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# Strengthening Foreign Reserve Exchange Through The Relationship Of Liquidity and Trade Variables: Evidence From Southeast Asian Selected Countries

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**Keywords**

*Strengthening, Foreign Reserve Exchange, Liquidity, Trade Variables, Southeast Asian.*

**ABSTRACT**

*The recent years have witnessed intense debates on the enhancement of foreign exchange reserves' performance, yet the significance of this improvement for developing countries still needs to be answered. This study aims to investigate the connection and impact between money supply and exports on foreign exchange reserves in select Southeast Asian nations, namely Indonesia, Thailand, Malaysia, the Philippines, and Singapore. We utilised the Ordinary-Least Square (OLS) and Johansen Cointegration Test models to examine the effects of money supply and exports on foreign exchange reserves using annual data from 1990 to 2019 in these five ASEAN countries. Our findings indicate that, over the long term, money supply and exports exert a positive and substantial influence on the performance of foreign exchange reserves in these ASEAN countries. Our policy recommendation underscores the need for efforts aimed at bolstering foreign exchange reserves to prioritise the involvement of the respective governments in these selected ASEAN countries, both domestically and globally, through a series of collaborative initiatives designed to enhance foreign exchange reserves' performance.*

## INTRODUCTION

The existence of the economy in the global constellation is very important for every country. The existence of a country means that the country has a level of independence in managing and building an optimal image regarding the national development of that country (Marlinah, 2017). The increasing existence of the state will be an important factor in the continuity of a country's national development. Increasing the achievement of a country's economic indicators, which are growing massively, will increase the perception of effectiveness in resource management and guarantee the development of the performance of the country's economic variables (Dewi et al., 2013). The level of existence of a country in the global arena is influenced by the country's economic development performance, both internally and externally (Mateane, 2023; Matsumoto, 2022).

Economic development is a process carried out by a country with the aim of increasing its economic existence by increasing economic activities or activity in increasing the standard of living or prosperity (Income per capita) of the community (Witjaksono, 2009). One of the goals of economic development is to improve community welfare. Economic development and economic growth are two very related concepts, where with economic development, there will also be economic growth in a country (Benigno et al., 2022; Chakrabarti & Sen, 2023). Economic growth is a measure of economic performance shown through the process of increasing the production of goods and services in national economic activities (Ma'ruf & Wihastuti, 2008). In the development of the global economy, the performance of economic growth, which is proxied by the *Gross Domestic Product* (GDP) indicator, experiences fluctuations along the way.


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Optimising the management of resource factors in the economy, which is primarily an open economy, is very dependent on both the internal and external sectors (Khan & Anwar, 2022). In terms of the external sector, the stability of liquidity indicators plays an important role in maintaining the balance and stability of various connectivity of the country's economy with the global economy. Foreign exchange reserves as an indicator of external sector liquidity are very necessary for economic activities, including investment, trade transactions and goods and services production activities (Sonia & Setiawina, 2016).

Given its linkage with the external sector, the performance of Foreign Exchange Reserves is closely related to other external variables, namely Exports (Sonia & Setiawina, 2016). Foreign exchange reserves are the liquidity value of an economy in international transactions. These international transactions include imports and exports. Export activities are trading activities of goods and services outside the customs area, for which the exporting country will receive payments, which are calculated as cash foreign exchange reserves (Karkowska & Palczewski, 2023; Kim et al., 2023). Thus, changes in export performance will influence the performance of the foreign exchange reserves variable. This is supported by the results of research conducted by (Andriyani et al., 2020). The study examined how Foreign Debt, Exchange Rates, Inflation, and Exports impacted Indonesia between 2016 and 2018. The findings revealed a noteworthy and favourable impact of exports on foreign exchange reserves. Apart from that, research conducted by (Simamora & Widanta, 2021), which analysed the influence of exports, exchange rates and CPI on foreign exchange reserves in Indonesia in 2014-2018, also indicated similar results, where exports had a positive and significant influence on foreign exchange reserves.

Apart from the external side, foreign exchange reserves are also influenced by financial performance, which is proxied by the Money Supply variable. The money supply in the narrow sense (narrow money/ M1) is money in circulation, which only consists of currency and demand deposits. Money in circulation in a broad sense (broad money/M2) is money in circulation, which includes currency, demand deposits and controlled money (rupiah and foreign currency savings belonging to residents who have temporarily lost their function as a medium of exchange). Economic fluctuations are caused more by changes in the money supply because of changes in demand for domestic production, which is an important factor that causes changes in the acceptance of international trade transactions. It can be concluded that if the money supply increases, then foreign exchange reserves increase with a positive correlation. Research conducted by (Niaz et al. et al., 2014) shows that there is a positive and significant relationship between the amount of money circulating in Bangladesh from 1972-2011. Apart from that, research conducted by (Joof Ceesay, 2021) shows that there is a positive and significant influence of foreign exchange reserves on the money supply in the countries of Gambia, Guinea, Sierra Leone, Ghana and Nigeria from 2001 to 2019. However, on the other hand, the relationship between the Export variables, Money Supply and Foreign Exchange Reserves has increasingly complex challenges and dynamics along the way. The results of the discussion of several kinds of literature also show a negative influence on the relationship between Exports and Money Supply on Foreign Exchange Reserves. Research conducted by (Uli, 2016) shows that there was a negative and insignificant influence of exports on foreign exchange reserves in Indonesia during 2011-2014.

The course of economic performance in the countries of Indonesia, Thailand, Malaysia, the Philippines, and Singapore is increasingly crucial, with fluctuations in the performance of each macroeconomic liquidity variable in the form of Exports and Money Supply and the total value of Foreign Exchange Reserves for each country during the period between 1990 until 2019 (Kim et al., 2020; Tsuruta, 2023; Wang et al., 2023). Economic challenges such as the 1997 Asian Crisis and the 2008 Sub Prime Mortgage Crisis in the United States caused a decline in the performance of liquidity variables and the external sector in Asian countries, including Indonesia, Thailand, Malaysia, the Philippines, and Singapore. In addition, the Asian financial crisis of 1997 had a broad impact on the economies of these countries. The discussion becomes even more interesting, considering that almost all the currencies of the countries studied in this research are included in the Soft Currency group, which is vulnerable to the influence of the external sector (Dąbrowski, 2021; Eichengreen et al., 2023; Ho, 2022).

Based on empirical conditions, several previous studies have focused on discussing the relationship and influence of the Foreign Exchange Reserve variable in a country's economic landscape but have not fully explained the influence and relationship of the Foreign Exchange Reserve variable in the economic domain of a particular region. Apart from that, one of the urgencies in this research is that almost all the currencies of the countries discussed in this research are classified as Soft Currencies. Therefore, it is very important to study and discuss these problems in the countries of Indonesia, Thailand, Malaysia, the Philippines, and Singapore. This study aims to fill the gap in the literature and investigate the influence of Money Supply and Exports on Foreign Exchange Reserves in selected ASEAN countries.

## METHODS

The type of research used in this research is quantitative descriptive research. The type of data used in this research is secondary data obtained through World Bank publications. The object of this research focuses on analyzing the influence of the independent variables, namely Money Supply and Exports, on Foreign Exchange Reserves as the dependent variable of selected ASEAN countries consisting of Indonesia, Malaysia, Thailand, the Philippines, and Singapore for the period 1990 - 2019.

This study investigates the impact of Money Supply and Export variables on Foreign Exchange Reserves in a group of Southeast Asian countries, specifically Indonesia, Malaysia, Thailand, the Philippines, and Singapore. The analysis employs panel data regression, which combines time series data with cross-sectional data, utilising estimation methods that include the Common Effect Model, Random Effect Model, and Fixed Effect Model. Additionally, two model estimation techniques, the Chow test and the Hausman test, are utilized to determine the most appropriate panel data regression estimates. Hypothesis testing in this research involves the use of the F-test and t-test.

The core focus of this research lies in the analysis of the independent variables, Money Supply (JUB) and Exports (EKP), and their influence on the dependent variable, Foreign Exchange Reserves (DEV). The equations used in this study are outlined as follows:

$$DEV_{it} = \alpha + \beta_1 JUB_{it} + \beta_2 EKP_{it} + e$$

Which: DEV represents Foreign Exchange Reserves across the chosen ASEAN nations, including Indonesia, Malaysia, Thailand, the Philippines, and Singapore. JUB denotes the Money Supply within these selected ASEAN countries. EKP stands for Exports in these same ASEAN nations. α signifies the regression coefficient, while β1, β2, and β3 represent the coefficients of the independent variables. ε is the error term, i corresponds to the five selected ASEAN countries (Indonesia, Malaysia, Thailand, the Philippines, and Singapore), and t stands for the year.

## RESULTS

Through the results of the analysis, both general analysis and OLS analysis will explain the behavior of the money supply and export variables in influencing foreign exchange reserves in selected ASEAN countries. In OLS analysis, there are several important tests, which include the Common Effect Model, Random Effect Model, and Fixed Effect Model. Two model estimation techniques, The Chow test and the Hausman test, are applied to ascertain the suitable panel data regression estimates. For hypothesis testing in this study, the F-test and t-test are employed.

In general, the development of the variable performance of the money supply, exports and foreign exchange reserves of Indonesia, Thailand, Malaysia, the Philippines, and Singapore experienced several fluctuations in its development. In 1997, the total value of exports from these countries decreased because of the Asian financial crisis of 1997 - 1998. The financial crisis caused a decrease in external demand for goods and services produced by the domestic economy of each country, which occurred during the crisis. The financial. The momentum for export value fluctuations occurred again in 2008, that year, the subprime mortgage crisis occurred in the United States. The subprime mortgage crisis in the United States has again caused a decline in external demand for goods and services from the domestic economies of Indonesia, Thailand, Malaysia, the Philippines, and Singapore. Recovery began in 2009 before experiencing a decline again towards 2019 due to the decline in global economic performance because of the Covid-19 pandemic.

There are three types of estimation approaches for selecting panel data regression estimation techniques, namely the Common Effect Model, Fixed Effect Model and Random Effect Model. To determine the best technique to use for panel data regression, tests are carried out, namely the Chow test and the Hausman test.

**Tabel 1. Chow Test Result**

| Fixed Effect Model | | |
|---|---|---|
| F test that all u_i=0 | F(2,143) = 1824,38 | Prob > F = 0.0000 |

The Chow test results presented in Table 1 indicate a significance value of 0.0000, which is less than 5%. As a result, Ho is statistically rejected, and Ha is accepted, thus affirming the suitability of the Fixed Effect Model (FEM) for panel data regression. Given that the Chow test results favor the Fixed Effect Model (FEM), it is essential to conduct the Hausman test to determine the most appropriate model between the Fixed Effect Model (FEM) and the Random Effect Model (REM).

**Tabel 2. Hausman Test Result**

| Test Summary | Signifikansi |
|---|---|
| Cross-section random | 0,0000 |

Referring to the results of the Hausman test displayed in table 2, the significance value derived from the random cross-section is 0.0000, which is less than 0.05. Consequently, Ho is statistically rejected, and Ha is accepted, confirming that the suitable estimation model for panel data regression is the Fixed Effect Model.

**Table 3. Results of Panel Data Regression Estimation Using Common Effect Model, Fixed Effect Model, and Random Effect Model Methods**

| Variable | Common Effect Model | | Fixed Effect Model | | Random Effect Model | |
|---|---|---|---|---|---|---|
| | Coefficient | Prob. | Coefficient | Prob. | Coefficient | Prob. |
| C | -4,33 | 0,039 | -6,00 | 0,001 | -6,01 | 0,275 |
| JUB | 0,0012759 | 0,000 | 0,0017823 | 0,000 | 0,00174 | 0,000 |
| EKP | 0,3706997 | 0,000 | 0,03167606 | 0,000 | 0,3222032 | 0,000 |

After conducting assessments of model suitability in panel data regression through the Common Effect Model, Fixed Effect Model, and Random Effect Model methods, the most favorable approach, as indicated by the test results across all three models, is the Fixed Effect Model. Consequently, the Fixed Effect Model has been chosen as the most appropriate model for this research. Both the Chow Test and Hausman Test also confirmed the Fixed Effect Model as the optimal choice.

Subsequently, utilizing the Fixed Effect Model method, as detailed in Table 3, the regression results reveal a constant value of 6.00 with a negative sign. When considering the Money Supply and

Export variables as constant, foreign exchange reserves are projected to decrease by 6 percent. Notably, the Money Supply variable (JUB) exhibits a positive impact on foreign exchange reserves, evident in the coefficient value of 0.0017823 for this variable. If there is an increase in the money supply by 1 percent, foreign exchange reserves will increase by 0.0017823 percent. These results indicate that the money supply will increase the level of liquidity supply in international trade transaction activities through conversion into foreign currency, thereby indirectly increasing the value of foreign exchange reserves. Thus, the money supply variable has a significant effect on foreign exchange reserves.

Furthermore, the export variable has a positive influence on foreign exchange reserves. This condition can be seen from the coefficient value on the export variable, namely 0.03167606, which indicates that if exports increase by 1 per cent, there will be an increase in the value. This condition indicates the important role of exports in encouraging an increase in foreign exchange reserves in the economy. Thus, the export variable has a significant influence on foreign exchange reserves.

The money supply has a positive and significant influence on foreign exchange reserves, considering its important role in providing additional supply for foreign exchange reserves when needed by the government in international transactions. The results of this research are in line with (Sonia & Setiawina, 2016) In Indonesia, it is observed that the money supply variable exerts a positive and noteworthy impact on exports, while the money supply variable also has a positive and significant effect on foreign exchange reserves. Additionally, the export variable demonstrates a positive influence on foreign exchange reserves. The results of this research were confirmed by (Niaz Murshed Chowdhury et al., 2014), who showed that the variables of the export price index and money supply had a positive and significant influence on foreign exchange reserves in Bangladesh.

Apart from that, the export variable also contributes to a positive and significant influence on foreign exchange reserves in the five selected ASEAN countries. This is considering the role and direct contribution of exports in foreign exchange reserves because of payments for international trade transactions. Exports are trade transactions outside the customs area. Returns from export transaction payments will be recorded as foreign exchange reserves. Therefore, the increasing export achievements of the five selected ASEAN countries will increase the value of their respective foreign exchange reserves. The results of this research are in line with Andriyani et al. (2020), Niaz Murshed Chowdhury et al., (2014), Anwar et al., (2019), Djamal et al., (2023), Isramaulina & Ismaulina (2021), Laksono & Tarmidi (2021), Simamora & Widanta (2021) and Manto (2022) which show that the export price index and money supply variables have a positive and significant influence on foreign exchange reserves in Bangladesh.

Overall, the results of this research show that there is a positive relationship and influence between money supply and exports on foreign exchange reserves in selected ASEAN countries, namely Indonesia, Thailand, Malaysia, the Philippines, and Singapore during the period 1990 - 2019. There is encouragement for optimal and sustainable export performance and strengthening the value of the money supply in society has been proven to have increased foreign exchange reserves as external liquidity in selected ASEAN countries.

**Discussion Of Analysis Results in Selected Asean Country**

A continuous increase in the total value of national output demonstrates development of economic performance. Sustainable development of economic performance results from a constellation of macroeconomic variables. What is important is the existence of the external side of the economy, which has a big influence on the development of domestic economic performance. Foreign exchange reserves encompass all foreign assets under the supervision of the monetary authority, available for addressing imbalances in the balance of payments or ensuring monetary stability through interventions in the foreign exchange market and other related purposes. In accordance with this explanation, a nation's foreign exchange reserves serve the dual purposes of preserving exchange rate stability and funding deficits in the balance of payments (Benny, 2013).

The results of this research show that there is a positive influence of all independent variables on the dependent variable, namely Foreign Exchange Reserves in selected ASEAN countries. In this research, the Money Supply variable is proven to have a positive and significant influence on Foreign Exchange Reserves. This is due to the need to provide funds in the form of foreign currency to be used for international transactions, such as payments for import transactions and maturing foreign debt. Suppose the value of foreign exchange reserves held by the Central Bank needs to be increased. In that case, a large amount of domestic money will need to be exchanged into foreign currency, which will be used in the transaction. Therefore, the higher the value of the amount of money circulating in society, the higher the value of accumulated foreign exchange reserves. The results of this research support previous research conducted by (Sonia & Setiawina, 2016; Suryono, 2019), which explains the positive influence of money supply on foreign exchange reserves.

Apart from that, in this research, it is also proven that the export variable has a positive and significant influence on the foreign exchange reserves variable. The coefficient value shows that increasing exports will contribute to increasing the value of foreign exchange reserves. This is because export transaction payments will be recorded in the balance of payments. Therefore, the higher the value of exports produced, the higher the value of foreign exchange reserves. The results of this research also confirm the results of previous research regarding the positive influence of exports on foreign exchange reserves (Andriyani et al., 2020; Dananjaya et al., 2019; Isramaulina & Ismaulina, 2021; Joof & Ceesay, 2021; Juliansyah et al., 2020; Laksono & Tarmidi, 2021; Simamora & Widanta, 2021)

Increasing the performance of foreign exchange reserves is one of the determining factors in external stability through the exchange rate. Currency exchange rates are a reference for economic actors in international trade and investment transactions. The greater the value of foreign exchange reserves held by the central bank, the greater the stability of the country's domestic currency exchange rate. On the other hand, the more the value of foreign exchange reserves held by the central bank decreases, the more the stability of the country's domestic currency exchange rate will decrease. This is in accordance with research conducted by (Yusuf & Ichsan, 2019) entitled "Analysis of the Effectiveness of Using Foreign Exchange Reserves, Foreign Debt and Exports on Exchange Rate Stability".

Furthermore, foreign exchange reserves are used as an indicator of global ratings. Foreign exchange reserves constitute a component of a nation's savings. Therefore, the expansion and magnitude of these reserves serve as an indicator to international financial markets regarding the trustworthiness of a country's monetary policies and its financial standing. The better the rating given to an economy's foreign exchange reserve position, the more it will increase the inflow of foreign funds into the domestic market, both through foreign debt and foreign investment, both of which are used to finance domestic economic activities.

Almost all the countries that are the topic of this research are developing countries which are also classified as middle- and high-income countries. The policy focus related to external liquidity must be one of the main priorities in the economic development strategy of each country, as well as in the Southeast Asia region and globally. On the other hand, most of the currencies from the countries that are case studies in this research are classified as soft currencies, where currencies that are classified as soft currencies are very vulnerable to impulses or even shocks, which mainly come from the external sector.

The role of the Government of each selected ASEAN country is very necessary through a series of policies that encourage growth in the performance of foreign exchange reserves, which, in accordance with the results of this research through the money supply and exports will have a positive impact not only on the performance of foreign exchange reserves, but also on other variables. – a variable that is directly related to the foreign exchange reserve variable, which has a major influence on the domestic and regional economy.

At the local economic level, each government is expected to improve export performance through several policies such as diversification of import substitution industries which will reduce dependence on imported goods. Apart from that, it is hoped that the policies of the Central Bank of each country can intervene, such as the policy of requiring the use of local currency in transactions within the territory of that country, which will protect the performance of the money supply in each country. In the regional and global order, each Government is expected to play an important role through a series of general and thematic collaborations in finding the right solutions to improve the performance of each macroeconomic variable.

## CONCLUSION

This research analyzes the influence of money supply and exports on foreign exchange reserves in selected ASEAN countries, namely Indonesia, Malaysia, Thailand, the Philippines, and Singapore. Ordinary Least Square (OLS) analysis is used to explain the influence of the money supply and export variables on foreign exchange reserves. The empirical findings from this research show that the increase in the independent variables, namely money supply and exports, has a positive impact on foreign exchange reserves in selected ASEAN countries. The discussion becomes increasingly important considering the urgency of the foreign exchange reserve variable on the economy in the ASEAN countries selected in the research, especially in relation to currency exchange rates. This is considering that almost all the currencies of the ASEAN countries selected in the research are included in the Soft Currency category, Which is vulnerable and volatile. On the other hand, the portion of the value of the money supply and exports in selected ASEAN countries has great potential and tends to show an increasing trend. This is very important in determining the performance of foreign exchange reserves of selected ASEAN countries and the global economy.

The government, in this case, the government of each selected ASEAN country, must maximise their role, both in the domestic economy and at the global level. Increasing export achievement needs to be increased through expanding export destination countries through specialisation. In this way, domestic production from selected ASEAN countries will be absorbed more optimally in the global market. Apart from that, interest rate policy needs to be maximised to maintain the performance of the amount of money circulating in the domestic economy. At the global level, the governments of each country are expected to maximise the role of organisations and economic cooperation at both regional and global levels. Increasing the role of regional cooperation, such as ASEAN and APEC at the global level, will create a conducive economic climate that will support the performance of the variables Money Supply, Exports and Foreign Exchange Reserves in selected ASEAN countries more sustainably and optimally.

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