$S = \frac{1+n}{1+n^*}$$

Where:

S : exchange rate

n : domestic inflation rate

$n^*$  : foreign inflation rate

### **2.2.3 Limitations of Purchasing Power Parity Theory**

One limitation of purchasing power parity testing is that the test results will vary according to the base period used. For example, if 1978 is used as a base period, most subsequent periods will show a relatively overvalued dollar value, otherwise if 1984 is used as a base period, the dollar may look undervalued in the next period. The selected base period must reflect an equilibrium position, because the next period will be evaluated in comparison with the base period. Unfortunately, it is difficult to choose a basic period, even one of the main reasons for the elimination / rejection of the fixed exchange rate system is the difficulty in identifying the equilibrium exchange rate (Madura, 2000).

According to Yuliati and Prasetyo (2005), there are two fundamental causes why the theory of purchasing power parity is difficult to apply, namely:

#### 1. Other factors that influence

Exchange rates are influenced by many factors besides differences in the inflation rate. Government control or policy is one of the important factors that influence the exchange rate. As an illustration, let's say that inflation in the UK is 5% higher than in the United States of America. From this information, PPP theory suggests that British pound sterling must depreciate by 5%. However, if the British government increases trade barriers for goods from the United States of America, consumers and companies in the UK will not change their consumption

by consuming more goods from the United States of America. As a result, the exchange rate does not need to be adjusted (depreciated).

## 2. No substitute merchandise is found

The basic idea in PPP theory is that if prices in one country are relatively higher than other countries, consumers in that country will buy the same goods from abroad. The process of purchasing goods from abroad (imports) will continue until there is an exchange rate adjustment. What if substitution for domestic goods is not available abroad? For example, if the UK experiences inflation 5% higher than the United States of America, British consumers might not find substitute goods for goods they need from abroad. As a result, British consumers will buy products from within the country, and the exchange rate does not need to be adjusted.

With the limitation of purchasing power parity, the absolute form of the theory can not occur or in other words is not reliable since it didn't put any of international barriers into consideration of the purchasing power parity of a country. Meanwhile, the relative form of purchasing power parity is an alternative version that takes into account market imperfections such as transportation costs, tariffs and quotas. The relative form of purchasing power parity theory states that the exchange rate will adjust from time to time to reflect the difference in inflation between the two countries. And with that, the relative form of purchasing power parity with the comparison of the two country's inflation rate will be used as the dependent variable in this research.



## **2.3 Inflation**

### **2.3.1 Definition of Inflation**

Inflation is mostly understood as the excessed money (paper) supply in circulation so that the value of the currency goes down and causing an increase in the prices of goods and services. This understanding of inflation is the general knowledge of most people who have heard or learned about inflation. It is true that the inflation can be caused by excessed money supply in circulation, but to be precise, Bank Indonesia as the central bank of Indonesia spell out that inflation is not only that, and announces in simple definition of what inflaton is. In simple terms, inflation is defined as an increase in prices in general and continuously within a certain period. An increase in the price of one or two items alone cannot be called inflation unless the increase is widespread (or results in a price increase) in other goods. Meanwhile, the opposite of inflation is called deflation.

### **2.3.2 Causes of Inflation**

Understanding the definition of inflation brings out the question as to why do inflation occur. There are 3 reasons that can trigger inflation, including (Gilarso, 2014):

#### **1. Increased Demand (Demand Pull Inflation)**

This inflation is caused or occurs due to an increase in demand for goods or services by consumers in the aggregate or usually called aggregate demand.

The factors that can cause this inflation include:

- Increased government spending

- Increased demand for goods to be exported
- Increased demand for private goods

## 2. Increased Production Costs (Cost Push Inflation)

This inflation is caused or occurs due to an increase in the cost of producing goods or services by producers.

The factors that can cause this inflation include:

- Fuel prices go up
- Labor costs are rising

## 3. High Circulation of Money

Inflation can occur because the amount of money circulating in the community exceeds the needs needed. The amount of money in excess of needs is usually caused by the closing of the budget deficit by the government where the government decides to print money in dealing with the budget deficit so that the money supply increases which can eventually lead to inflation.

### **2.3.3 Types of Inflation**

Not only by the cause (reason) as to why inflation occurs, inflation is also divided into several types.

#### a. Inflation Based on its Character

By its character, inflation is divided into three main categories, namely low inflation, medium inflation, heavy inflation, and very high inflation.

### 1) Low Inflation (Creeping Inflation)

This inflation is the inflation with a level below 10% per year which is usually needed in economic growth where this inflation can be a trigger for producers in producing goods and services with quantity and quality better than before.

### 2) Medium Inflation (Gallop Inflation)

This inflation is the inflation with a level between 10-30% per year where the occurrence of inflation is characterized by price increases that are generally fast and fairly large. This inflation is referred to as double digit inflation because the rate contains double digits such as 15%, 20%, and 30%.

### 3) Heavy Inflation (High Inflation)

This inflation is the inflation between 30-100% per year. High inflation had occurred in the mid-1960s when the inflation rate at that time touched 60%.

### 4) Very High Inflation (Hyperinflation)

This inflation is the inflation with a very high level that can reach 4 digits (more than 100%). This inflation was triggered by a drastic price increase and in these circumstances the value of money has fallen and has caused people to lose their willingness to save and prefer to exchange their money for goods or services.

b. Inflation Based on the Cause

Based on the cause (Gilarso, 2014), inflation is divided into two, namely as follows.

1) Demand Pull Inflation

This inflation is the inflation where there is a continuous increase in prices caused by high demand with a steady supply which will eventually bring on inflation if the conditions of supply and demand remain that way.

2) Cost Push Inflation

This inflation is the inflation that occurs due to an increase in costs at the time of production (an increase in factor and input costs). This causes an increase in the cost of production factors which can trigger two producer actions where they can provide a fixed amount of supply by increasing the price of the product or by increasing the price caused by a decrease in the amount of production.

3) Bottle Neck Inflation

This inflation is the inflation that can be caused by two factors, namely demand or supply. For the supply factor, the constraint lies in the large number of requests when the supply is already using the capacity that should be, and for the cause of the demand factor is the amount of liquidity due to excess estimates of the emergence of new requests.

c. Inflation Based on Its Origin

Based on its origin (Gilarso, 2014), inflation is divided into two, namely as follows.

1) Inflation originating from within the country (domestic inflation)

This inflation is the inflation caused by a deficit that occurs in state expenditure reflected in the state budget.

2) Inflation originating from abroad (imported inflation)

This inflation arises because countries that are trading partners of a country experience high inflation. Price increases abroad or in major trading partner countries (partly due to the weakening of the exchange rate) which will directly or indirectly cause an increase in production costs in the country. The increase in production costs will usually be accompanied by an increase in the price of goods.

d. Inflation Based on Its Constituent Indicators

Based on its constituent indicators (Bank Indonesia, 2020), inflation is divided into 3 types:

1) Monthly Inflation (month to month)

This inflation is the calculated inflation rate of a month in comparison with the month before.

2) Yearly Inflation (year on year)

This inflation is the calculated inflation rate of a year in comparison with the year before as to comparing the month of year in calculation to the same month of year before the year of calculation.

3) Current Year Inflation (year to date)

This inflation is the calculated inflation rate of the current year in comparison with the month of december in the year before.

e. Based on the commodity (Bank Indonesia, 2020), inflation is divided into 3 types:

1) Core Inflation

Core inflation is inflation derived from moving goods due to aggregate macro demand that can be seen from processed commodities, for example clothing and processed food. Inflation occurring in these commodities is usually driven by macro aggregate demand. This inflation is usually controlled by Bank Indonesia head office policies and not representative offices because the policies issued (for example: interest rates) can drive demand in the aggregate.

2) Volatile Food

The most common inflation handled in representative offices comes from volatile food commodities. The food ingredients in question are food items that move very volatile and are greatly influenced or very much correlated with their productivity and the influence of weather or climate for example, chillies, onions, and tomatoes. Commodities in volatile food baskets are easier to control regionally so that they are somewhat familiar in Bank Indonesia's representative offices.

### 3) Administer Price

Administer prices are commodities whose prices are controlled or regulated and determined by the government, for example, fuel oil, electricity tariffs, gas fuels, public transport rates. In addition, regional levies can have implications for commodities included in administer prices, for example, tourism fees that are influenced by government policy. This commodity is greatly influenced by policies issued by the government.

#### 2.3.4 Measurement of Inflation

To measure and to know the rate of inflation, an indicator is needed to calculate it. An indicator often used to measure inflation is the Consumer Price Index (CPI). Changes in the CPI from time to time show the price movements of packages of goods and services consumed by the public. To calculate inflation, the CPI is used as follow (Untoro, 2010):

$$\text{INFLATION RATE} = \frac{IH_t - IH_{t-1}}{IH_{t-1}} \times 100\%$$

Where:

$IH_t$  = Current period price index

$IH_{t-1}$  = Price index of the previous period

In measuring the CPI, certain goods and services are included in the CPI measurement basket where the goods and services that will later compile the CPI

are taken or selected based on the Living Cost Survey (SBH) by the Central Statistics Agency (BPS). After determining the CPI basket, BPS must then monitor the development of prices of goods and services in the CPI basket in several traditional and modern markets in several cities on a monthly basis. Other than CPI, inflation indicators based on international best practices include:

- Wholesale Price Index (WPI).

$$I = \sum (I_i \cdot R_i) / \sum W_i$$

Where:

I = Index Number of wholesale prices of a sub-group/group/major group/all commodities

W<sub>i</sub> = The weight assigned to the item /sub-group/group/major group.

I<sub>i</sub> = Index of the item /subgroup/group/major group

The Wholesale Trade Price Index is the price of the transaction between the seller / wholesaler and the next large seller / trader with the first large market market quantity of a commodity.

- Producer Price Index (PPI)

$$PPI = \frac{\text{Current price of basket}}{\text{base price of basket}}$$

(Obaidullah Jan, ACA, CFA, 2018)

Producer Price Index is an index of the measurement results from the receipt of changes in average prices by domestic producers for each goods or service produced.



- Gross Domestic Product (GDP) Deflator

$$GDP\ Deflator = \frac{GDP\ Nominal}{GDP\ Real} \times 100$$

(Purnastuti, L. & Setyorini, D, 2008)

The GDP deflator is an index that shows the rate of change in prices of all new goods, local manufactured goods, finished goods and services resulting from the division of GDP nominal by GDP Real.

- Asset Price Index

The Asset Price Index is an index that measures the movement of asset prices (property and shares) which can later be a reference indicator to the overall price.

Inflation measured by CPI in Indonesia is grouped into 7 expenditure groups (based on the Classification of individual consumption by purpose - COICOP), namely:

1. Foodstuffs Group
2. Processed Food, Beverage, Cigarettes and Tobacco Groups
3. Housing, Water, Electricity, Gas and Fuel Group
4. Clothing group
5. Health Group
6. Education, Recreation and Sports Groups
7. Transportation, Communication and Financial Services Group

## **2.4 Relationship between the Independent Variables and the Dependent Variable**

### **2.4.1 Relationship between Exchange Rate and Purchasing Power Parity**

The two things that stand out the most as a result of the effects of the economic crisis that have plagued our country are depreciation in value the exchange rate of the rupiah against the United States of America dollar is very volatile and the inflation rate is increasingly difficult to control by monetary and government authorities. Achieving a competitive exchange rate and a controlled inflation rate is realized to be very necessary to create a conducive situation for domestic economic activity. In Law No. 3, In 2004, these two things were determined as the objectives of Bank Indonesia. However, because the exchange rate in the free floating exchange rate system is more determined by the balance between demand and supply in the market, the government through Bank Indonesia sets a low and controlled inflation rate as an end target (Agustin, 2009).

In relation to the exchange rate, a high inflation rate in a country will cause the prices of domestically produced goods to be more expensive, so they will be less competitive in the international market. With a higher level of domestic inflation from abroad it will be more profitable to import goods from abroad that are cheaper. Meanwhile, when viewed from the perspective of the monetary approach, the high inflation rate was also followed by a high growth in the money supply due to the need for more money for transaction purposes. Excessive growth in the money supply. This can create imbalances in the money market and trigger exchange rate depreciation. So, it can be said briefly that differences in

inflation rates between countries can affect the exchange rate of its currency against foreign currencies. One theory that explains the relationship between the price level or inflation with exchange rate movements is the Purchasing Power Parity Theory theory. This purchasing power parity theory is one of the theories most often tested for validity. In the theory of purchasing power parity it is said that the exchange rate between two countries should be equal to the ratio of the price level in the two countries. So that the fall in domestic purchasing power at a currency (an increase in the level of domestic prices or an increase in inflation) will be followed by depreciation of that country's currency in foreign money markets. However, if the opposite is true, domestic purchasing power has increased (the inflation rate has decreased / deflation has occurred), it will also be followed by an appreciation of the currency (Agustin, 2009).

Purchasing Power Parity theory is the one of exchange rate determination theory that commonly been tested its validity. This theory explains relationship among relative inflation rate with international currency exchange rate. This research uses error correction model to test the validity of theory on rupiah exchange rate to American dollar on the floating exchange rate system. According to the research done by Agustin (2009), the analysis result proves the validity of PPP theory in Indonesia. It is urging to maintain the price stability that reflects inflation. The difference of price level can exacerbate exchange rate in the short term as well as in the long term.

## **2.4.2 Relationship between Foreign Exchange Fluctuation and Purchasing**

### **Power Parity**

The exchange rate is one of the important prices in Macroeconomics, because the exchange rate is determined by the existence of a balance between demand and supply that takes place on the foreign exchange market, its effect on the current account balance and on other macroeconomics. To measure economic conditions, a tool that can be used as a measurement is the exchange rate. If the growth in the value of a currency or exchange rate that can run stable means that the country has a relatively good or stable economic condition. The exchange rate of the rupiah with the US dollar is very important to be reviewed by the monetary authority to control and stabilize the exchange rate. Because the exchange rate can have an impact on the economy as a whole. Impacts such as the price of goods and services experience price increases or inflation. The decline in the rupiah exchange rate can be one of the causes of public demand for the rupiah currency to decline, because the role of the national economy is declining or because the demand for foreign currencies as a tool for international payments is increasing. The magnitude of the impact resulting from exchange rate fluctuations on the economy, it is necessary to have an appropriate policy to control the exchange rate, so that the movement or fluctuation of exchange rates can be predicted and the economy can run stably (Mahaputra, 2017).

High levels of inflation can have a negative impact on the national economy, including reducing the purchasing power of people with fixed and low income, reducing investor enthusiasm for investment, can lead to inefficient

allocation of resources and so on. This inflation does not only come from domestic factors (internal pressure) but also foreign factors (external pressure), external factors can be sourced from rising commodity prices abroad (world prices) or from exchange rate fluctuations for example with the depreciation of the rupiah will resulting in the price of imported goods becoming more expensive in the country (Riyadh, 2007).

### **2.4.3 Relationship between Foreign Exchange Reserves and Purchasing**

#### **Power Parity**

Limitations in the form of resources both natural resources as well as human resources, requires a country to carry out international trade to other countries to fulfill resources that cannot be produced domestically. Foreign exchange reserves of a country can illustrate how the economic situation in the country, because foreign exchange reserves are part of a country's development factors. Foreign exchange reserves have a very important function for a country to finance international trade and also to increase the country's development funds (Sayoga, 2017).

Foreign exchange reserves are like savings for a country. Aside from being a savings account, the function of foreign exchange reserves is to transact and be prepared. Viewed from its function as savings, the amount of foreign exchange reserves can increase and decrease, changing over time as needed. Foreign exchange reserves are also used to finance the imbalance of the balance of payments, intervene in the market to maintain the exchange rate, and other purposes as a bearing on Indonesia's obligations. Foreign exchange reserves are

used as a regulator of foreign exchange demand and supply in trade transactions. The strength and weakness of the economy in a country can be seen from the country's foreign exchange reserves. The more a country has foreign asset liquidity, the more prepared the country will be for a crisis. (Lestari, 2016).

Inflation is also one of the factors that influence levels foreign exchange reserves of a country. If inflation in a country is high, the prices of goods and services in the country will also be high. This causes changes in the value of currencies, impacting commercial bank deposits and impacting foreign exchange reserves. In other words, the higher level of inflation that occurs will add value to a currency because of rising prices of goods and services on the market (Putra, 2013).

## 2.5 Previous Research

**Table 2.1**  
**Previous Research**

<b>No</b>	<b>Researcher and Year</b>	<b>Research Topic</b>	<b>Data Analysis Technique</b>	<b>Result</b>
1.	Magda Kandil (2004)	EXCHANGE RATE FLUCTUATIONS AND ECONOMIC ACTIVITY IN DEVELOPING COUNTRIES: THEORY AND EVIDENCE	Theoretical rational expectation model	<ul style="list-style-type: none"> <li>Exchange rate fluctuations generate adverse effects on economic performance in a variety of developing countries. These</li> </ul>

				effects are evident by output contraction and price inflation in the face of currency depreciation.
2.	Reynaldi Ristya Mahaputra (2017)	FACTORS AFFECTING VALUE FLUCTUATION RUPIAH EXCHANGE FOR UNITED STATES OF AMERICA DOLLARS	Ordinary Least Square (OLS) method with time series data	<ul style="list-style-type: none"> <li>The test results show that the inflation variable has a significant and positive effect on the exchange rate of the rupiah against the US dollar.</li> </ul>
3.	Meita Nova Yanti Panjaitan and Wardoyo (2016)	FAKTOR-FAKTOR YANG MEMPENGARUHI INFLASI DI INDONESIA	Multiple Linear Regression	<ul style="list-style-type: none"> <li>The variable money supply and the BI Rate have a significant influence on the inflation rate in Indonesia.</li> <li>Other variables, namely, the exchange rate and net exports do not have a significant effect on inflation in Indonesia. The results of tests carried out</li> </ul>

				simultaneously (together) show that the exchange rate, the money supply, the BI rate and net exports have an influence on inflation in Indonesia.
4.	Annisa Tri Utami (2013)	PENENTU INFLASI DI INDONESIA; JUMLAH UANG BEREDAR, NILAI TUKAR, ATAUKAH CADANGAN DEVISA?	Ordinary Least Square (OLS)	<ul style="list-style-type: none"> <li>The results show that the Gross Domestic Product, Total Money Supply, Exchange Rates, and Foreign Exchange Reserves simultaneously affect Inflation in Indonesia in 2007-2013. Gross Domestic Product (GDP) and foreign exchange reserves in that period did not affect inflation in Indonesia. The amount of money in circulation has a significant</li> </ul>



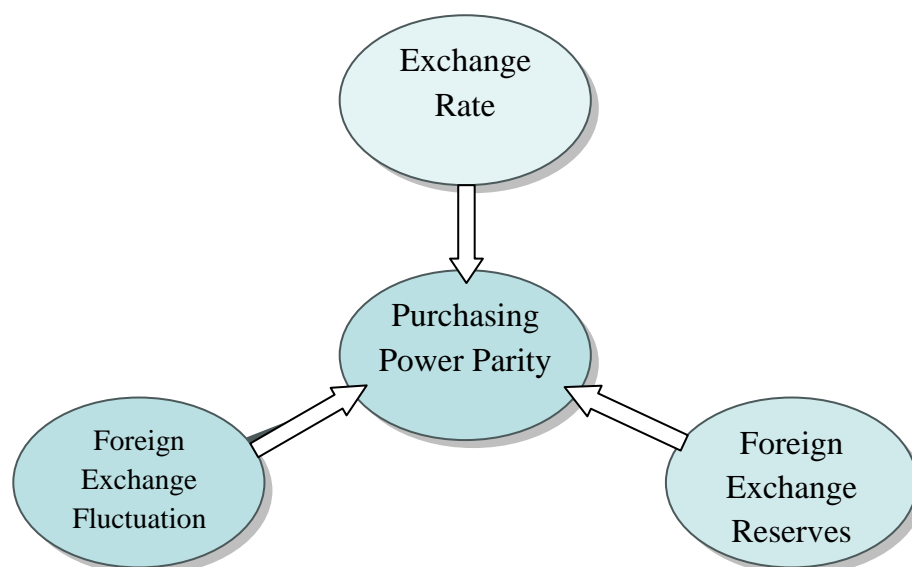
				<p>negative effect on inflation in Indonesia.</p> <p>Exchange rates have a significant positive effect on inflation in Indonesia.</p>
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## 2.6 Conceptual Framework

In this research, the independent variables which is the exchange rates, foreign exchange fluctuation and foreign exchange reserves is suspected to have an influence toward the dependent variable, in which the purchasing power parity.

**Figure 2.1**

### Conceptual Framework



## **2.7 Hypothesis**

### **2.7.1 The Influence of Exchange Rate toward Purchasing Power Parity (X1)**

H0: Exchange rate has no significant influence toward purchasing power parity.

Ha: Exchange rate has a significant influence toward purchasing power parity.

### **2.7.2 The Influence of Foreign Exchange Fluctuation toward Purchasing Power Parity (X2)**

H0: Foreign exchange fluctuation has no significant influence toward purchasing power parity.

Ha: Foreign exchange fluctuation has a significant influence toward purchasing power parity.

### **2.7.3 The Influence of Foreign Exchange Reserves toward Purchasing Power Parity (X3)**

H0: Foreign exchange reserves has no significant influence toward purchasing power parity,

Ha: Foreign exchange reserves has a significant influence toward purchasing power parity.

#### **2.7.4 The Influence of Exchange Rate, Foreign Exchange Fluctuation and Foreign Exchange Reserves toward Purchasing Power Parity (X4)**

H0: Exchange rate, foreign exchange fluctuation and foreign exchange reserves has no significant influence toward purchasing power parity.

Ha: Exchange rate, foreign exchange fluctuation and foreign exchange reserves has a significant influence toward purchasing power parity.

## CHAPTER III

### RESEARCH METHOD

#### 3.1 Time, Area, and Object of Research

The object of this research is the Indonesia Rupiah on United States of America Dollar. The area of this study is the data of exchange rate and foreign exchange fluctuation of Indonesia Rupiah on United States of America Dollar (Rp/\$), data of Indonesia's foreign exchange reserves in the year of 2015-2019, and the data of Indonesia' purchasing power parity in the year of 2015-2019. This research will be conducted from April 13<sup>th</sup>, 2020 – July 27<sup>th</sup>, 2020. In conducting the research, there are time schedule that writer made so that the research can be finished well within the period that has been set.

**Table 3.1**

**Research's Time Schedule**

ACTIVITY	TIME (WEEK)															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Introduction	■	■	■													
Theoretical Framework	■	■	■													
Data Specification	■	■	■													
Data Collection	■	■	■	■	■											
Data Analysis					■	■	■	■								
Discussion								■	■	■	■	■				
Conclusion and Recommendation													■	■		
Submit – Exam															■	■

In conducting the research, there are costs that needs to be spent. The budget details and the amount of cost needed to conduct this research will be shown in the table below.

**Table 3.2**

**Research Budget**

<b>DETAILS</b>	<b>COST</b>
University tuition	Rp6.250.000.-
Printing cost	Rp500.000.-
Hard cover	Rp250.000.-
Internet fees	Rp150.000.-
Stationary	Rp50.000.-
Electricity	Rp300.000.-
<b>TOTAL</b>	<b>Rp7.500.000.-</b>

**3.2 Types of Research**

The type of research used in this research is quantitative research, where this research will produce results that can be measured using quantification methods and will be analyzed using objective theory.

### **3.3 Population, Samples, and Sampling Techniques**

#### **3.3.1 Population**

The population of this research is the data of exchange rate and foreign exchange fluctuation of Rp/\$, Indonesia' foreign exchange reserves and Indonesia' purchasing power parity in the year of 2015-2019.

#### **3.3.2 Samples**

The samples of this research is the data of exchange rate and foreign exchange fluctuation of Rp/\$, Indonesia' foreign exchange reserves and Indonesia' purchasing power parity in the year of 2015-2019.

#### **3.3.3 Sampling Techniques**

This research uses the saturated sampling techniques. According to Sugiyono (2016), the saturated sampling techniques is a sampling technique in which all the members of the population are used as samples. Writer will be using all the population, that is the data of exchange rate and foreign exchange fluctuation of Rp/\$, Indonesia' foreign exchange reserves and Indonesia' purchasing power parity in the year of 2015-2019.as the samples of this research.

### **3.4 Data Collecting Methods**

The data used in this study are secondary data collected by the documentation method, namely by studying existing documents or collecting records and data that are already available, relating to the problem under study. In

this method, research is not carried out directly on the object of research, but through analysis of data or documents from the object of research. This research uses secondary data acquired from the official website of Badan Pusat Statistik Indonesia ([www.bps.go.id](http://www.bps.go.id)) and Bank Indonesia ([www.bi.go.id](http://www.bi.go.id)), also from several official website for currency and uses a statistical software, namely SPSS (Statistical Package for Social Science) to analyze the data used in this research.

### 3.5 Operational Variable Definition

This study has one dependent variable and three independent variables. The dependent variable in this research is the Indonesia's purchasing power parity (Y), and the independent variables in this research are exchange rate (X1), foreign exchange fluctuation (X2), and foreign exchange reserves (X3).

**Table 3.3**

#### Operational Variable

Research Variable	Symbol	Indicator	Measurement	Scale
Purchasing Power Parity	Y	Inflation Rate = $\frac{IHK_n - IHK_{n-1}}{IHK_{n-1}} \times 100\%$	Ratio	PPP Ratio (Relative Form) $S = \frac{1+n}{1+n^*}$
Exchange Rate	X1	Middle Rate =	Indonesia Rupiah	Growth Ratio

		$\frac{\text{Selling rate} + \text{Buying rate}}{2}$ (Salim, 2008)		$g = \frac{t1-t0}{t0} \times 100\%$
Foreign exchange Fluctuation	X2	Foreign Exchange Growth = $ER_n - ER_{n-1}$	Indonesia Rupiah	Growth Ratio $g = \frac{t1-t0}{t0} \times 100\%$
Foreign exchange Reserves	X3		Million USD	Growth Ratio $g = \frac{t1-t0}{t0} \times 100\%$

### 3.6 Classical Assumption Test

#### 3.6.1 Normality Test

Normality test is a test to measure whether our data has a normal distribution so that it can be used in parametric statistics, if the data is not normally distributed, non-parametric statistics can be used. Chi Square ( $X^2$ ) can be used to see if the data is normally distributed or not (Sujarweni, 2017):

$$X^2 = (f_i - f_h)^2 / f_h$$

Where:

$X^2$ : Chi squared count

$f_h$ : expected frequency



fi: frequency / amount of observational data

Criteria:

Chi squared count > chi squared table then the data is not normally distributed

Chi squared count < chi squared table then the data is normally distributed

### **3.6.2 Multicollinearity Test**

A regression model is said to be subjected to multicollinearity problems if there is a perfect or near perfect linear relationship between some or all of the independent variables. As a result the model will have difficulty seeing the effect of independent variables on the dependent variable (Maddala, 2001). The use of multicollinearity test aims to determine whether or not one or more independent variables have a relationship with other independent variables. There are rules of thumb that a model contains multicollinearity problems if the model has a high R<sup>2</sup> (for example above 0.8) but the significant level of explanatory variables based on the statistical t test is very small (Gujarati, 2003). The easiest way to overcome the problem of multicollinearity is to eliminate / drop one or several variables that have a high correlation in the regression model. Another way can be to add research data, this method is useful if the problem of multicollinearity due to sample errors. Then the third way to eliminate the problem of multicollinearity is the value of the variable used back one year.

For example:

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + e$$

Become:

$$Y = a + \beta_1 X_{1(t-1)} + \beta_2 X_{2(t-2)} + e$$

### 3.6.3 Autocorrelation Test

Autocorrelation test aims to detect whether a confounding variable in a period correlates or does not correlate with other confounding variables. A model is said to not contain an autocorrelation problem if it is measured according to the influence of confounding factors that occur in a period of time of observation not affected by other periods. Instead autocorrelation problems arise when there is interdependence between confounding factors associated with the observation period. The autocorrelation problem causes the estimated parameters to be biased and the variants are not minimal. The most popular test for autocorrelation problems is the Durbin Watson test (DW test). The main advantage of the autocorrelation test with the DW test is that this test is based on the estimated residuals and various computer software packages have displayed statistical DW values (Insukindro, 2001).

Decision whether or not the problem of autocorrelation if:

- 1) The DW value is higher than the upper limit (Upper Bound) then the model contains a negative autocorrelation:  $0 < DW \text{ statistics} < dL$ .
- 2) The DW value is lower than the lower limit (Lower Bound) then the model contains a positive autocorrelation:  $4 - dL < DW \text{ statistics} < 4$ .

3) If the statistical DW value is between the lower boundary (Lower Bound) and the upper boundary (Upper Bound) then the model is in a doubtful area:  $dL < d < dU$  and  $4 - dU < 4 - d < 4 - dL$

4) A model is said to be free of positive or negative autocorrelation problems if the statistical DW is located between:  $dU < DW \text{ statistics} < 4 - dL$

### **3.6.4 Heteroscedasticity Test**

A regression model contains a heteroscedasticity problem meaning that the variable variance in the model is not constant. Heteroscedasticity problems often arise in cross section data. Cross-section data (cross section) often raises the problem of heteroscedasticity due to variations in individual units. As a result of this heteroscedasticity problem, the estimation variant is not minimized so that the estimator / estimator in the regression model becomes inefficient. To overcome the problem of heteroscedasticity in regression with cross section data, the Generalized Least Square (GLS) method is used. The panel data regression method with Generalized Least Square (GLS) is an attempt to eliminate the heteroscedasticity problem. Gujarati (2003) explains that the method of generalized least square transforms disturbance variables into homoscedasticity. Data processing in this study also with the GLS method, the results of the regression can be said to be free from heteroscedasticity problems. So the use of the GLS method is able to estimate efficiently. The diagnosis of the problem of heteroscedasticity is by the Spearman ranking correlation test. This test uses the distribution of "t" by comparing the calculated t value with t table. If the calculated t value is greater than t table then rejects  $H_0$  and accepts  $H_a$ , meaning

that the regression model contains a heteroscedasticity problem. One way to eliminate the problem of heteroscedasticity is to transform variable values into logarithmic forms.

For example:

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + e$$

Become:

$$\ln Y = \ln a + \beta_1 \ln X_1 + \beta_2 \ln X_2 + e$$

### **3.7 Data Analysis Method**

#### **3.7.1 Multiple Linear Regression**

Multiple Linear Regression is used to find the functional relationship of all the predictors with the criteria. In addition, to know the magnitude of the contribution of predictor variables to criteria, both relative contributions and effective contributions. Multiple linear regression is used to determine the influence of the independent variable with the dependent variable, namely: exchange rate, foreign exchange fluctuation and foreign exchange reserves toward purchasing power parity measured using the inflation rate between Indonesia and United States of America. The regression model used is:

$$Y = a + b_1 X_1 + b_2 X_2 + b_3 X_3 + e$$

Description:

Y = Purchasing Power Parity

a = Price of constants (price of Y if X = 0)

b<sub>1,2,3</sub> = Price of regression coefficient

X<sub>1</sub> = First independent variable (Exchange Rate)

X<sub>2</sub> = Second independent variable (Foreign exchange Fluctuation)

X<sub>3</sub> = Third independent variable (Foreign exchange Reserves)

e = Standard error

### **3.8 Hypothesis Test**

#### **3.8.1 Simultaneous Coefficient Test (F test)**

F test indicates whether all independent variables included in the equation / regression model simultaneously affect the dependent variable. The F test can also be seen from the regression output produced by SPSS. To test the F value, we should formulate a null hypothesis, namely:

H<sub>0</sub>:  $\beta = 0$ , meaning that all independent variables are not explanatory variables.

H<sub>a</sub>:  $\beta \neq 0$ , meaning that all the independent variables simultaneously are a significant explanation of the dependent variable.

From the regression output, we can see:

If the F value is greater than 4, then H<sub>0</sub> is rejected and H<sub>a</sub> is accepted. All independent variables included in the regression equation / model simultaneously influence the dependent variable.

### **3.8.2 Correlation Test for Partial Regression (T test)**

The test of the statistical value of t is a test of the significance of individual parameters. The t value statistic shows how far the influence of the independent variables individually on the dependent variable. The test of the statistical value of t is also called a partial test in the form of a regression coefficient. We can do this test easily and briefly through SPSS. First, we must formulate the null hypothesis to be tested, namely:

H<sub>0</sub>:  $\beta = 0$ , meaning that the independent variable is not an explanation of the dependent variable.

H<sub>a</sub>:  $\beta \neq 0$ , meaning that the independent variable is an explanation of the dependent variable.

We can see from the regression output as follows:

If the value of t is greater than 2 (in absolute value) then H<sub>0</sub> is rejected and H<sub>a</sub> is accepted. This means that the independent variables individually represent the explanatory of the dependent variables.

### **3.8.3 Multiple Coefficient Determination ( $R^2$ )**

Determination coefficient measures how much the capability of the model explain variables of dependent variations. Thus, the determination coefficient actually measures the amount of the percentage of the effect of all independent variables in the regression model of the dependent variables (Purwanto & Sulistyastuti, 2017). In the space separating from zero to one is the value of coefficient determination. The small value of determination signifies the

capability of independent variable in interpreting the variation variable of the dependent variable is limited. The value that approached one means that independent variable provide high information needed to predict variation of the dependent variable (Riduwan, 2010). The result of this research will be found by using SPSS22.

$$D = r^2 \times 100\%$$

Where:

D= Value of coefficient determination

R= Value of coefficient correlation

## CHAPTER IV

### RESULTS AND DISCUSSION

#### 4.1 Descriptive Analysis

Descriptive analysis contains a description about the variable data used in this study. This research uses time series data for the period of 2015-2019.

The research is conducted to find the influence of the independent variables with the dependent variable. Below is the exposure of the variables:

1. Dependent Variable
  - a) Purchasing power parity (Y): Inflation rate (year on year), relative form of PPP
2. Independent Variables
  - a) Exchange rate (X1): Indonesia Rupiah on US Dollar
  - b) Foreign exchange fluctuation (X2): Indonesia Rupiah on US Dollar  
foreign exchange fluctuation
  - c) Foreign exchange reserves (X3): Annual foreign exchange reserves of  
Indonesia

This research uses secondary data acquired from the official website of Badan Pusat Statistik Indonesia ([www.bps.go.id](http://www.bps.go.id)) and Bank Indonesia ([www.bi.go.id](http://www.bi.go.id)), also from several official website for currency and uses a statistical software, namely SPSS (Statistical Package for Social Science) to analyze the data used in this research.



### 4.1.1 Inflation Rate

Inflation is mostly understood as the excessed money (paper) supply in circulation so that the value of the currency goes down and causing an increase in the prices of goods and services. Or simply, inflation is defined as an increase in prices in general and continuously within a certain period. Inflation rate between ratio of Indonesia and US reflect the purchasing power parity of the country. The two country's inflation rate throughout the latest 5 years' data will be shown on table 4.1 and table 4.2.

**Table 4.1**

**Indonesia's Inflation Rate**  
**Period 2015-2019**

<b>Year</b>	<b>Inflation (%, yoy)</b>
2015	3,35
2016	3,02
2017*	3,61
2018*	3,13
2019*	2,72

*Source: Bank Indonesia official website*

**Table 4.2**

**United States of America's Inflation Rate**  
**Period 2015-2019**

<b>Year</b>	<b>Inflation (%, yoy)</b>
2015	0.7
2016	2.1
2017*	2.1
2018*	1.9

*Source: United States of America Inflation Calculator*

The purchasing power parity theory stated that most economic factor including the foreign exchange between two country, which in this case is Indonesia and US can be affected by the inflation rate of the two country mentioned. For that reason, the inflation rate between Indonesia and US will be shown in the table 4.3 below.

**Table 4.3**

**Indonesia and US Inflation Rate**

**(Period of 2015-2019)**

<b>PERIOD</b>	<b>INFLATION RATE</b> (%)
2015	2.63
2016	0.90
2017	1,48
2018	1,22
2019	0,41

*Source: Data Processed*

Based on table 4.1 we can see that Indonesia and US's inflation rate experience positive and negative growth in every year for the period of 2015-2019. The table shown lowering rate of the inflation rate as much as 3 times which was 2.63% to 0.90%, 1.48% to 1.22%, and 1.22% to 0.41% respectively in the year of 2016, 2018 and 2019. In the latest 3 years, the ratio experience

depreciation to a better rate each year from the year of 2017 to 2019 where in 2019 the rate experienced the lowest rate for 5 years as much as 0.41%.

Even though the growth isn't always consistent and in some year the growth didn't experience lower rate from the year before, these rates could be considered an excellent attainment where the inflation rate between Indonesia and US experienced positive control progress 3 times in a row for the year of 2015-2019.

#### 4.1.2 Exchange Rate

**Table 4.4**

**Indonesia Rupiah Exchange Rate against US Dollar**

**(Period of 2015-2019)**

<b>PERIOD</b>	<b>EXCHANGE RATE</b> <b>(Rp)</b>
2015	13,389.41
2016	13,308.33
2017	13,380.83
2018	14,236.94
2019	14,147.67

*Source: Data Processed*

The chart above stated that the exchange rate of Indonesia Rupiah against US Dollar rose from Rp13,380.83 to Rp14,236.94 in the year of 2018, making it the greatest surge of the exchange rate for the last 5 years. Even so, the next year

the exchange rate experiences decrease as much of 0.62703081% from last year's nominal. The exchange rates experience ups and downs to a higher and lower rate the years before where the lowest rate is in 2016 as much as Rp13,308.33.

**Table 4.5**

**IDR/USD Exchange Rate Percentage Calculation**

**(Period of 2015-2019)**

<b>PERIOD</b>	<b>Exchange Rate</b> <b>(%)</b>
2015	12.81
2016	(0.61)
2017	0.54
2018	6.01
2019	(0.63)

*Source: Data Processed*

The table above shows the growth percentage of exchange rates of IDR/USD throughout the latest 5 years which is the period of 2015-2019. As we can see in the table, the highest growth is shown in the year of 2015 meaning that in 2015, IDR experienced its greatest exchange rate depreciation in the latest 5 years as much as 12.81%. Meanwhile in 2019, the IDR experience its greatest exchange rate strengthening where the growth is 0.63% to a lower rate making the latest year's exchange rate at Rp14,147.67.

### 4.1.3 Foreign exchange Fluctuation

**Table 4.6**  
**Indonesia's Foreign exchange Fluctuation**  
**in the Period of 2015-2019**

<b>PERIOD</b>	<b>FOREIGN EXCHANGE FLUCTUATION (Rp)</b>
2015	1,520.74
2016	(81.08)
2017	72.5
2018	856.11
2019	(89.27)

*Source: Data Processed*

Table 4.6 contains the data of Indonesia's foreign exchange fluctuation from the year of 2015-2019. The data served in units of Indonesia Rupiah and the amount written on the table is the fluctuation of Indonesia Rupiah against US Dollar in the determined year. The fluctuation shows positive result in the year of 2016, whereas Indonesia Rupiah experience strengthening as much of Rp81.08 against the US Dollar. This fluctuation brings the exchange rate to a depreciation the next year in 2017, where it experienced negative fluctuation with the amount of Rp72.5. In the year of 2018, Indonesia Rupiah fluctuates even more to a depreciation and becomes the biggest fluctuation in the determined year, with the amount of Rp856.11.

**Table 4.7**

**Indonesia's Foreign exchange Fluctuation Percentage Calculation  
Period of 2015-2019**

<b>PERIOD</b>	<b>FOREIGN EXCHANGE FLUCTUATION (%)</b>
2015	7.89
2016	94.67
2017	10.58
2018	1080.84
2019	89.57

*Source: Data Processed*

The table above shows the growth percentage foreign exchange fluctuation of IDR/USD throughout the latest 5 years which is the period of 2015-2019. As we can see in the table, the highest growth is shown in the year of 2018 meaning that the foreign exchange fluctuates the highest in that period of time as much of 1080.84%, meanwhile the lowest foreign exchange fluctuation is shown in the year of 2015 with the rate as much of 7.89%.

#### 4.1.4 Foreign exchange Reserves

**Table 4.8**

**Indonesia's Foreign exchange Reserves Period 2015-2019**

**(in Million USD)**

<b>PERIOD</b>	<b>FOREIGN EXCHANGE RESERVES</b>
2015	105,931
2016	116,362
2017	130,196.38
2018	120,654.27
2019	129,200

*Source: Biro Pusat Statistic (Data processed 2019)*

Data of Indonesia's foreign exchange reserves are obtained from Biro Pusat Statistic in which the data showed that the reserves has continued to increase from 2015-2017 and has decreased by 7.32901% from 2017-2018 and experienced another increase in 2019, making the amount of reserves in 2019 as much of Rp129,200 Million USD.

**Table 4.9**  
**Indonesia's Foreign exchange Reserves Percentage Calculation**  
**Period 2015-2019**  
**(in Million USD)**

<b>PERIOD</b>	<b>FOREIGN EXCHANGE RESERVES</b>
2015	5.30
2016	9.85
2017	11.89
2018	(7.33)
2019	7.08

*Source: Biro Pusat Statistik (Data processed 2019)*

The table above shows the growth percentage of Indonesia's foreign exchange reserves throughout the latest 5 years which is the period of 2015-2019. As we can see in the table, the lowest growth is shown in the year of 2015 meaning that in 2015, Indonesia experienced its lowest growth of reserves in the latest 5 years as much as 5.30%. Meanwhile the table showed that the highest growth is in the year of 2017 meaning that in 2017, Indonesia experienced its greatest growth of reserves in the latest 5 years as much as 11.89%.

#### **4.1.5 Research Data**

The data of independent and dependent variables that will be used in this research will be shown in the table below, namely table 4.10.



**Table 4.10**

**Data of Dependent and Independent Variable**

<b>PERIOD</b>	<b>Inflation Rate</b> <b>(%)</b> <b>(Y)</b>	<b>EXCHANGE</b> <b>RATE</b> <b>(Rp)</b> <b>(X1)</b>	<b>FOREIGN</b> <b>EXCHANGE</b> <b>FLUCTUTAION</b> <b>(Rp)</b> <b>(X2)</b>	<b>FOREIGN</b> <b>EXCHANGE</b> <b>RESERVES</b> <b>(Million USD)</b> <b>(X3)</b>
2015	3.35	13,389.41	1,520.74	105,931
2016	3.02	13,308.33	(81.08)	116,362
2017	3.61	13,380.83	72.5	130,196.38
2018	3.13	14,236.94	856.11	120,654.27
2019	2.72	14,147.67	(89.27)	129,200

*Source: Data Processed*

The data in table 4.1 is the inflation rate of Indonesia (yoy) and the processed data of foreign exchange fluctuation with the regular data of exchange rate acquired from from Bank Indonesia official website and Indonesia's foreign exchange reserves acquired from Badan Pusat Statistik Indonesia for the period of 2015-2019.

In analyzing data using the statistical software (SPSS), it is important to match the data units so that the analyzing process can go well. To match the units of the data, the percentage of annual growth (%) will be used as the unit of each variable.

Percentage of annual growth is calculated using:

$$g = \frac{t1-t0}{t0} \times 100\%$$

Where:

g = growth rate

t1 = final value

t0 = start value

**Table 4.11**

**Average Percentage Calculation Per Year**

<b>PERIOD</b>	<b>INFLATION RATE (%) (Y)</b>	<b>EXCHANGE RATE (%) (X1)</b>	<b>FOREIGN EXCHANGE FLUCTUATION (%) (X2)</b>	<b>FOREIGN EXCHANG E RESERVES (%) (X3)</b>
2015	2.63	12.81	7.89	5.30
2016	0.90	(0.61)	94.67	9.85
2017	1,48	0.54	10.58	11.89
2018	1,22	6.01	1080.84	(7.33)
2019	0,41	(0.63)	89.57	7.08

*Source: Data Processed*

## 4.2 Data Analysis

### 4.2.1 Normality Test

Normality test is a test to measure whether our data has a normal distribution so that it can be used in parametric statistics, if the data is not normally distributed, non-parametric statistics can be used. Chi Square ( $X^2$ ) can be used to see if the data is normally distributed or not. The output of the test is as follows:

**Table 4.12**

#### **Result of Normality Test**

#### **One-Sample Kolmogorov-Smirnov Test**

		Unstandardized Residual
N		5
Normal Parameters <sup>a,b</sup>	Mean	.0000000
	Std. Deviation	.04603520
Most Extreme Differences	Absolute	.246
	Positive	.142
	Negative	-.246
Kolmogorov-Smirnov Z		.549
Asymp. Sig. (2-tailed)		.923

The result showed that the value of Asymp. Sig. (2-tailed) is 0.923 which is greater than the significance value (0.05), meaning that the data and residues of this research are normally distributed.

## 4.2.2 Classic Assumption Test

### a. Multicollinearity Test

Multicollinearity test is needed to see whether or not there is a high correlation between independent variables in a multiple linear regression model. This test can be evaluated from the value of variance inflation factor (VIF). If the VIF is lower than 10 and the tolerance value is close to 1, then the model can be said to be free from multicollinearity. If the VIF value is bigger than 10, then it is assumed that there is multicollinearity problem. The result of analyzed data is as follows:

**Table 4.13**  
**Result of Multicollinearity Test**

#### Coefficients<sup>a</sup>

Model	Collinearity Statistics	
	Tolerance	VIF
1 (Constant)		
EXCHANGE RATE	.101	9.875
FOREIGN EXCHANGE FLUCTUATION	.192	5.197
FOREIGN EXCHANGE RESERVES	.180	5.571

a. Dependent Variable: INFLATION RATE

Based on the result shown in the table above, the collinearity test of exchange rate have VIF value of 9.875 and a tolerance value of 0.101. This means that the VIF of exchange rate variable is not greater than 10 and the tolerance value is close to 1. This concluded that the exchange rate does not have a problem with other independent variables or in other words there is no multicollinearity.

The next variable in which the foreign exchange fluctuation where it has VIF value of 5.197 and a tolerance value of 0.192. This means that the foreign exchange fluctuation variable is not greater than 10 and the tolerance value is close to 1. This concluded that the foreign exchange fluctuation does not have a problem with other independent variables or in other words there is no multicollinearity.

The collinearity test of foreign exchange reserves have VIF value of 5.571 and a tolerance value of 0.180. This means that the foreign exchange reserves variable is not greater than 10 and the tolerance value is close to 1. This concluded that the foreign exchange reserves does not have a problem with other independent variables or in other words there is no multicollinearity.

#### **b. Heteroscedasticity Test**

Heteroscedasticity test is used to see whether there are inequalities of residual variance. The statistical test used is the test by regressing the absolute residual value on the independent variable.

The presence or absence of heteroscedasticity problems can be evaluated using the following determination: if the significance between the independent variables and the absolute residual value is greater than 0.05, there is no heteroscedasticity. If the significance between the independent variables with the absolute residual value is  $< 0.05$ , then heteroscedasticity occurs. The result of the analyzed data are as follow:

**Table 4.14**

**Result of Heterocedasticity Test**

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.043	.081		-.529	.690
	EXCHANGE RATE	-3.310E-5	.003	-.006	-.010	.994
	FOREIGN EXCHANGE FLUCTUATION	.000	.000	1.625	.923	.526
	FOREIGN EXCHANGE RESERVES	.009	.008	2.249	1.163	.452

a. Dependent Variable: Abs\_Res

Based on the table above, it can be seen that the significance value of exchange rate is 0.994, the significance value of foreign exchange fluctuation is 0.526, and the significance value of foreign exchange reserves is 0.452. This concludes that the three variables have significance value greater than 0.05, and also concludes that in this regression model, there is no heteroscedasticity problem.

**c. Autocorrelation Test**

Autocorrelation test aims to find out whether in a linear regression model there is a correlation between confounders in period t with errors in period t-1. The provision of the test is: if the value of Asymp. Sig. (2-tailed) is above 0.05, there is no autocorrelation problem. The result of the analyzed data is as follows:

**Table 4.15**

**Result of Autocorrelation Test**

**Runs Test**

	Unstandardized Residual
Test Value <sup>a</sup>	.00393
Cases < Test Value	2
Cases >= Test Value	3
Total Cases	5
Number of Runs	2
Z	-.982
Asymp. Sig. (2-tailed)	.326

a. Median

The result showed that the value of Asymp. Sig. (2-tailed) is 0.326 and is greater than 0.05. This result concludes that there is no autocorrelation problems found in this research.

### 4.2.3 Multiple Linear Regression

**Table 4.16**

#### **Result of Multiple Linear Regression**

#### **Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1.154	.326		-3.541	.175
	EXCHANGE RATE	.209	.014	1.469	14.902	.043
	FOREIGN EXCHANGE FLUCTUATION	.002	.000	1.351	5.301	.119
	FOREIGN EXCHANGE RESERVES	.206	.031	1.865	6.669	.095

a. Dependent Variable: INFLATION RATE

Based on the result of the regression on the table above, the factors that influence the Inflation rate of Indonesia and US as the purchasing power parity for the period of 2015-2019 are as follows:

$$Y = - 1.154 + 1.469X_1 + 1.351X_2 + 1.865 X_3$$

Interpretation:

- a. The equation showed that the constant value of multiple regression coefficient is -1.154, meaning that when the value of exchange rate, foreign exchange fluctuation, and foreign exchange reserves are equals as 0, the value of inflation rate as the purchasing power parity will be -1.154.



- b. The equation showed that the coefficient of the variable exchange rate (X1) has the value of 1.469, meaning that for every increase of 1 percent in the exchange rate, the inflation rate as the purchasing power parity variable will also increase as much of 1.469.
- c. The equation showed that the coefficient of the variable foreign exchange fluctuation (X2) has the value of 1.351, meaning that for every increase of 1 percent in the foreign exchange fluctuation, the inflation rate as the purchasing power parity variable will also increase as much of 1.351.
- d. The equation showed that the coefficient of the variable foreign exchange reserves (X2) has the value of 1.865, meaning that for every increase of 1 percent in the foreign exchange reserves, the inflation rate as the purchasing power parity variable will also increase as much of 1.865.

#### **4.2.4 Hypothesis Test**

##### **a. Partial Hypothesis Test**

This test is a test of independent variables individually, which aims to determine the significance of the independent variables on the dependent variable by assuming other variables remain.

**Table 4.17**  
**Result of Partial Hypothesis Test**  
**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1.154	.326		-3.541	.175
	EXCHANGE RATE	.209	.014	1.469	14.902	.043
	FOREIGN EXCHANGE FLUCTUATION	.002	.000	1.351	5.301	.119
	FOREIGN EXCHANGE RESERVES	.206	.031	1.865	6.669	.095

a. Dependent Variable: INFLATION RATE

The  $t_{table}$  value is attained using the value  $(\alpha/2)$ ;  $(n - k - 1)$  or  $(0.05/2 = 0.025)$ ;  $(5 - 3 - 1 = 1)$  as where the value of  $t_{table}$  is  $(0.025; 1)$ . With the value of  $t_{table}$ , the result attain from the  $t_{table}$  distribution value is 12.71. Based on hypothesis testing criteria, if the  $t_{count} > t_{table}$  then  $H_0$  is rejected and  $H_a$  is accepted. If the  $t_{count} < t_{table}$  then  $H_0$  is accepted and  $H_a$  is rejected.

The data analysis is as follows:

1. Exchange Rate

$H_0$ : Exchange rate has no significant influence toward purchasing power parity.

$H_a$ : Exchange rate has a significant influence toward purchasing power parity.

From the analysis result, it is found that the  $t_{\text{count}}$  of the variable exchange rate (X1) is 14.902 and is greater than the  $t_{\text{table}}$  value which is 12.71, meaning  $H_a$  is accepted and that exchange rate is influential towards inflation rate as the purchasing power parity variable.

## 2. Foreign exchange Fluctuation

$H_0$ : Foreign exchange fluctuation has no significant influence toward purchasing power parity.

$H_a$ : Foreign exchange fluctuation has a significant influence toward purchasing power parity..

From the analysis result, it is found that the  $t_{\text{count}}$  of variable foreign exchange fluctuation (X2) is 5.301 and is less than the  $t_{\text{table}}$  value which is 12.71, meaning  $H_0$  is accepted and that the foreign exchange fluctuation is not influential towards inflation rate as the purchasing power parity variable.

## 3. Foreign exchange Reserves

$H_0$ : Foreign exchange reserves has no significant influence toward purchasing power parity.

$H_a$ : Foreign exchange reserves has a significant influence toward purchasing power parity.

From the analysis result, it is found that  $t_{\text{count}}$  of variable foreign exchange reserves (X3) is 6.669 and is less than  $t_{\text{table}}$  value which is 12.71, meaning  $H_0$  is

accepted and that the foreign exchange reserves is not influential towards inflation rate as the purchasing power parity variable.

**b. Simultaneous Hypothesis Test**

This test is conducted to determine whether all independent variables have the same effect on the dependent variable. Testing is done using the F test distribution, that is by comparing the value of F table with F count.

**Table 4.18**

**Result of Simultaneous Hypothesis Test**

**ANOVA<sup>b</sup>**

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2.747	3	.916	108.034	.071 <sup>a</sup>
	Residual	.008	1	.008		
	Total	2.756	4			

a. Predictors: (Constant), FOREIGN EXCHANGE RESERVES, EXCHANGE RATE, FOREIGN EXCHANGE FLUCTUATION

b. Dependent Variable: INFLATION RATE

From the data above, the value of  $F_{count}$  is 108.034 with  $F_{table}$  calculated using the formula below:

$$F_{table} = F(k; n-k) = F(3; 2) = 19.2$$

The formula resulted the value of  $F_{table}$  as much of 19.2, meaning that the  $F_{table} < F_{count}$  ( $19.2 < 108.034$ ), then  $H_a$  is accepted and  $H_0$  is rejected, concluding that exchange rate, foreign exchange fluctuation and foreign exchange reserves

have simultaneous influence toward inflation rate as the purchasing power parity variable.

#### 4.2.5 Multiple Coefficient Determination ( $R^2$ )

**Table 4.19**

**Result of Multiple Coefficient Determination**

**Model Summary<sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.998 <sup>a</sup>	.997	.988	.09207	2.627

a. Predictors: (Constant), FOREIGN EXCHANGE RESERVES, EXCHANGE RATE, FOREIGN EXCHANGE FLUCTUATION

b. Dependent Variable: INFLATION RATE

The results above showed the score of coefficients determination (R-Square) is as much of 0.997 or 99.7%, meaning that this certain variable has given a relativity 99.7% contribution to inflation rate as the purchasing power parity variable.

### 4.3 Discussion

#### 4.3.1 The Influence of Exchange Rate toward Purchasing Power Parity

Based on the data analysis using the partial hypothesis test and simultaneous hypothesis test on SPSS, the result showed that the exchange rate is influencing the purchasing power parity variable using the inflation ratio although the influence is not significant. This prove that the purchasing power parity does not only influenced by the exchange rate but also other variables that is not

included in this research which influenced the purchasing power parity more significantly than the exchange rate does.

The statistical analysis which is the multiple linear regression model showed that the exchange rate has the biggest correlation among the three independent variables with the inflation rate as the purchasing power parity variable.

This result is supported by the previous research by Agustin (2009) where the result concludes that simultaneously the other variables do influence the purchasing power parity significantly, while partially (t test) the exchange rate influences (not significant) the variable of purchasing power parity. Other research also concludes Indonesian and American inflation ratio variable proved to be influenced on changes in the Rupiah / US Dollar exchange rate. The purchasing power parity theory is proven applies to the exchange rate of Rupiah / United States of America Dollar because it has a positive direction (Kartikaningtyas, Suhadak, & Hidayat, 2014).

According to Madura (2000), PPP theory focuses on the relationship of inflation with exchange rates that the exchange rate will adjust from time to time to reflect the difference in inflation between two countries, consequently the purchasing power of consumers to buy products outside domestic will be the same as their purchasing power to buy foreign products. That is, the exchange rate of a currency will change as a reaction to differences in inflation between two countries and the purchasing power of consumers when buying domestic products will be the same as the purchasing power when importing from another country.

### **4.3.2 The Influence of Foreign Exchange Fluctuation toward Purchasing**

#### **Power Parity**

Based on the data analysis using the partial hypothesis test and simultaneous hypothesis test on SPSS, the result showed that the variable foreign exchange fluctuation is not significantly influencing the purchasing power parity variable using the inflation ratio. This prove that the purchasing power parity does not influenced by the foreign exchange fluctuation but other variables that is not included in this research.

The statistical analysis which is the multiple linear regression model showed that the foreign exchange fluctuation has the least correlation among the three independent variables with the inflation rate as the purchasing power parity variable.

The previous research by Mahaputra (2017) didn't show the same result where the test results show that the fluctuation of foreign exchange has a significant and positive effect on the inflation rate. These result differences might be caused by the data used in the analysis that were taken from different periods and also the previous research might use more sample or more years of the variables' data.

The research's result also showed different result with what Riyadh (2007) stated, that high levels of inflation can have a negative impact on the national economy, including reducing the purchasing power of people with fixed and low income, reducing investor enthusiasm for investment, can lead to inefficient allocation of resources and so on. This inflation does not only come from

domestic factors (internal pressure) but also foreign factors (external pressure), external factors can be sourced from rising commodity prices abroad (world prices) or from exchange rate fluctuations for example with the depreciation of the rupiah will resulting in the price of imported goods becoming more expensive in the country.

Foreign exchange fluctuation might have some indirectly influence on purchasing power parity, because the exchange rate variable showed positive result on influencing purchasing power parity as where the foreign exchange fluctuation is the fluctuation of the exchange rate itself. The result might not showed positive influence of foreign exchange fluctuation on purchasing power parity because the data acquired are being processed first and the result also showed in a regression model and the difference of result might also be caused of the research's data that are being taken from different time series and a longer period of research.

#### **4.3.3 The Influence of Foreign Exchange Reserves toward Purchasing Power Parity**

Based on the data analysis using the partial hypothesis test and simultaneous hypothesis test on SPSS, the result showed that the variable foreign exchange reserves are not significantly influencing the purchasing power parity variable using the inflation ratio. This prove that the purchasing power parity does not influenced by the foreign exchange reserves but other variables that is not included in this research which influenced the purchasing power parity more significantly than the foreign exchange reserves do.



The statistical analysis which is the multiple linear regression model showed that the foreign exchange reserves has a correlation of 0.206 among the three independent variables with the inflation rate as the purchasing power parity variable.

This result is supported by the previous research by Romadhoni (2019) where the result validity test (t test) shows that the value of foreign exchange reserves toward the inflation rate of purchasing power parity and the exchange rate do not have a significant effect.

Foreign exchange reserves are like savings for a country. Aside from being a savings account, the function of foreign exchange reserves is to transact and be prepared. Viewed from its function as savings, the amount of foreign exchange reserves can increase and decrease, changing over time as needed. Foreign exchange reserves are also used to finance the imbalance of the balance of payments, intervene in the market to maintain the exchange rate, and other purposes as a bearing on Indonesia's obligations (Lestari, 2016). The foreign exchange reserves might not have a positive result on influencing the purchasing power parity in because of the function of the foreign exchange reserves itself which as a saving for the country as we logically speaking that a saving cannot be a big factor in influencing the country's purchasing power.

## CHAPTER V

### CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Conclusions

Based on the research and discussions from the chapter before, the conclusions of this research are as follow:

Exchange rate (IDR/USD) does influence the purchasing power parity of Indonesia measured using inflation rate between Indonesia and US for the period of 2015-2019 although it is not significant. This is shown by the  $t_{count}$  distribution of  $14.902 > t_{table}$  of 12.71 with the significance level of 5%, the significance value of 0.043 which is less than the 0.05 significance level.

Foreign exchange fluctuation does not significantly influence purchasing power parity of Indonesia measured using inflation rate between Indonesia and US for the period of 2015-2019. This is shown by the  $t_{count}$  distribution of  $5.301 < t_{table}$  of 12.71 with the significance level of 5%, the significance value of 0.119 which is greater than the 0.05 significance level.

Foreign exchange reserves does not significantly influence purchasing power parity of Indonesia measured using inflation rate between Indonesia and US for the period of 2015-2019. This is shown by the  $t_{count}$  distribution of  $6.669 < t_{table}$  of 12.71 with the significance level of 5%, the significance value of 0.095 which is greater than the 0.05 significance level.

Exchange rate (IDR/USD), foreign exchange fluctuation and foreign exchange reserves are simultaneously influencing purchasing power parity of

Indonesia measured using inflation rate between Indonesia and US. This is indicated by the  $F_{\text{count}}$  distribution is  $108.034 > F_{\text{table}}$  of 19.2 and the significance value of  $0.071 > 0.05$ .

## **5.2 Recommendations**

The researcher suggest other researcher to do a deeper research about each of the variables that have been analyzed in the previous chapters, namely exchange rate (IDR/USD), foreign exchange fluctuation and foreign exchange reserves to see if any of the variables has significant influence or impact toward other new variable to bring new information and knowledge for the public.

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# **APPENDICES**

Appendix 1

Inflation Rate between Indonesia and United States of America

Period of 2015-2019

<b>PERIOD</b>	<b>INFLATION RATE</b> (%)
2015	2.63
2016	0.90
2017	1,48
2018	1,22
2019	0,41

Appendix 2

Indonesia Rupiah Exchange Rate against US Dollar

Period of 2015-2019

<b>PERIOD</b>	<b>EXCHANGE RATE</b> <b>(Rp)</b>
2015	13,389.41
2016	13,308.33
2017	13,380.83
2018	14,236.94
2019	14,147.67

Appendix 3

Indonesia's Foreign exchange Fluctuation  
in the Period of 2015-2019

<b>PERIOD</b>	<b>FOREIGN EXCHANGE FLUCTUATION (Rp)</b>
2015	1,520.74
2016	(81.08)
2017	72.5
2018	856.11
2019	(89.27)

Appendix 4

Indonesia's Foreign exchange Reserves Period 2015-2019

(in Million USD)

<b>PERIOD</b>	<b>FOREIGN EXCHANGE RESERVES</b>
2015	105,931
2016	116,362
2017	130,196.38
2018	120,654.27
2019	129,200