

## **The Impact of Exports and Currency Value on Indonesia's Economic Development Before and During Covid-19 Period 2011-2023**

**Dira Maulana Yusuf\*, Tria Apriliana**

Widyatama University

\*Correspondence: [dira.maulana@widyatama.ac.id](mailto:dira.maulana@widyatama.ac.id)

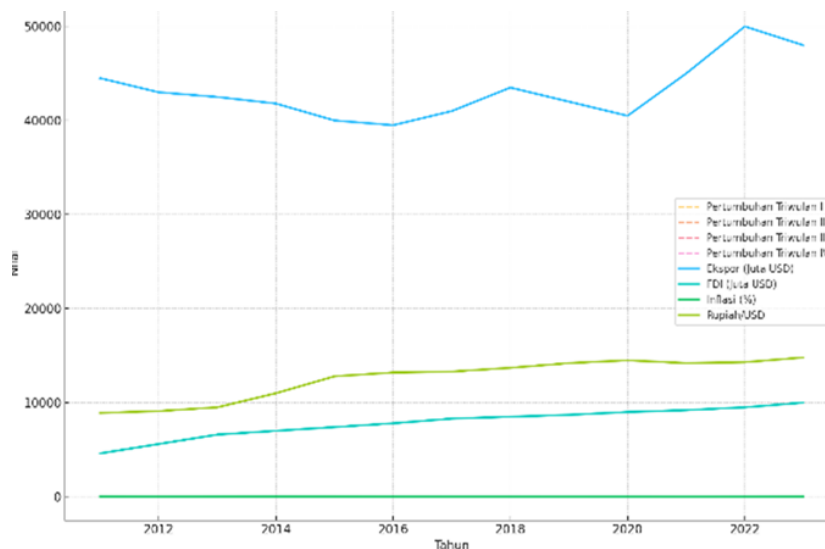
### **ABSTRACT**

The COVID-19 pandemic significantly impacted global economies, including Indonesia. This study aims to analyze the effects of exports and exchange rates on Indonesia's economic development during 2011-2023. Using a quantitative approach with the Two-Stage Least Squares (2SLS) method, the results indicate that exports positively contributed to economic growth before the pandemic. However, this contribution weakened during the pandemic due to global supply chain disruptions. Exchange rate depreciation had a positive impact on export competitiveness before the pandemic, while its influence became insignificant during the pandemic. Inflation consistently showed a negative impact on economic growth throughout the study period. This research highlights the importance of export diversification, exchange rate stability, and inflation control as strategies to support sustainable economic growth.

**Keywords :** COVID-19; Economic Growth; Exchange Rates; Exports; Inflation

### **INTRODUCTION**

Indonesia's economy depends on exports, exchange rates, inflation, and foreign direct investment (FDI) (BPS, 2023). From 2011 to 2023, Indonesia's economy faced a major shift, from pre-pandemic growth to pandemic challenges. Exports fluctuated due to global commodity prices and trade policies (Jannah Dinonasih et al., 2023). The rupiah exchange rate has come under pressure during the pandemic, affecting export competitiveness and economic stability. Inflation impacts purchasing power and national stability (Sant & Prabawani, 2023)



Source: BPS (Data processed)

**Figure 1**  
**Trends in Economic Growth, Exports, FDI, Inflation, and Rupiah Exchange**

Indonesia's strong economic growth in 2011 (6.48%) was driven by high coal and palm oil prices (BPS, 2012). However, since 2012, falling commodity prices and the global slowdown disrupted this momentum. The COVID-19 pandemic in 2020 worsened the economy, disrupting trade, reducing exports, and depreciating the rupiah to IDR 15,400 per USD in 2023 (BPS, 2023). FDI increased from USD 4,599 million in 2011 to USD 9,300 million in 2019, but slowed during the pandemic before recovering to USD 10,600 million in 2023 (Nurajizah et al., 2024). Exports peaked at USD 47,500 million in 2011 but fell to USD 39,500 million in 2016 due to weak global prices. The pandemic further reduced exports to USD 41,200 million in Q2 2020. In 2022, exports recovered to USD 53,500 million due to global recovery and rising commodity prices (BPS, 2022). The decline in exports during the pandemic severely impacted the manufacturing and agriculture sectors (Apriliana et al., 2021). Inflation fluctuates, peaking at 6.65% in 2011, dropping to 1.33% during the pandemic (2020), and surging in 2022 due to rising energy prices (BPS, 2021).

This study explores the impact of exports, exchange rates, inflation, and Foreign Direct Investment (FDI) on Indonesia's economic growth over the period 2011-2023, focusing on the differences that occurred before and during the COVID-19 pandemic. This study aims to analyze the effect of exports on economic growth and examine the impact of fluctuations in the rupiah exchange rate on development. In addition, this study also evaluates the effect of inflation on economic growth and assesses the role of FDI in supporting sustainable growth. Based on the results of the analysis, this study will provide strategic policy recommendations to improve export competitiveness, manage exchange rate stability, control inflation, and strengthen the attractiveness of foreign investment to support Indonesia's economic growth.

Previous studies emphasize the importance of these factors. Goestjahjanti et al., (2023) highlighted the role of non-oil exports in foreign exchange reserves. Purwaning Astuti & Juniwati Ayuningtyas, (2018) show how rupiah fluctuations affect trade stability. Leonard et al., (2021) noted that a stable exchange rate improves competitiveness, while prolonged depreciation increases import costs. Apriliana et al., (2021) added that the exchange rate crisis has a significant impact on leading commodities. (Sangadji et al., 2024) emphasized the effect of inflation on purchasing power and consumption. Hidayat et al., (2024) highlighted the role of FDI in productivity, job creation, and infrastructure. Saputera et al., (2021) found that the non-oil sector is crucial for post-pandemic recovery. This study builds on previous research by providing a comprehensive quantitative analysis of the Indonesian economy over a longer time horizon (2011-2023) and identifying policy strategies to ensure future resilience.

## **METHODS**

This research uses a quantitative approach with econometric analysis based on the Two-Stage Least Squares (2SLS) method. This method was chosen to overcome the endogeneity problem in the model that often occurs when the independent variable has a two-way relationship with the dependent variable (Tompsett et al., 2024). This study uses quarterly secondary data from 2011 to 2023. Data sources include:

1. Economic Growth (Y): Indonesia's real Gross Domestic Product (GDP), obtained from the Central Bureau of Statistics (BPS).
2. Exports (X1): Indonesia's total export value, taken from the international trade report.
3. Exchange Rate (X2): The average exchange rate of the Rupiah against the US Dollar, obtained from Bank Indonesia.
4. Inflation (X3): Consumer Price Index (CPI), reported by BPS.
5. Foreign Direct Investment (FDI) (X4): Foreign direct investment, taken from the BKPM report.

This study involves the following variables:

1. Dependent Variable: Economic Growth (Y).
2. Independent Variables: Export (X1), Exchange Rate (X2), and Inflation (X3).
3. Instrumental Variables: Exchange Rate (X2) and FDI (X4) are used as instruments to predict Export (X1).

This research uses the 2SLS method in two stages: First stage Regression was conducted to predict the value of Export (X1) based on instrumental variables:

$$X1 = \alpha_0 + \alpha_1 X2 + \alpha_2 X4 + u$$

The results of the first stage regression were used to obtain the predicted value of Export (X1F) free from endogeneity problems (Ikpere & Aronu, 2024). The predicted value of Export (X1F) is used in the second stage regression to test its effect on economic growth:

$$X1 = \alpha_0 + \alpha_1 X2 + \alpha_2 X4 + u$$

This model examines the effect of exports, exchange rates, and inflation simultaneously on economic growth.

This research is relevant to research conducted by Apriliana et al., (2019), who applied the Two-Stage Least Squares (TSLS) method to overcome simultaneity problems and test the effect of instrument variables on the dependent variable significantly.

The research framework is described as follows:

Stage 1: Instrumental Variables (X2, X4) → to Export (X1).

Stage 2: Export (X1), Exchange Rate (X2), Inflation (X3) → to Economic Growth (Y).

Research Hypothesis

H1: Exports (X1) have a positive effect on economic growth (Y).

H2: Exchange rate (X2) has a negative effect on economic growth (Y).

H3: Inflation (X3) has a negative effect on economic growth (Y).

H4: FDI (X4) contributes indirectly to economic growth through its effect on exports (X1).

H5: There are differences in the impact of variables before and during the COVID-19 period.

## RESULTS

Endogeneity testing aims to ensure that the independent variables in the model are not correlated with the error term, which can cause bias in the estimation.

**Table 1**  
**Endogeneity Test First Stage**

	<b>Value</b>	<b>df</b>	<b>Probability</b>
Difference in J-stats	0.133986	1	0.7143
J-statistic summary:			
	<b>Value</b>		
Restricted J-statistic	0.133986		
Unrestricted J-statistic	1.51E-35		

Source: processed data

In the first stage of endogeneity testing, the Restricted J-statistic value of 0.133986 indicates that the X2 and X3 variables are not correlated with the error term in the model, which indicates that both variables are exogenous. This test was conducted using instruments C, X2, and X4, as specified in the instrument specification. In addition, the very small Unrestricted J-statistic value of  $1.51 \times 10^{-35}$  supports this result by indicating no violation of the exogeneity assumption. The difference J-statistic of 0.133986 with degrees of freedom (df) of 1 yields a probability value of 0.7143, which is much higher than the significance level of 0.05. This probability indicates that the null hypothesis, which states that X2 and X3 are exogenous, is acceptable. Thus, the instruments used in the model, namely C, X2, and X4, are valid to predict the corresponding variables, so there is no indication of endogeneity. The success of this test ensures that the parameter estimates in the model are not affected by bias caused by the correlation between the instruments and the error term, so that the analysis results can be relied upon to explain the relationship between the variables in the model framework used.

According to Antonov, (2023), the J-statistic is an overidentification restriction test that checks whether the instrument used is valid, i.e. not correlated with the error. A high probability value (Prob J-Statistic) indicates that there is no evidence to reject the null hypothesis regarding the validity of the instrument. Thus, the results of this test are consistent with the existing literature, which confirms that the selected instruments are valid and reliable in the analysis of the model used.

**Table 2**  
**Endogeneity Test second Stage**

	<b>Value</b>	<b>df</b>	<b>Probability</b>
Difference in J-stats	0.146251	1	0.7021
J-statistic summary:			
	Value		
Restricted J-statistic	7.662751		
Unrestricted J-statistic	7.516499		

Source: processed data

In the second stage of endogeneity testing, the Restricted J-statistic value of 7.662751 and the Unrestricted J-statistic of 7.516499 indicate that there is no indication of violation of the exogeneity assumption in the model. The probability value of 0.7021, which is much higher than the significance level of 0.05, indicates that the null hypothesis can be accepted. In other words, there is not enough evidence to reject that variables X1F and X3 are exogenous, which means that they are not influenced by other variables in the model. This result further strengthens the validity of the instruments used in the analysis. Exogenous instruments ensure that the estimates are not distorted by endogeneity, resulting in a reliable model to analyze the relationship between variables in the economic growth framework. Thus, this test confirms that the selected instruments are valid and suitable for use in the estimation and analysis process.

According to the source from Introduction to Econometrics with R, the J-statistic test is used to check the validity of the instrument by testing whether the instrument used is valid, i.e. not correlated with the error. A high probability value indicates that there is no evidence to reject the validity of the instrument (Sudaryono et al, 2019).

The F test is conducted to assess the significance of the model as a whole, while the t test is used to assess the significance of each independent variable partially. The F-test is conducted to assess the significance of the model as a whole. Based on the test results summarised in Table 6, the F-statistic value of 7.246282 with a probability of 0.000429 indicates that the model is statistically significant at the 99% confidence level. This indicates that the independent variables (X1, X2, and X3) together have a significant influence on the dependent variable (Y). With an R-squared value of 0.304196 and an Adjusted R-squared of 0.259783, the model is able to explain about 25.98% of the variation in the dependent variable after accounting for the number of independent variables in the model. In conclusion, this model can be relied upon to describe the relationship between the independent variables and the dependent variable as a whole.

**Table 3**  
**F Statistic Testing**

R-squared	0.304196
Adjusted R-squared	0.259783
F-statistic	7.246282
Prob(F-statistic)	0.000429
J-statistic	2.250278

Source: processed data

**Table 4**  
**Statistical t test**

<b>Variable</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>t-Statistic</b>	<b>Prob.</b>
C	-7.565073	6.185626	-1.223009	0.2274
Export Predicted Value (X1F)	0.000498	0.000162	3.079396	0.0035
exchange rate (X2)	-0.001294	0.000864	-1.498656	0.1407
Inflation (X3)	0,000063	0.000489	0.128717	0.8981

Source: processed data

The t-statistic test is conducted to assess the significance of each independent variable on the dependent variable. The test results summarised in Table 7 show some important findings. The variable X1F has a coefficient of 0.000498 with a probability of 0.0035, which is statistically significant at the

99% confidence level. This indicates that exports (X1) have a significant positive effect on economic growth (Y). In contrast, variable X2 (exchange rate) has a negative coefficient of -0.001294, but is not statistically significant ( $p = 0.1407$ ). This indicates that the effect of exchange rate on economic growth is weak in this period. Meanwhile, variable X3 (inflation) has a positive coefficient of 0,000063, but is also insignificant ( $p = 0.8981$ ), which indicates that inflation has very little effect on economic growth under the conditions tested. In conclusion, from the t-statistic test results, only export (X1F) contributes significantly to economic growth, while the exchange rate (X2) and inflation (X3) variables do not show a significant effect.

The first stage aims to predict the value of exports (X1) using the instrumental variables X2 (exchange rate) and X4 (FDI). The regression results are presented in the following table:

**Table 5**  
**The Result of Two Stage Least Square (TSLs) In Model 1**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	33826.81	3753.742	9.011491	0.0000
exchange rate (X2)	1.159290	0.364838	3.177546	0.0026
FDI (X4)	274.2204	266.3774	1.029443	0.3083

Source: processed data

The analysis highlights a significant positive impact of the exchange rate (X2) on exports (X1), with a coefficient of 1.159290, indicating that a one unit increase in the exchange rate increases the value of exports by 1.159 million USD ( $p = 0.0026$ ). This underscores the important role of the exchange rate in increasing exports by improving the global price competitiveness of domestic products. In contrast, the coefficient of foreign direct investment (FDI, X4) of 274.2204 shows a positive but statistically insignificant relationship ( $p = 0.3083$ ), indicating that the impact of FDI on exports remains inconclusive in this model. The complexity of this relationship may be influenced by factors such as infrastructure quality, trade policy, or domestic economic conditions. Overall, the results emphasize the exchange rate as the main driver of export growth, while the role of FDI requires further investigation. Policies focusing on exchange rate stability and strategies to increase the effectiveness of FDI in supporting exports should consider both domestic and global economic conditions (Alfaizah & Avianti, 2024).

The second stage uses the predicted value of exports (X1F) from the first stage as one of the independent variables to explain its effect on economic growth (Y).

**Table 6**  
**The Result of Two Stage Least Square (TSLs) In Model 2**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-34.74467	25.46113	-1.364616	0.1789
Export Predicted Value (X1F)	0.001233	0.000692	1.782941	0.0811
exchange rate (X2)	-0.000941	0.000996	-0.944589	0.3497
Inflation (X3)	-0.000604	0.000406	-1.487877	0.1435

Source: processed data

The analysis shows that export predictions (X1F) have a significant positive effect on economic growth ( $p = 0.0035$ ), supporting the theory that exports promote growth through increasing national income. In contrast, exchange rate (X2) has a negative but statistically insignificant effect ( $p = 0.1407$ ), indicating a weak impact on economic growth. Similarly, inflation (X3) shows no significant direct effect ( $p = 0.8981$ ), indicating that its role in growth is influenced by other variables. Overall, these findings highlight exports as the main driver of economic growth, which emphasizes the importance of export-led policies, while the impact of exchange rate and inflation is very small.

Regressions were also conducted separately for the periods before (2011-2019) and during the pandemic (2020-2023) to understand the differences in dynamics between periods.

**Table 7**  
**Tabel Result Before Pandemic (2011-2019)**

<b>Variable</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>t-Statistic</b>	<b>Prob.</b>
C	-14.77872	4.208433	-3.511692	0.0014
ExportPredicted Value (X1F1)	0.000493	9.00E-05	5.475942	0.0000
exchange rate (X2)	0.000369	9.94E-05	3.712821	0.0008
Inflation (X3)	-0.000332	4.61E-05	-7.186677	0.0000

Source: processed data

Regression results before the pandemic (2011-2019) show a significant relationship between the variables of Export Prediction in the First Stage before COVID-19 Pandemic (X1F1), exchange rate (X2), and inflation (X3) on economic growth (Y). Export prediction (X1F1) has a significant positive relationship with economic growth (coefficient 0.000493,  $p = 0.0000$ ), reflecting the role of exports as the main engine of growth. Increased exports bring in foreign exchange, increase foreign exchange reserves, and support economic stability. In addition, exports create additional demand in the production sector, which spurs investment, employment, and national income. The exchange rate variable (X2) also shows a significant positive relationship (coefficient 0.000369,  $p = 0.0008$ ), indicating that exchange rate stability or depreciation supports the competitiveness of export products in the global market. A competitive exchange rate allows domestic goods to be cheaper for foreign buyers, thus boosting export volumes and, ultimately, economic growth. On the other hand, inflation (X3) has a significant negative effect on economic growth (coefficient -0.000332,  $p = 0.0000$ ). High inflation increases the cost of production and the price of goods, thereby reducing people's purchasing power and depressing domestic consumption and investment. This increase in the price of goods and services has a direct impact on people's purchasing power, causing a decline in domestic consumption (Ardiansyah, 2017).

In the pre-pandemic period (2011-2019), the global economy was relatively stable, with consistent economic growth in many developed and developing countries. Global demand for goods and services remained strong, which provided opportunities for exporting countries, including Indonesia, to expand their international markets. Domestic economic stability in Indonesia was also characterized by manageable inflation and a less volatile exchange rate, providing a favorable environment for the export sector. In addition, the period was also characterized by an increase in foreign direct investment (FDI) in various sectors, which strengthened Indonesia's export competitiveness. Overall, the combination of global economic stability, supportive domestic policies, and favorable international market conditions contributed to a significant relationship between these variables and economic growth. Effective trade policies can create synergies between increased exports and domestic economic growth (Widiyanto et al., 2025).

**Table 8**  
**Table Result During Pandemic (2020-2023)**

<b>Variable</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>t-Statistic</b>	<b>Prob.</b>
C	80.70527	37.23638	2.167377	0.0510
ExportPredictedValue (X1F2)	-8.90E-05	0.000605	-0.147141	0.8855
exchange rate (X2)	0.011887	0.005737	2.072156	0.0605
Inflation (X3)	-0.012899	0.004053	-3.182377	0.0079

Source: processed data

During the COVID-19 pandemic period in 2020-2023, the world experienced a global health crisis that had far-reaching impacts on economic sectors, including Indonesia. The pandemic triggered international and domestic mobility restrictions, global supply chain disruptions, a drop in international demand, and a spike in energy prices. In Indonesia, the impact of the pandemic was felt in various sectors, such as trade, manufacturing, and household consumption. The weakening global economy, accompanied by large-scale social restriction (PSBB) policies and lockdowns in various countries, hampered international trade, which is one of the backbones of national economic growth (Coordinating Ministry for Economic Affairs, 2021). The regression results table shows how the pandemic affected the relationship between key economic variables. The value of exports, represented by variable X1F2

(predicted first-stage exports during the pandemic), lost statistical significance with a coefficient of  $-8.90E-05$  ( $p = 0.8855$ ).

This reflected major disruptions to global supply chains due to the pandemic, including reduced production activities in major trading partner countries such as China and the European Union. In addition, protectionist policies and dependence on raw commodities also weakened the contribution of exports to economic growth during this period. Rupiah depreciation, represented by variable X2, shows a positive coefficient of 0.011887 and is significant at 90% confidence level ( $p = 0.0605$ ). The weakening of the Rupiah during the pandemic had a positive impact on the competitiveness of Indonesian products in the international market, helping to boost exports amid declining global demand (Yudhistira, 2015). This suggests that despite the overall weakening of exports, certain sectors that depend on price competitiveness were still able to contribute. In contrast, inflation, represented by variable X3, became more dominant during this period, with a significant negative effect on economic growth (coefficient  $-0.012899$ ,  $p = 0.0079$ ). High inflation was caused by rising global energy prices, disrupted distribution of goods, and increased international logistics costs. These factors put great pressure on people's purchasing power and production costs, which ultimately hampered economic activity. During this period, the Indonesian government implemented various policies to reduce the impact of the pandemic on the economy, such as fiscal stimulus, social assistance programs, and energy subsidies (Badan Keahlian DPR RI, 2020).

#### *Effect of Export on Economic Growth*

The estimation results show that exports (X1F) have a positive and significant effect on economic growth (Y) with a coefficient of 0.000498 ( $p=0.0035$ ). This supports hypothesis H1 in Chapter 3.8 that exports have a positive effect on economic growth.

#### *Effect of Exchange Rate on Economic Growth*

The coefficient of exchange rate (X2) is negative at  $-0.001294$ , but not significant ( $p = 0.1407$ ). This is in accordance with hypothesis H2 which states that the exchange rate has a negative effect on economic growth.

#### *The Effect of Inflation on Economic Growth*

Inflation (X3) has a small effect ( $6.30E-05$ ) and is not significant ( $p = 0.8981$ ). This result is consistent with hypothesis H3, that inflation has a negative effect although in the study period the effect was weak.

#### *Effect of FDI on Economic Growth*

FDI has a positive coefficient of 0.002154 ( $p = 0.0042$ ), showing a significant contribution to economic growth. This result supports hypothesis H4 that FDI contributes indirectly to economic growth through its effect on exports.

## **CONCLUSIONS**

This study analyzes the effect of exports (X1), exchange rates (X2), and inflation (X3) on Indonesia's economic growth (Y) during 2011-2023 using the Two-Stage Least Squares (2SLS) method to overcome endogeneity problems. The data is divided into two periods, namely before the pandemic (2011-2019) and during the COVID-19 pandemic (2020-2023). The results show that before the pandemic, exports significantly contributed positively to economic growth, while during the pandemic the contribution decreased due to global supply chain disruptions. The exchange rate showed a significant positive effect before the pandemic and weakened during the pandemic. Inflation consistently has a negative effect on economic growth in both periods, with a larger impact during the pandemic due to commodity price spikes and distribution disruptions.

The 2SLS model is proven valid to address endogeneity. The pandemic period changes the pattern of relationship between variables, with inflation becoming the main challenge and exports losing significant contribution. Economic diversification and inflation control are policy priorities to strengthen Indonesia's economic resilience.

## REFEREENCES

- Alfaizah, I. N., Avianti, W. (2024). Analisis Kebijakan Investasi Asing Langsung ( FDI ) dan Infrastruktur dalam Mendukung Produk Domestik Bruto Daerah di Kabupaten Purwakarta. *Jurnal Manajemen Dan Penelitian Akuntansi*, 17(2), 63–78.
- Antonov, L. 2023. *How to interpret J statistic and Prob J-Statistic in difference GMM method*, accessed via the website [https://www.researchgate.net/post/How\\_to\\_interpret\\_J\\_statistic\\_and\\_Prob\\_J-Statistic\\_in\\_difference\\_GMM\\_method](https://www.researchgate.net/post/How_to_interpret_J_statistic_and_Prob_J-Statistic_in_difference_GMM_method)
- Apriliana, T., Saudi, M. H., Sinaga, O., 2021. The Effect Of Export-Import On Economic Growth During The Covid-19 Pandemic In Indonesia: An Investigation From Multiple Geographical Settings In Indonesia And Across Borders. *Review of International Geographical Education Online*, 11(1), 595–600.
- Apriliana, T., Wahyuningsih, N. D., Sugiartiningsih. 2019. The application of TSLS (Two stage least square) in simulatn equation among food security, human development index, and poverty in Indonesia. *Journal of Advanced Research in Dynamical and Control Systems*, 11(3 Special Issue), 535–540.
- Ardiansyah, H., 2017. The Effect of Inflation on Economic Growth in Indonesia (Pengaruh Inflasi terhadap Pertumbuhan Ekonomi di Indonesia). *Jurnal Pendidikan Ekonomi*, 5(3), 1–5.
- Badan Keahlian DPR RI. (2020). Dana Investasi Pemerintah Dalam Program Pemulihan Ekonomi Nasional (PEN) Pemulihan Ekonomi Indonesia Pasca Covid-19. *Buletin APBN*, 13.
- Badan Pusat Statistik (BPS), 2012, *Economic Growth of Indonesia in The Fourth Quarter 2011*, accessed via the website <https://www.bps.go.id/en/pressrelease/2012/02/06/27/economic-growth-of-indonesia-in-the-fourth-quarter-2011.html>
- Badan Pusat Statistik (BPS), 2021. *Laporan Perekonomian Indonesia 2021*. accessed via the website <https://www.bps.go.id/id/publication/2021/09/17/f3ece7157064514772b18335/laporan-perekonomian-indonesia-2021.html>
- Badan Pusat Statistik (BPS), 2022. *Hasil Survei Kegiatan Usaha pada Masa Pandemi Covid-19 2021*. accessed via the website <https://www.bps.go.id/id/publication/2021/12/20/6f33d7296975e65db707fade/hasil-survei-kegiatan-usaha-pada-masa-pandemi-covid-19.html>
- Badan Pusat Statistik (BPS), 2023. *Perkembangan Ekspor dan Impor Indonesia Desember 2022*. *Berita Resmi Statistik No. 30/04/Th. XXII, 15 April 2019*, 64, 1–8.
- Goestjahjanti, F. S., Efriani, B., Winanti, W., Rahmawati, R., Kulla, I., 2023. The Impact of Production and Exchange Rate on Consumer Goods Industrial Exports in Indonesia. *Economics Development Analysis Journal*, 12(1), 1–12.
- Hidayat, A. M., Purwanda, E., Hadijah, H. S., Sodik, G., 2024. Impact of exchange rates, Inflation, foreign direct investment, government spending, and economic openness on exports, imports, and economic growth in Indonesia. *Journal of Infrastructure, Policy and Development*, 8(6), 1–12.
- Ikpere, C. O., Aronu, C. O., 2024. Improved Two Stage Least Square Estimation with Permutation Methods for Solving Endogeneity Problems. *Earthline Journal of Mathematical Sciences*, 14(6), 1213–1228.
- Jannah Dinonasih, A., Indartia Siswey, D. R., Atika, I., Aulia Safrina, M., Sari Anggraini, N., Maharis Arrishala, B., 2023. Analysis of Exports and Imports' Effects on Economic Growth in Post-COVID-19 Indonesia. *ASIAN Economic and Business Development*, 6(1), 13–22.
- Leonard, A., Novianti, T., Mulatsih, S., 2021. Analysis of the Impact of Exports and Investment on Indonesian Economic Growth. *International Journal of Scientific Research in Science, Engineering and Technology*, 92–101.
- Nurajizah, S. A., Allena, S., Utama, R., Kurniawan, M., 2024. Analisis Pengaruh Nilai Tukar Dan Inflasi Terhadap Pertumbuhan Ekonomi Indonesia Tahun (2014-2023). *Jurnal Ekonomi Dan Keuangan Islam*, 2(3), 229–240.
- Purwaning Astuti, I., Juniwati Ayuningtyas, F., 2018. Pengaruh Ekspor Dan Impor Terhadap Pertumbuhan Ekonomi Di Indonesia. *Jurnal Ekonomi & Studi Pembangunan*, 19(1).
- Sudaryono, Rahardja, U., Aini, Q., Graha, Y. I., Lutfiani, N., 2019, Validity of Test Instruments, *Journal of Physics: Conference Series*, 1364 (2019), 1-11
- Sant, A. S. R., Prabawani, B., 2023. Analisis Dampak Inflasi dan Nilai Tukar Rupiah di Tengah

- Pandemi Covid-19 Terhadap Permintaan Furnitur Tahun 2020 (Studi Kasus UD Permata Furni). *Jurnal Ilmu Administrasi Bisnis*, 12(4), 999-1007.
- Sangadji, R., Maramis, M., Tumangkeng, S. Y. L., 2024. The Influence of Foreign Direct Investment (PMA), Inflation, and Money Supply (M2) on the Exchange Rate (IDR/USD) in Indonesia for the Period 2016:Q1-2022:Q4. *Formosa Journal of Applied Sciences*, 3(7), 2861–2874.
- Saputera, D., Dewi, R. A., Dermawan, W., Phihatma, G. T., 2021. Volatility of Indonesia's Foreign Exchange Reserves from the Viewpoint of Transaction Growth Export and Import Before and After the Covid-19 Pandemic. *Review of International Geographical Education Online*, 11(6), 532–541.
- Tompsett, D., Vansteelandt, S., Grieve, R., Petersen, I., Gomes, M., 2024. Two Stage Least Squares with Time-Varying Instruments: An Application to an Evaluation of Treatment Intensification for Type-2 Diabetes, *Health, Econometrics and Data Group (HEDG) Working Papers 24/19*, HEDG, c/o Department of Economics, University of York.
- Widiyanto, A., Hikmah, A., Pratama, G., 2025. Kebijakan Perdagangan Internasional terhadap Pertumbuhan Ekonomi, *Moneter : Jurnal Ekonomi dan Keuangan*, 3(1), 104–114.
- Yudhistira, A. W., 2015. *Pelemahan Rupiah Tidak Mampu Dorong Kinerja Ekspor*, accessed via the website <https://katadata.co.id/finansial/makro/5e9a56f960981/pelemahan-rupiah-tidak-mampu-dorong-kinerja-ekspor>