International Journal of Educational Review, Law & Social Sciences (IJERLAS)
International Journal of Educational Review, Law And Social Sciences (IJERLAS Journal) | ISSN (e): 2808-487X
Volumes 5 No. 6 (2025)

THE EFFECT OF INFLATION, INTEREST RATE AND EXCHANGE RATE ON INDONESIA'S BALANCE OF PAYMENTS

Nyimas Adheana Darnita[1]*, Weri[2], Asri Diana[3], Fitriyani[4], Diana Sapha A.H[5]
[1,2,3]Universitas Syiah Kuala, Aceh
Corresponding E-mail: nyimas21@mhs.usk.ac.id[1]*, weri@usk.ac.id[2], asridianasj@usk.ac.id[3], fitri@usk.ac.id[4], diana.sapha@usk.ac.id[5]

Received : 15 October 2025	Published : 19 December 2025
Revised : 01 November 2025	DOI : https://doi.org/10.54443/ijerlas.v5i6.3995
Accepted : 28 November 2025	Link Publish : https://radjapublika.com/index.php/IJERLAS

Abstract

This study aims to analyse the effect of inflation, interest rate and exchange rate on Indonesia's balance of payments by using annual data for the period 1993-2024. The method used is Autoregressive Distributed Lag (ARDL) which is able to identify short-term and long-term effects simultaneously, and accommodate the characteristics of non-stationary time series data with different levels of integration. The results show that in the short term, inflation has a positive effect, while exchange rates and interest rates have a negative effect on the balance of payments. Meanwhile, in the long run, exchange rates and interest rates have a positive effect, and inflation has a negative but insignificant effect. The novelty of this study lies in the use of ARDL model with long data coverage and explicit separation between short-run and long-run dynamics, which has rarely been comprehensively discussed in previous studies related to the balance of payments in Indonesia. The government's role is required to maintain price and interest rate stability through adaptive exchange rate management in order to maintain Indonesia's balance of payments.

Keywords: ***Balance of Payments, Inflation, Interest Rates, and Exchange Rates.***

INTRODUCTION

In recent years, the Indonesian economy has faced complex dynamics due to the interaction between domestic and global factors. One important indicator that reflects the stability of Indonesia's external economy is the balance of payments. The balance of payments is a methodical overview of all global economic transactions of a country in a certain period, and is a vital instrument in assessing the external condition of the economy, whether it is in a surplus or deficit position (Mankiw, 2021). A sustainable imbalance in the balance of payments can trigger various economic problems, such as pressure on the rupiah exchange rate, decreasing foreign exchange reserves, and potentially leading to an economic crisis (Dornbusch et al., 2014).

According to Krugman et al. (2018), balance of payments conditions are very vulnerable to external shocks, especially in developing countries whose macroeconomic fundamentals are still relatively weak. Indonesia, as a developing country with a high dependence on commodity exports, is not immune to the risk of global commodity price fluctuations. A decline in the prices of strategic commodities such as oil and coal can reduce export earnings, which negatively affects the trade balance as well as the overall balance of payments (Boediono, 1998). One domestic factor that has a major influence on the balance of payments is inflation. High inflation not only reduces people's purchasing power, but also has the effect of potentially encouraging the depreciation of the rupiah exchange rate. This depreciation in turn increases the cost of reducing the volume of imports and weakens the competitiveness of exports, thus worsening the trade balance deficit and having negative implications for the balance of payments (Nopirin, 2000). Research by Hakeem et al. (2018) in Nigeria also found that high inflation tends to cause a current account deficit due to increased imports and weakened exports.

In addition to inflation, interest rates are also closely related to the balance of payments. An increase in interest rates is often used as an instrument of contractionary monetary policy to control inflationHowever, this policy has a double consequence. On the one hand, high interest rates can attract short-term foreign investment, thereby increasing financial transactions and improving the balance of payments in the short term (Sukirno, 2011). On the other hand, high interest rates can trigger exchange rate appreciation, which can reduce export competitiveness and increase imports, potentially worsening the trade balance (Krugman et al., 2018)

Another important factor is the exchange rate of the rupiah against the US dollar. The exchange rate plays a strategic role in influencing external sector performance. Exchange rate appreciation can reduce export competitiveness, while depreciation has the potential to increase the burden of foreign debt payments and trigger imported inflation (Krugman et al., 2018). The increase in the exchange rate is influenced by various factors, including foreign capital flows, global economic conditions, and market expectations of Indonesia's monetary policy. Hutagalung et al. (2019) stated that although GDP and inflation have a limited effect in the short term, the exchange rate has a significant impact on the balance of payments in the long term.

LITERATURE REVIEW

The balance of payments is an indicator that reflects the stability of a country's economy in its interaction with the international community. The balance of payments documents all economic transactions involving domestic residents and foreign residents, whether in the form of trade in goods and services, income flows, or capital and financial transactions (Sukirno, 2010; Hidayat, 2017). In this study, the balance of payments is measured using the balance of Indonesia's balance of payments in units of million United States dollars, which indicates whether the balance sheet position is in surplus or deficit. Continued imbalances in the balance of payments can trigger exchange rate pressures, reduce foreign exchange reserves, and even trigger an economic crisis (Dornbusch et al., 2014).

Inflation refers to a broad and sustained increase in the prices of goods and services in an economy (Sukirno, 2016). Inflation in this study is measured by the percentage change in the Consumer Price Index (CPI) compared to the previous year, which is a leading indicator of price stability in a country. High inflation causes domestic goods to be relatively more expensive than imported goods, thus weakening the competitiveness of exports and increasing imports, which in turn negatively affects the current account balance, which is the main important component of the balance of payments (Nopirin, 2000). Research by Hakeem et al. (2018) also proved that high inflation can cause a current account deficit due to rising import costs and weakening exports, while Krugman et al. (2018) mentioned that inflation also drives exchange rate depreciation, worsening the balance of payments position.

The interest rate is the return received by the owner of capital for the use of funds within a certain period of time (Mishkin, 2019). In this study, interest rates are measured through Indonesia's nominal interest rate, which is the average interest rate per year. High interest rates are often applied as a monetary policy to contain inflation, but on the other hand can attract short-term foreign capital inflows, thereby increasing the surplus on financial transactions in the balance of payments (Sukirno, 2011). However, Krugman et al. (2018) emphasized that an increase in domestic interest rates can also trigger an exchange rate appreciation which then reduces export competitiveness and increases imports, potentially reducing the current account balance. Syahwani's research (2020) shows that differences in interest rates in the ASEAN region also affect capital flows and the balance of payments.

The exchange rate is the price of exchange between a domestic currency and a foreign currency, which reflects how much domestic currency is needed to obtain one unit of foreign currency (Nopirin, 2012). In this study, the exchange rate is measured through the annual average of the rupiah exchange rate against the US dollar. A fluctuating exchange rate can affect a country's export and import prices, thus having a direct impact on the current account balance (Krugman et al., 2018). Exchange rate depreciation can increase export competitiveness as domestic goods become cheaper for foreign buyers, but at the same time increase the cost of importing capital goods and servicing foreign debt, which is an additional pressure on the balance of payments (Hutagalung et al., 2019). Research by Awagi et al. (2024), Salamah and Wahyuni (2021), and Uchechi et al. (2022) show that the exchange rate has a significant influence on balance of payments conditions, although the effect is different in the short and long term. Although many studies have discussed the relationship between inflation, interest rates, exchange rates, and the balance of payments, most studies are still limited to the short term or have not comprehensively separated the short and long term effects. In fact, the dynamics of the balance of payments is strongly influenced by the interaction of macroeconomic variables over a longer time horizon, especially in developing countries such as Indonesia that are vulnerable to external shocks (Lane & Milesi-Ferretti, 2007).

METHOD

This study focuses on analyzing the effect of macroeconomic variables, namely inflation, interest rates, and exchange rates, on the balance of payments in Indonesia. This study is based on numbers and refers to existing data. The data analyzed are annual data from the period 1993-2024, with a total of 32 data observations and using a time series approach derived from BPS Indonesia and the World Bank. This analysis study applies the

Autoregressive Distributed Lag (ARDL) method to integrate time series data. In the process of estimating time series data regression models, there are a number of commonly applied procedures, namely stationarity test using Augmented Dickey-Fuller (ADF), cointegration test with Bound Testing Approach, ARDL model estimation for short and long term, Error Correction Term (ECT) test, diagnostic tests (autocorrelation, heteroscedasticity) and model stability tests (CUSUM and CUSUMQ) (Gujarati & Porter, 2009). In general, the ARDL model estimation can be formulated through the following equation:

$$\Delta LBOP_t = \beta_0 + \sum_{i=1}^{n1} \beta_1 \Delta LBOP_{t-i} + \sum_{i=0}^{n2} \beta_2 \Delta \pi_{t-i} + \sum_{i=0}^{n3} \beta_3 \Delta i_{t-i} + \sum_{i=0}^{n4} \beta_4 \Delta Le_{t-i} + \emptyset_1 LBOP_{t-1} + \emptyset_2 \pi_{t-1} + \emptyset_3 i_{t-1} + \emptyset_4 Le_{t-1} + \varepsilon_t$$

Where ΔLBOP is Balance of Payment, π is Inflation, i is Interest Rate, Le is Exchange Rate, β is Short Term Coefficient, ∅ is Long Term Coefficient, t is time series, and ε is Error Term.

RESULTS AND DISCUSSION

Results of Data Stationarity Test

Stationarity testing is done at the level first to ascertain whether the data is stationary in its original form, because time series data often contains trends or patterns that can cause regression results to be spurious if not stationary. In this study, the ADF (Augmented Dickey-Fuller) test is used, which has long been widely used because of its ability to identify the unit root by taking into account the lags of the independent variables (Gujarati & Porter, 2009). At the level level, there are 3 variables that are stationary, namely the balance of payments, inflation and exchange rates with constants and trends having a p-value below the 5 percent significance level, so they are declared stationary at the level or integrated at zero order (I(0)). While the p-value of the interest rate at the level is greater than the 5 percent significance level, thus indicating that the data is not stationary at the level, the interest rate variable becomes stationary after the first differentiation.

Table 1. Data Stationarity Test Results

	At Level		At First Difference		
Variabel	**Statistic**	**P-Value**	**Statistic**	**P-Value**	**Kesimpulan**
LOG_BOP	-4,157939	0,0141	-	-	I(0)
INF	-5,088313	0,0014	-	-	I(0)
INT	-2,927955	0,1718	-5,875751	0,0003	I(1)
LOG_ER	4,593726	0,0054	-	-	1(0)

Source: Data Processed, 2025

Cointegration Test Results

Through the bounds testing approach, researchers can identify whether there is a long-run equilibrium between variables by comparing the F-statistic value to the predetermined critical limits. From the Bound Testing results, it is known that the F-statistic value of 9.550 exceeds the upper bound cri *Source: Data Processed, 2025*tical value at the 1%, 5%, and 10% significance levels. This indicates that the null hypothesis (no long-run relationship or cointegration) can be rejected. Thus, it can be concluded that there is a significant long-term relationship (cointegration) between inflation, interest rates, exchange rates, and balance of payments variables in Indonesia.

Table 2. Cointegration Test Results

Test-Statistic	Value	Signif	I(0)	I(1)
F-Statistic	9,550032	10%	2,37	3,2
K	3	5%	2,79	3,67
		2,5%	3,15	4,08
		1%	3,65	4,66

Source: Data Processed, 2025

Model Diagnostic Test Results

Autocorrelation Test

Based on the test results using the Breusch-Godfrey Serial Correlation LM Test method displayed in Table 3, the probability value is 0.7766 for the F test and 0.3948 for the Chi-Square test. Both values are much greater than the 5% significance level, so there is not enough evidence to reject the null hypothesis that there is no autocorrelation in the model. It is concluded that the estimated ARDL model escapes the problem of serial autocorrelation at the specified significance.

Table 3. Autocorrelation Test Results

Breusch-Godfrey Serial Correlation LM-Test:			
F-Statistic	0,263773	Prob.F(2,6)	0,7766
Obs*R-Squared	1,858821	Prob.Chi-Square(2)	0,3948

Source: Data Processed, 2025

Heteroscedasticity Test

In this test, if the Obs*R-Squared value shows a value > 0.05, it can be concluded that there is no heteroscedasticity problem in the ARDL model. Based on the Breusch-Pagan-Godfrey test results in Table 4, it is known that the probability value (Prob. Chi-Square) for the Obs*R-Squared value of 0.7034 and for the Scaled Explained SS of 1.0000 are all > 5% (0.05). Thus, there is not enough evidence to reject the null hypothesis that there are no symptoms of heteroscedasticity in the model.

Table 4. Heteroscedasticity Test Results

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-Statistic	0,503876	Prob.F(14,8)	0,8748
Obs*R-Squared	10,77755	Prob.Chi-Square(14)	0,7034
Scaled explained SS	1,329964	Prob.Chi-Square(13)	1,0000

Source: Data Processed, 2025

Short-Term ARDL Estimation

Table 5. Short-Term ARDL Estimation Test Results

ECM Regression

Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob	Kesimpulan
D(LOG_BOP(-1))	1,122329	0,247443	4,535702	0,0019	Signifikan
D(LOG_BOP(-2))	0,810977	0,198044	4,094929	0,0035	Signifikan
D(LOG_BOP(-3))	0,581607	0,128917	4,511484	0,0020	Signifikan
D(INF)	0,187324	0,040232	4,656108	0,0016	Signifikan
D(INF(-1))	0,074207	0,042055	1,764548	0,1156	Tidak Signifikan
D(INT)	-0,446924	0,156905	-2,848377	0,0215	Signifikan
D(INT(-1))	0,222092	0,108669	2,043753	0,0752	Tidak Signifikan
D(LOG_ER)	-6,643506	1,447011	-4,591191	0,0018	Signifikan
D(LOG_ER(-1))	-9,778654	1,904641	-5,134120	0,0009	Signifikan
D(LOG_ER(-2))	-6,090066	1,299156	-4,687709	0,0016	Signifikan
CointEq(-1)*	-2,932723	0,346528	-8,463170	0,0000	Signifikan

Source: Data Processed, 2025

Based on the Error Correction Model (ECM) estimation results, it can be seen that Indonesia's balance of payments in the short term is significantly affected by the lag value of the previous balance of payments. The positive coefficient on three lags indicates the existence of an inertia effect, where past balance of payments conditions still affect the movement of the current balance, maintaining or improving Indonesia's external position. Inflation was found to have a significant positive effect on the balance of payments, with a coefficient of 0.187324 and probability of 0.0016. This can be explained through the relative price effect. An increase in inflation tends to

encourage import substitution with domestic products and increase exports in the short term, although the impact is temporary and highly dependent on price dynamics and market response. Short-term interest rates show a significant negative effect on the balance of payments with a coefficient of -0.446924 and probability of 0.0215. An increase in interest rates has the potential to suppress domestic demand through higher borrowing costs and trigger exchange rate appreciation, which in turn weakens export competitiveness and creates investment uncertainty. The exchange rate also has a significant negative effect, with coefficients of -6.643506, -9.778654 and -6.090066 and probabilities of 0.0018, 0.0009 and 0.0016, respectively. This indicates that the depreciation of the rupiah in the short term actually decreases the balance of payments. This is consistent with the J-curve phenomenon, when a weakening domestic currency initially increases the burden of import payments before the volume of trade adjusts.

The coefficient of Error Correction Term (ECT) is significant and worth -2.932723 which is statistically significant at 1% significance level (p-value 0.0000). This indicates that about 293.27% of the imbalance that occurred in the previous period will be corrected in the current period. Since the model uses annual data, the system is estimated to take about 0.34 years or about 4 months to return to long-term equilibrium conditions. This indicates that Indonesia's balance of payments correction mechanism is quite aggressive in restoring long-term equilibrium. Overall, the results of this study confirm that macroeconomic variables such as inflation, interest rates, and exchange rates have an important role in the dynamics of Indonesia's balance of payments, so the stability of these factors needs to be maintained to support a healthy external sector.

Long-Term ARDL Estimation

Table 6. Long-Term ARDL Estimation Test Results

Level Equation

Case 2: Restricted Constant and No Trend

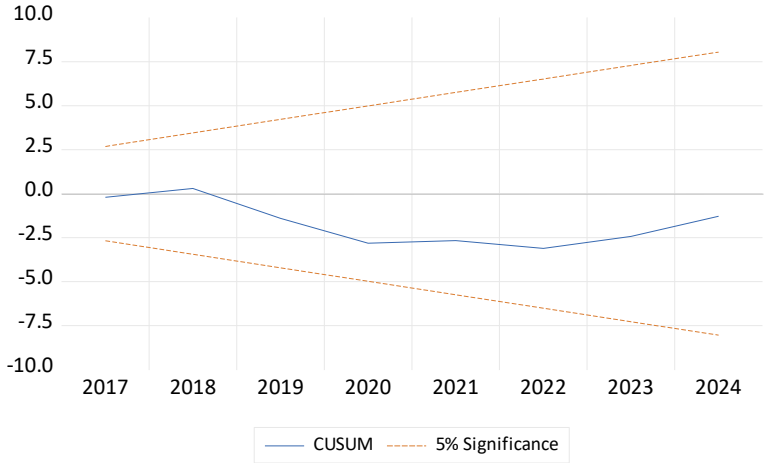
Variable	Coefficient	Std. Error	t-Statistic	Prob	Kesimpulan
INF	-0,014136	0,043831	-0,322518	0,7553	Tidak Signifikan
INT	0,188044	0,077030	2,441171	0,0405	Signifikan
LOG_ER	1,272228	0,564753	2,252717	0,0543	Signifikan
C	-5,081377	5,973072	-0,850714	0,4197	Tidak Signifikan

Source: Data Processed, 2025

The estimation results show that inflation has a negative but insignificant effect on the balance of payments, with a coefficient of -0.014136 and a probability of 0.7553. This reflects that although inflation can theoretically weaken export competitiveness and encourage imports, its impact in the long run has not proven statistically significant (Mankiw, 2018). Interest rates have a significant positive effect on the balance of payments, with a coefficient of 0.188044 and a probability of 0.0405. This finding supports the capital flow theory, where an increase in interest rates attracts foreign investment and potentially suppresses consumption and imports, thereby improving the country's external position (Pesaran et al., 2001). The exchange rate has a significant positive effect on the balance of payments, with a coefficient of 1.272228 and a probability of 0.0543. Long-term appreciation of the rupiah is considered to help improve the balance of payments, especially if it reflects strong economic fundamentals, such as capital inflows or current account surpluses (Juhro & Goeltom, 2022).

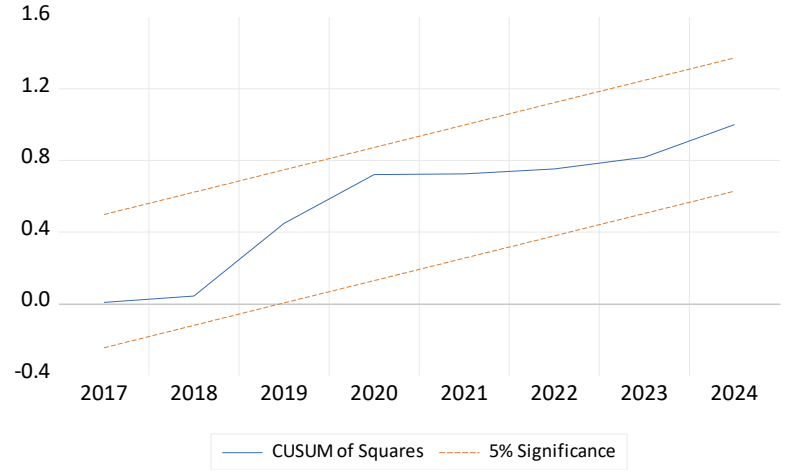
Model Stability Test Results

This test serves to detect structural changes in model parameters during the observation period, as well as provide a visual representation of the stability of the coefficients in the long run. According to Pesaran, et al. (2001), CUSUM and CUSUMSQ testing is an integral part of the model validation process in the ARDL approach, because parameter stability is very important to ensure that the relationship between variables is consistent and reliable in forecasting and economic interpretation.



Source: Data Processed, 2025

Gambar 1. CUSUM



Source: Data Processed, 2025

Gambar 2. CUSUM

Based on the estimation results of the ARDL (4,2,2,3) model, the CUSUM and CUSUMSQ figures displayed in Figures 1 and 2 show that the test lines are within the critical limits at the 5 percent significance level. The pattern is characterized by a blue line that moves steadily between two dashed red borders. This condition indicates that there is no evidence of parameter instability during the estimation period, so the model can be said to be stable and feasible to use for both short-term and long-term analysis.

CONCLUSION

Based on the estimation results in the short run, inflation shows a positive and significant effect on the short run balance of payments, which indicates that demand-driven inflation can increase exports. In contrast, the exchange rate and interest rate have a negative and significant effect on the balance of payments. Exchange rate depreciation in the short run tends to lower the balance of payments due to increased import costs, while rising interest rates reduce domestic economic activity and encourage capital outflows. In the long run, the direction of the effect of Inflation in the long run does not have a significant effect on the balance of payments, which reflects the success of inflation control by the monetary authorities. Meanwhile, the direction of the effect of exchange rate and interest rate changes to be positive and significant. Exchange rate depreciation in the long run increases export competitiveness and encourages import substitution, while high interest rates attract foreign capital flows that strengthen the capital account.

SUGGESTION

In the short term, the government needs to maintain price, interest rate and exchange rate stability to support the balance of payments. Inflation that has a positive effect can be utilized in a controlled manner, while interest

rates and exchange rates that have a negative impact need to be carefully regulated. Exchange rate policy should be adaptive, meaning that it is flexible and responsive to economic conditions. Fiscal and monetary coordination is essential to maintain macro stability. In the long term, the policy focus is directed at strengthening the economic structure. Price stability is maintained even though inflation is not significant. Competitive interest rates and a controlled exchange rate can strengthen exports and attract investment. The government needs to encourage the export industry through efficiency, diversification, and trade cooperation. All policies should be integrated to support sustainable balance of payments.

REFERENCES

Awagi, D., Sujianto, A. E., Fitriana, L., Roisatin, E. N., & Wardani, C. E. R. (2024). Pengaruh Ekspor, Impor, Inflasi, dan Suku Bunga terhadap Neraca Pembayaran di Indonesia. *Jurnal Ekonomi, Akuntansi dan Manajemen*, 3(1) 150-160.

Boediono. (1998). *Teori Pertumbuhan Ekonomi.* Yogyakarta: BPFE

Dornbusch, R., Fischer, S., & Startz, R. (2014). *Makroekonomi (Edisi ke-11).* Erlangga.

Gujarati, D. N., & Porter, D. C. (2009). *Basic Econometrics (5th ed.).* McGraw-Hill.

Hakeem, A. O., Hussein, S. I., & Abass, S. I. (2018). Exchange Rate, Inflation and the Nigerian Balance of Payment. *Journal of Economics and Sustainable Development*, 9(3) 10-16.

Hutagalung, S. A., Rahmadana, M. F., Nasir, M., & Rinaldi, M. (2019). Analysis of The Effect of Gross Domestic Product, Exchange Rate, and Inflation on Balance of Payments in Indonesia. *Advances in Social Sciences Research Journal*, 6(10) 361-374.

Juhro, S. M., & Goeltom, M. S. (2022). *Makroekonomi dan Kebijakan Moneter di Indonesia*. Bank Indonesia Institute.

Krugman, P. R., Obstfeld, M., & Melitz, M. J. (2018). *International economics: Theory and policy (11th ed.).* Pearson.

Lane, P. R., & Milesi-Ferretti, G. M. (2007). The external wealth of nations mark II: Revised and extended estimates of foreign assets and liabilities, 1970–2004. *Journal of International Economics*, 73(2), 223–250.

Mankiw, N. G. (2018). *Principles of Economics (8th ed.).* Cengage Learning.

Mankiw, N. G. (2021). *Principles of economics (9th ed.).* Cengage Learning.

Mishkin, F. S. (2019). *The Economics of Money, Banking, and Financial Markets (13th ed.).* Pearson.

Nopirin. (2000). *Ekonomi internasional.* BPFE-Yogyakarta

Nopirin. (2012). *Ekonomi Makro: Uang dan Perbankan.* Yogyakarta: UGM Press

Pesaran, M. H., Shin, Y., & Smith, R. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, 16, 289-326.

Rusdi Hidayat N. (2017). *Pasar Keuangan Internasional.* Jakarta: Penerbit Gramedia.

Salamah, R. A., & Wahyuni, K. T. (2021). Analisis Simultan Neraca Pembayaran Indonesia Tahun 2009-2020. *Seminar Nasional Official Statistics*, (1) 507-516.

Sukirno, S. (2010). *Makroekonomi Teori Pengantar.* Jakarta: PT Raja Grafindo Persada.

Sukirno, S. (2011). *Pengantar Teori Makroekonomi.* Jakarta: Rajawali Pers.

Sukirno, S. (2016). *Ekonomi Makro: Teori dan Aplikasi.* Jakarta: PT Raja Grafindo Persada.

Syahwani & Asty, K. I. (2020). Pengaruh Inflasi, Suku Bunga dan Nilai Tukar Rupiah terhadap Neraca Pembayaran (Studi Kasus: Negara-Negara Tetangga di ASEAN). *Proseding Seminar Nasional Akuntansi*, 3(1) 78–94.

Uchechi, U. J., Iheukwumere, I. V., & Abass, I. S. (2022). Analysis of the Impact of Interest Rate on Balance of Payments in Nigeria. International *Journal of Science and Research Development*, 1(5) 073-078.