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THE EFFECT OF CASHEW NUT EXPORTS, GROSS DOMESTIC PRODUCT (GDP) AND EXCHANGE RATE ON INDONESIA'S FOREIGN EXCHANGE RESERVES

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Abstract

This study aims to determine the effect of cashew nut exports, Gross Domestic Product (GDP) and exchange rates on short-term and long-term foreign exchange reserves in Indonesia. The data used is a time series in the range of 1986-2021 obtained from the world bank and FAO (Food And Agriculture Organization). This study used an Autoregressive Distributed Lag (ARDL) model with 10 e-views. The results showed that in the short term cashew nut exports have a positive and significant effect on Indonesia's foreign exchange reserves while in the long term cashew nut exports have a negative and insignificant effect on Indonesia's foreign exchange reserves. The variable Gross Domestic Product (GDP) has no effect and is significant on foreign exchange reserves in the short term and in the long run Gross Domestic Product (GDP) has a positive and significant effect on foreign exchange reserves. While the exchange rate variable has no effect and is significant on foreign exchange reserves in the short term and in the long term the exchange rate has a positive and significant effect on foreign exchange reserves.

Keywords : *Cashew nut export, GDP, Exchange rate, Autoregressive Distributed Lag*

JEL Clasification :

1. INTRODUCTION

Foreign exchange reserves reflect a country's economic prosperity and are used to support obligations and influence monetary policy (Wahongan et al., 2022). Monetary policy, based on Law No. 23 of 1999, aims to accelerate economic growth and improve people's welfare (Anggriawan et al., 2016). Indonesia's foreign exchange reserves, held by Bank Indonesia, are a source of financing for national development. International trade, especially exports, is beneficial for the economies of developing countries like Indonesia. Exports increase foreign exchange reserves through foreign exchange earnings, which strengthens Indonesia's macroeconomic fundamentals (Juliansyah et al., 2020).

Over the last 30 years, Indonesia's foreign exchange reserves have experienced significant fluctuations. According to World Bank data (2024), the lowest foreign exchange reserves occurred in 1992 amounting to 11.84 billion US$. Since 1993, foreign exchange reserves have continued to increase until they reached 130.21 billion US$ in 2017. Despite experiencing fluctuations in 2018-2019, foreign exchange reserves rose sharply to 135.91 billion US$ in 2020 and 144.90 billion US$ in 2021. This increase was caused by tax revenues, services and foreign loan withdrawals, and was supported by economic stability. Other supporting factors include oil and gas foreign exchange, exports, foreign debt, and capital investment (Mildyanti & Triani, 2019).

Apart from oil and gas and non-oil and gas exports, Indonesia also exports agricultural and plantation products. Charismawati (2019) examined the factors that inhibit agricultural commodity exports from foreign exchange for the 2012-2016 period. Ramadhani et al. (2020) analyzed the competitiveness of pepper exports and its impact on foreign exchange reserves in five main pepper exporting countries, including Indonesia. Peanuts are one of the superior plantation commodities in Indonesia which have extraordinary potential in the international market. Cashew nuts are one of the plantation commodities that generate foreign exchange from export activities. According to Agustyan, (2018) economically cashews are the country's foreign exchange earner, a source of income for farmers, industrial raw materials and as a reforestation plant for land conversion. In general, cashew nuts are traded in logs and Indonesia is one of the exporters of cashew nuts and also meets domestic consumption needs.

According to data from the Ministry of Agriculture (2022), the average world export value of cashew nuts in 2016-2020 shows Vietnam as the largest exporter with 3,007,699 tons (40.67% of total exports). Ivory Coast is in second place with 933,990 tonnes (12.63%), followed by Ghana with 679,868 tonnes (6.24%), the Netherlands with 461,337 tonnes (4.85%), and Tanzania with 330,696 tonnes (4.47%). Indonesia ranks sixth with 85,584 tonnes (3.01%).

Table 1. Data on Foreign Exchange Reserves, Cashew Nut Exports, Gross Domestic Product and Exchange Rates 2012-2021.

Years	Reserve Year Foreign Exchange (US$)	Cashew Exports (Million US$)	Gross Domestic Product (US$)	Exchange Rates (RP/US$)
2012	112.797.627.833	70.412	917.869.913.332	9.386,63
2013	99.386.826.239	56.626	912.524.136.718	10.461,24
2014	111.862.594.562	69.730	890.814.755.533	11.865,21
2015	105.928.847.089	118.269	860.854.232.686	13.389,41
2016	116.369.601.851	100.261	931.877.364.037	13.308,33
2017	130.215.330.385	112.261	1.015.618.744.159	13.381,83
2018	120.660.974.091	84.353	1.042.271.532.988	14.237,94
2019	129.186.464.020	121.578	1.119.099.871.350	14.148,67
2020	135.915.917.616	102.363	1.059.054.842.698	14.582,20
2021	144.907.809.744	70.720	1.186.505.455.736	14.308,14

Data Source: FAO & World Bank (2024)

Based on table 1 above, it can be seen that the lowest foreign exchange reserves in 2013 were US$ 99,386,826,239 billion compared to the previous year in 2012, namely US$ 112,797,627,833 billion. The highest value of foreign exchange reserves in 2021 was US$ 144,907,809,744 billion, this figure is the largest figure in 10 years and the lowest figure for foreign exchange reserves in 2013 was US$ 99,386,826,239 billion. Then, exports of cashew nuts with the highest value in 2019 amounted to US$ 121,028 million, this was due to the increase in global demand for cashew nuts, while the amount of cashew nut exports with the lowest value in 2013 was US$ 56,626 million. However, in 2014 exports of cashew nuts increased again by US$ 69,730 million.

Gross Domestic Product fluctuates every year. In 2020 Gross Domestic Product (GDP) decreased in 2020 by US$ 1,059 trillion, compared to the previous year in 2019 which was US$ 1,119 trillion, this was caused by the Covid-19 pandemic which entered Indonesia. However, the increase in Gross Domestic Product (GDP) will increase in 2021 by US$ 1,182 trillion. The movement of the rupiah exchange rate against the United States dollar is one that is always monitored dynamically by the government. In 2020, the Indonesian currency exchange rate weakened by IDR 14,582.20/US$, which is the lowest exchange rate in the last 10 years. This was caused by very strong external factors, causing the rupiah to depreciate quite deeply at the peak of the spread of the virus. corona in the world. However, in 2021 the exchange rate strengthened again to IDR 14,308.14/US$.

Various studies conducted by previous researchers regarding exports, gross domestic product, and the exchange rate on Indonesia's foreign exchange reserves illustrate a contradictory relationship. There is a direct correlation, as research conducted by (Astuty, 2020) found that the variables export, gross domestic product and exchange rate had a positive and significant effect on Indonesia's foreign exchange reserves. Furthermore, research conducted by (Fiddien et al., 2023) found that the export variable in the short term had a significant and positive effect on Indonesia's foreign exchange reserves, and in the long term the export variable had a significant and positive effect on Indonesia's foreign exchange reserves.

The findings of previous studies have examined many export variables, gross domestic product and the exchange rate on Indonesia's foreign exchange reserves. Such as research (Pamungkas et al., 2020), (Ardianti & Swara, 2018), (Mustafa & Andriyani, 2020), (Widiyanto & Suryono, 2020), (Astuty, 2020), (Rianda, 2020), and (Fakhrurrazi & Juliansyah, 2021). The research that has been carried out examines each dependent and independent variable that has a relationship within it.

The above study has also focused on Indonesia's foreign exchange reserves. Some of these studies still use the OLS model and also use exports in general, whereas this research focuses on the cashew nut commodity, as well as Gross Domestic Product (GDP) and the exchange rate as factors that influence foreign exchange reserves using the innovative ARDL (Autoregressive Distributed Lag) model. is considered to provide information on the long-term effects due to permanent changes in the 1986-2021 period in order to enrich existing empirical knowledge on the foreign exchange reserve variable.

From the description of the data phenomenon, research gap and novelty above, it can be concluded that cashew nut exports, Gross Domestic Product (GDP), exchange rates and foreign exchange reserves have significant problems and are in direct contrast to theory.

2. LITERATURE REVIEW

Foreign Exchange

Foreign Exchange Reserves are government savings (assets) in the form of other countries' currencies, gold and securities held by Bank Indonesia as the Central Bank which will be used as a means of payment for international transactions. According to (Dananjaya et al., 2019) foreign exchange is the total foreign currency owned by the state or government and private sector of a country which is generally referred to as foreign exchange reserves which can be known from the balance of payments position or international balance of payments. The types of foreign exchange reserve components can be in the following form, (Gandhi, 2006) in (Silfia, et al., 2018).

1. Monetary Gold (Monetary Gold)

Monetary gold is a stock of gold owned by the monetary authority in the form of gold bullion with certain international requirements (London Good Delivery/LGD), pure gold, and gold currency located both domestically and abroad. This monetary gold is a foreign exchange reserve that does not have a financial liability position like Special Drawing Rights (SDR). Monetary authorities who increase their gold holdings, for example by mining new gold or buying gold from the market, must monetize the gold. On the other hand, authorities who wish to release gold holdings for non-monetary purposes must demonetize the gold.

2. Special Drawing Rights (SDR)

SDR in the form of fund allocation from the International Monetary Fund (IMF) is a facility provided by the IMF to its members. This facility allows member countries to increase or decrease foreign exchange reserves. The purpose of creating SDR is to increase international liquidity.

3. Reserve Position in the Fund (RPF)

RPF is a country's foreign exchange reserves which are in the IMF account and shows the position of the country's wealth and claims to the IMF as a result of the country's transactions with its membership in the IMF. IMF members are in the Fund's General Resources Account position which is recorded in the foreign exchange reserve category. Member's foreign exchange reserve position is reserve tranche purchases that can be withdrawn by members (according to the debt agreement) given to members.

4. Foreign Exchange consists of:

a. Foreign banknotes and deposits
b. Securities: investments, shares, bonds and other money market instruments.
c. Financial derivatives

Foreign exchange includes monetary authority claims to non-residents in the form of currency, deposits, securities and financial derivatives, examples of which are forwards, futures, swaps and options.

5. Other bills.

Other bills are the last type included in bills that are not included in the bill categories mentioned above.

The benefits of foreign exchange are also called foreign exchange functions. Some of the benefits or functions of foreign exchange (Wahongan et al., 2022):

1. As a medium of exchange in transactions between countries (international)
2. Used as a tool to pay foreign debt installments.
3. To stabilize a country's currency.
4. Used to finance activities/programs related to relations between countries.
5. Source of income for the state which is used for national development.

Foreign exchange reserves are the main core in the development of the Indonesian state, if an economic crisis occurs due to export foreign exchange being lower than import foreign exchange. To maintain Indonesia's foreign exchange reserves to remain stable is to maintain matters related to foreign exchange reserves such as exports.

Expor

Physically, exporting means transporting goods produced by one country to another country for sale. These deliveries will create a flow of spending to the corporate sector. According to Rianda, (2020) exports reflect trade activities between countries which provide encouragement in the dynamics of international trade growth, so that developing countries have the possibility to achieve economic progress. Therefore, exports of goods and services increase total expenditure which ultimately leads to an increase in national income or thereby increases the country's foreign exchange reserves.

Exports are the production or sale of goods and services from one country to another country or to the international market with applicable laws and regulations. Export activities occur because demand for goods and services is met domestically, because these goods and services are quite competitive in price and quality with similar products on the international market. The most promising export factor is a country's ability to produce goods that are competitive in foreign markets. In creating competitiveness, it is necessary to increase the quality standards of export commodities to avoid rejection (claims) by foreign buyers (importers) (Aritonang et al., 2020).

Exports play an important role in a country's economy and contribute to economic growth, job creation and financial stability. The country's foreign exchange income is obtained from export activities originating from the sale of goods or services abroad which can be used to finance infrastructure development projects, as well as to improve community welfare. According to Sutedi (2014), the role of the export sector is as follows:

1. Expanding markets across the ocean for certain goods, as emphasized by classical economists, an industry can grow quickly if the industry can sell its products across the ocean rather than only in a narrow domestic market.
2. Exports create new effective demand, goods in the domestic market seek innovation that is intended to increase productivity.
3. Expanding export activities facilitates development, because industry grows without requiring as much investment in social capital as is needed.

A country can export goods it will produce to other countries if these goods are needed in other countries and they cannot produce these goods themselves. Competitiveness in foreign markets, economic conditions in other countries, protection policies in foreign countries, income and foreign exchange rates are the main factors that will determine a country's ability to export abroad.

The more a country exports, the more foreign exchange it earns, which means the country's foreign exchange will increase. Indonesia has two types of exports, oil and gas and non-oil and gas. Exports of oil and gas products include oil and gas, while non-oil and gas exports include agricultural and other plantation products. Additionally, it is very profitable to export goods from one country to another when the other country needs them.

Gross Domestic Product (GDP)

The economic development of a country can be measured by economic growth, namely the growth in production of goods and services in an economic area within a certain period of time. This output is measured using the concept of added value (value added) produced by economic sectors in a region and is collectively called Gross Domestic Product (GDP). Gross domestic product is considered the best economic indicator to assess a country's economic development. The high GDP value of a country's population indicates that the purchasing power of that country's population is also high (Faisol, 2017). Therefore, GDP can be used as an indicator to measure a country's economic performance or reflect the government's success in transforming the economic sector.

In neoclassical economic growth theory, according to Joseph Schumpeter, a country's economy can improve if entrepreneurs make innovations and new combinations related to production processes and business investments. This theory explains that technological progress is largely determined by the entrepreneurial spirit of people who are able to see business opportunities and expand their businesses. In this way, additional employment opportunities are available to absorb the number of workers which always increases every year.

The amount of national income is the same as gross domestic product which is influenced by several factors, including the following (Mulyasari, 2020):

a. Overall Demand and Supply (Aggregate Demand and Supply)
   Overall demand (Aggregate Demand) is the total public demand for goods and services at a certain price level. Meanwhile, the overall supply (Aggregate Supply) is the total supply of goods and services offered by producers at a certain price level. Both can increase gross domestic product.

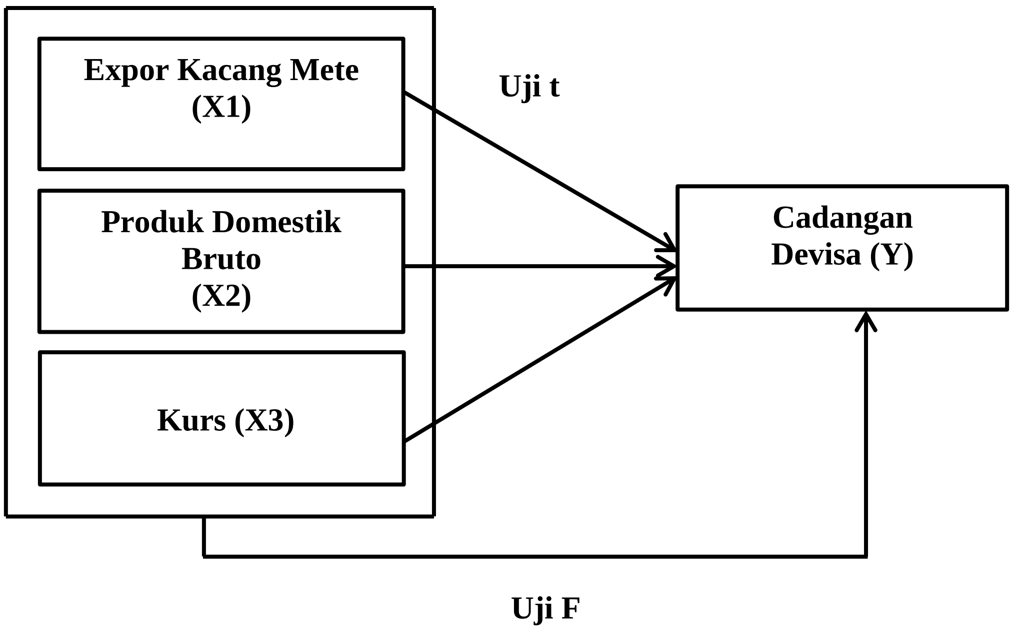
b. Investment
   Investment has a big impact on increasing national income. Increasing domestic investment will increase domestic production. This condition affects the level of national income in a certain period of time.
c. Consumption and Savings
   Consumption is the part of people's income that is used to purchase goods and services to meet human needs. Savings refers to personal income that is not used for consumption purposes. Increased consumption and public savings can increase gross domestic product.

Exchange Rate

Exchange rate is a value that shows the amount of a country's currency. Given the huge influence on the current account balance and other macroeconomic variables (Astuti et al., 2016). With the exchange rate, a country can transact with other countries conducively. The strengthening of the exchange rate in a country will show the economy of that country. However, the obstacle faced in this currency is that not every country has the same currency value. The exchange rate crisis not only causes prices to soar, but also causes a fairly deep economic contraction (Alawiyah et al., 2019).

Hypothesis

The conceptual framework describes the flow of a study. The flow of this study consists of three independent variables, namely cashew nut exports, Gross Domestic Product (GDP) and exchange rates which will be tested for their influence on the dependent variable, namely foreign exchange reserves. The conceptual framework in this study is as follows:



Picture 1. Conceptual framework

According to Sugiyono, (2017) a hypothesis is a temporary answer to the formulation of the problem. This is still temporary and needs to be confirmed with empirical data. The hypothesis is formulated based on a framework that represents the answer to the formulated problem. Based on the problems and objectives of this study, it can be formulated as follows:

1. H01: It is suspected that cashew nut exports do not affect Indonesia's foreign exchange reserves in the short and long term.

   Ha1: It is suspected that cashew nut exports affect Indonesia's foreign exchange reserves in the short and long term.
2. H02: It is suspected that gross domestic product (GDP) does not affect Indonesia's foreign exchange reserves in the short and long term.

   Ha2: It is suspected that gross domestic product (GDP) affects Indonesia's short and long term foreign exchange reserves.
3. H0 3: It is suspected that the exchange rate does not affect Indonesia's foreign exchange reserves in the short and long term.

   Ha3: It is suspected that the exchange rate has an effect on Indonesia's foreign exchange reserves in the short and long term.
4. Ha4: It is suspected that cashew nut exports, Gross Domestic Product (GDP) and the exchange rate do not have a simultaneous effect on Indonesia's foreign exchange reserves in the short and long term.

   H04: It is suspected that cashew nut exports, Gross Domestic Product (GDP) and exchange rates have a simultaneous effect on Indonesia's foreign exchange reserves in the short and long term.

3. RESEARCH METHOD

Object is a problem that is the focus of discussion. The object used in this study is one of the plantation commodities, namely cashew nut exports, Gross Domestic Product (GDP), exchange rates and foreign exchange reserves. Location is the place where a study takes place, this study takes place in Indonesia. The type of data used in this study is quantitative data. The purpose of the study is to obtain data, so the data collection method is the most vital step in a study. Researchers who conduct research will not get the desired data if they do not know the method of data collection. Data collection is used by researchers to collect valid data, and how researchers determine the right method to obtain data and draw conclusions.

Operational variables are how instrumental variables can be used to measure research variables. To understand this part of the research more easily, the definition of each variable used will be explained, including:

1. **Foreign Exchange Reserves**
   Foreign exchange reserves are foreign currency reserves owned by a country stored in the Central Bank and can be used for international payments. Foreign exchange reserves in this study are measured in billions of US dollars.
2. **Cashew Nut Exports**
   Cashew nut exports are selling or transporting commodity goods or production goods to the international market or to other countries with the aim of obtaining profits in the form of foreign exchange. Cashew nut exports in this study are measured in millions of US dollars.
3. **Gross Domestic Product (X2)**
   Gross Domestic Product (GDP) is the amount of added value generated by all business units in a particular country or is the amount of the value of final goods and services produced by all economic units. GDP in this study is measured in billions of US dollars.

4. **Exchange rate (X3)**
   Exchange rate is a comparison of the value of a national currency with the currency of another country. In this study, the unit used is the value of the local currency per US dollar (LCU/US$).

4. RESULTS AND ANALYSIS

The t-test is used to test the hypothesis partially to show the influence of each independent variable individually on the dependent variable. The t-test is a test of the regression coefficient of each independent variable on the dependent variable to determine how much influence it has. To conclude whether it has an influence or not, you must compare the calculated t value with the t table. To get the t table, namely by: $\alpha = 5\%$, then $t\ \alpha / 2 = 0.025$ in df: (n-k) = 36 - 4 = 32 = 2.03224. Here are the results of the partial test:

Tabel 2. T-test

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
D(LOGCD(-1))	-0.160420	0.189564	-0.846257	0.4061
D(LOGCD(-2))	-0.301103	0.166843	-1.804714	0.0842
D(LOGEKM)	0.084148	0.057188	1.471423	0.1547
D(LOGEKM(-1))	-0.073830	0.056718	-1.301693	0.2059

D(LOGEKM(-2))	-0.014246	0.063502	-0.224340	0.8245
D(LOGEKM(-3))	-0.132934	0.054286	-2.448769	0.0224
D(LOGPDB)	1.098156	0.386711	2.839733	0.0093
D(LOGKURS)	0.822370	0.304412	2.701501	0.0127
C	0.005964	0.049289	0.121007	0.9047

The F test is a simultaneous regression relationship test that aims to determine whether all independent variables together have a significant influence on the dependent variable. To determine whether it has an influence or not, the calculated f value must be compared with the f table. To obtain the f table, namely: df = (k-1)(n-k) is (4-1)(36-4) = (3)(32) at α = 10% is: 2.25, and the calculated F is: 2.65

Tabel 3. F-test

Test Statistic	Value
F-Statistic	2.652988
Probabilitas	0.031943

Based on the F-Test Result Table, because fhit > ftab, or 2.65 > 2.25, then reject H0 and accept Hα, which means that simultaneously (together) cashew nut exports, gross domestic product and exchange rates have a significant and positive effect on Indonesia's foreign exchange reserves. This can also be seen from the probability of 0.031 < 0.05.

Based on the results of the tests that have been carried out, it can be concluded that in the short term, cashew nut exports have a positive and significant effect on Indonesia's foreign exchange reserves. This is in line with research (Hidayah, 2022) where the export variable in the short term has a positive and significant effect on foreign exchange reserves. This means that cashew nut exports have a significant effect on Indonesia's foreign exchange reserves because if Indonesia often exports cashew nuts to other countries, Indonesia will obtain foreign exchange from importing countries, with the increasing number of cashew nuts exported, Indonesia's foreign exchange reserves will increase.

Based on the results of the tests that have been studied, it can be concluded that in the short term, gross domestic product has no significant effect on foreign exchange reserves. The results of this study are in line with previous studies, namely (Resdianto et al., 2022) with the results of research in the short term, gross domestic product has no effect on foreign exchange reserves. It can be interpreted that changes in GDP usually take time to affect capital inflows and outflows and trade because the process involves other economic factors. Therefore, in the short term, the correlation between gross domestic product and foreign exchange reserves is not always strong in the short term.

Based on the results of the tests that have been carried out, it shows that in the short term the exchange rate does not have a significant effect on Indonesia's foreign exchange reserves. This is in line with research conducted by (Fadillah et al., 2023) in their research found that the exchange rate has no significant effect on Indonesia's foreign exchange reserves. In the study (Khusnatun & Hutajulu, 2021) the results presented are also in accordance with this study, namely that the exchange rate has no significant effect on foreign exchange reserves. The insignificance of the exchange rate on foreign exchange reserves can be caused when the exchange rate experiences pressure or weakening and the limited foreign exchange reserves of a country. Therefore, although

Indonesia's foreign exchange reserves are important in maintaining exchange rate stability, limited foreign exchange stocks can also limit their impact on changes in exchange rates.

5. CONCLUSION

The purpose of this study is to evaluate the short-term and long-term effects of cashew nut export factors, Gross Domestic Product (GDP) and exchange rates on Indonesia's foreign exchange reserves. The following conclusions can be drawn from the study using the ARDL (Autoregressive Distributed Lag). Cashew nut exports have a negative and insignificant effect on Indonesia's foreign exchange reserves in the long term, while in the short term cashew nut exports have a positive and significant effect on Indonesia's foreign exchange reserves. Gross Domestic Product (GDP) has a positive and significant effect on Indonesia's foreign exchange reserves in the long term, while in the short term Gross Domestic Product (GDP) has no significant effect on Indonesia's foreign exchange reserves. Exchange rates have a positive and significant effect on foreign exchange reserves in the long term, while in the short term exchange rates have no significant effect on Indonesia's foreign exchange reserves.

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