

The Influence of Foreign Tourists and Inflation on Economic Growth Through Airline Demand in Indonesia

Robi Saputra, Dwita Sakuntala, Suhendi

Abstract

This study analyzes the influence of the tourism and air transportation sectors as strategic pillars for national economic growth, especially during the post-pandemic recovery period. This research aims to analyze the relationship between Foreign Tourist visits (NFT), the Number of International Passengers (NIP), and the Inflation rate on Gross Domestic Product (GDP) in Indonesia during the period 2010 to 2024. Specifically, this study reviews how international mobility dynamics and price stability affect macroeconomic performance. The results of the analysis reveal a close relationship between these variables in the long run. Foreign tourist visits and the number of international passengers are proven to provide a significant and positive contribution to the increase in national GDP. On the other hand, inflation during this observation period did not show a dominant influence on overall economic growth. Meanwhile, short-term economic fluctuations are more influenced by growth trends from previous years. This study concludes that strengthening the tourism sector and increasing international air transport connectivity are the main drivers of Indonesia's economic growth. The synergy between the increase in foreign tourist flows and the efficiency of international flight services is proven to be able to sustain the national GDP structure sustainably. Therefore, policies that support ease of international travel access and security stability are crucial to maintaining economic growth momentum in the future.

Keywords: GDP, Foreign Tourists, International Passengers, Inflation, ARDL

Robi Saputra¹

¹Master of Science in Economics, Universitas Pembangunan Panca Budi, Indonesia e-mail: robzyatc2@gmail.com¹

Dwita Sakuntala², Suhendi³

^{2,3}Master of Science in Economics, Universitas Pembangunan Panca Budi, Indonesia e-mail: sakuntaladwita@gmail.com², suhendi@dosen.pancabudi.ac.id³

2nd International Conference on Islamic Community Studies (ICICS)

Theme: History of Malay Civilisation and Islamic Human Capacity and Halal Hub in the Globalization Era

<https://proceeding.pancabudi.ac.id/index.php/ICIE/index>

Introduction

Indonesia is currently in a strong economic recovery momentum, marked by a surge in foreign tourists reaching 13.9 million in 2024 and a 10.3% growth in tourism, followed by a 23.94% recovery in aviation with a total contribution to GDP reaching IDR 289.1 trillion. However, an economic slowdown from 5.03% to 4.7% and an increase in inflation from 2.3% in 2024 to 2.65% in 2025 have the potential to suppress tourist purchasing power and airline operational costs [1]. Inflation stability is a key element in maintaining the sustainability of this sector, which now plays a vital role as a driver of the national economy. Research by [2] confirms that the resilience of air transportation and tourism has a significant impact on economic growth in Southeast Asia, where increased tourism and aviation activities strengthen macroeconomic performance. As a complex and fragmented sector, tourism possesses great potential for job creation, income enhancement, and the stimulation of other industries, while serving as a crucial source of foreign exchange.

The rapid development of Indonesia's tourism sector is also supported by adequate security conditions and increased public purchasing power, which collectively drive the sector to become more competitive and contribute significantly to national economic growth [3]. Identifying a long-term relationship between aviation demand and tourism growth in Thailand shows that increased air connectivity accelerates the flow of international tourists and foreign exchange. Meanwhile, [4] explains that rising inflation in Southeast Asia tends to suppress tourism receipts and economic growth; thus, inflation control becomes essential for macroeconomic stability, which affects the aviation sector. Based on this empirical evidence, the link between tourists, inflation, and economic growth through aviation demand reflects a mutually reinforcing real-monetary relationship as long as inflation remains within a controllable range. Therefore, efforts to maintain price stability and manage inflation are essential to support the sustainable growth of the tourism sector, which contributes significantly to the Gross Regional Domestic Product. Consequently, macroeconomic policies focused on inflation control are vital to maintaining the positive momentum of the tourism and air transportation sectors in Indonesia [5].

The 2020-2025 period serves as a strategic recovery phase for Indonesia amidst global inflationary pressures and rising energy costs, with the tourism and aviation sectors acting as the primary drivers of recovery. Research by [6] indicates that the development of air transportation and consumer preferences significantly influence the economic structure and air travel volume in Southeast Asia, including Indonesia. Findings from [7] also support that tourism contributes significantly to economic growth in the region, emphasizing the critical role of price stability and inflation in maintaining its sustainability. Therefore, this study is directed at examining the influence of foreign tourists and inflation on economic growth, with aviation demand as a mediating variable, to ensure that the aviation sector remains a motor for Indonesia's long-term economic growth. This approach was chosen to evaluate the multifaceted impact of macroeconomic variables on the tourism and air transportation sectors, considering the complexity of existing interactions. Specifically, this research focuses on the dynamics of interaction between the number of foreign tourists, inflation rates, and aviation demand as an intervening variable in influencing Indonesia's economic growth.

Literature Review 1. Economic Growth

Economic growth is a primary indicator reflecting macroeconomic performance and social welfare, measured through changes in real Gross Domestic Product (GDP) as a representation of increased national production capacity. According to [8], Indonesia's economic growth is heavily influenced by investment, government spending, and labor, which are vital components in increasing output; where investment drives productivity and job creation, while government spending strengthens infrastructure and public services. This view is reinforced by the Neoclassical Growth Theory of Solow-Swan [Solow, 1956], which states

that long-term economic growth stems from capital accumulation, labor force growth, and technological progress as exogenous factors that increase efficiency. Within the Solow framework, investment in physical and human sectors allows the economy to reach a higher steady state, such that sustainable growth indicates a continuous improvement in economic conditions toward a better state over time.

2. Number of Foreign Tourists

Regional economic growth is significantly influenced by every tourist visit, which triggers an increase in demand for service sectors such as transportation, accommodation, and local product consumption [9], where findings show that an increase in the number of foreign tourists has a significant positive impact on economic growth, such as in Bali Province, through direct contributions to regional income. This study confirms that the synergy between investment and government policies in the tourism sector plays an important role in supporting sustainable economic development, considering that foreign tourists are a major source of foreign exchange capable of strengthening national economic stability. Theoretically, according to Archer and Cooper (1994) in the Tourism Multiplier Effect theory, foreign tourists are defined as consumers from outside the domestic economic system who inject new spending (leaking-in) into a country's circular flow of income, which then generates a multiple economic impact exceeding the initial value of that expenditure. However, an increase in the number of foreign tourists is also correlated with a rise in the Consumer Price Index, which indirectly reflects the influence of inflation, as higher prices for goods and services can reduce destination competitiveness and decrease the number of visits [10]. As stated by Soebagyo, every increase in tourist visits has a direct impact on Gross Domestic Product and foreign exchange reserves, which in turn will spur macroeconomic growth through value creation in various related sectors.

3. Number of International Passengers

The number of international air passengers reflects the level of global mobility and the economic openness of a country, where [11] explains that an increase in the number of air passengers and tourist visits provides a positive impact on Indonesia's economic growth, primarily through improved connectivity between regions and countries. The increase in international flight volume also strengthens the transportation and logistics sectors, which ultimately drives supply chain efficiency and enhances national economic competitiveness. Theoretically, according to Doganis (2019) in his work on international airline economics, the number of international passengers is a key parameter in measuring derived demand arising from trade and tourism activities; an increase in this passenger flow creates a hub-and-spoke effect that expands market reach and lowers international trade transaction costs through air network efficiency. This increase in passenger numbers also indirectly indicates higher crossborder business and tourism interactions essential for modern economic growth, as supported by the study of Bojanic and Lo, which shows that tourism has a strong influence on economic growth, especially in archipelagic countries rich in tourist attractions, as it can boost tax revenues and regional levies.

4. Inflation Rate

The inflation rate describes the general and continuous changes in price levels within an economy, where its stability is a crucial factor in maintaining public purchasing power and supporting sustainable economic growth. According to [12], inflation, exchange rates, and interest rates have a significant relationship with Indonesia's economic growth, as high inflation has the potential to decrease investment interest and public consumption levels. Theoretically, this aligns with the view of Mankiw (2019) in his macroeconomic theory, which states that unstable inflation creates price uncertainty that can distort resource allocation and reduce market efficiency through menu costs and shoe-leather costs. Inflation stability greatly assists in

maintaining investor confidence and strengthening the foundation of national economic growth, especially during the post-COVID-19 pandemic recovery period. Although some studies indicate that controlled inflation can support an increase in tourism income that drives growth, according to the long-run Phillips curve, uncontrolled inflation will instead hinder private investment and slow overall economic growth due to the decline in the real value of assets and future uncertainty.

Research Methodology

This research employs a quantitative approach using the Autoregressive Distributed Lag (ARDL) model with E-Views 10 software to analyze the short-term and long-term relationships between the number of foreign tourists, inflation, and economic growth through aviation demand in Indonesia [13]. The 2010-2024 research period is used to represent economic dynamics before the pandemic, during the crisis, and throughout the recovery phase, utilizing secondary data sourced from the Central Bureau of Statistics (BPS), Bank Indonesia, the Ministry of Tourism and Creative Economy, and the Directorate General of Civil Aviation. The variables analyzed include real GDP, the number of foreign tourists, the number of international flight passengers, and inflation, all of which are transformed into natural logarithms.

The Autoregressive Distributed Lag (ARDL) model, developed by Pesaran, Shin, and Smith (2001), is an econometric approach used to test for cointegration or long-term equilibrium between variables. According to the developers, the primary advantage of this model is its flexibility, as it does not require all variables to have the same order of integration. Thus, it remains valid for variables that are stationary at level $I(0)$, first difference $I(1)$, or a mixture of both, as long as no variables are integrated at order $I(2)$. Furthermore, the bounds testing procedure in ARDL is considered more efficient and possesses more robust statistical properties for small sample sizes compared to other conventional cointegration methods like the Johansen test. This model is also capable of simultaneously separating short-term and longterm effects within a single equation through the Error Correction Model (ECM) mechanism, which helps researchers understand the adjustment dynamics of variables to economic shocks.

Prior to model estimation, stationarity tests are conducted using the ADF and PP methods to ensure that no variables are integrated at the second order. The long-term relationship between variables is then tested through the Bounds Test; if cointegration is identified, the ARDL model is estimated in the form of an Error Correction Model (ECM) to capture the short-term adjustment process toward long-term equilibrium [14]. The optimal lag length is determined based on AIC, SIC, and HQIC criteria and is verified through diagnostic and model stability tests. As a final stage, the Granger causality test is used to identify the direction of the relationship between variables, ensuring that the research results provide a clear and relevant overview for the formulation of economic and tourism policies.

Results Stationarity Test

Table 1. Stationarity Test Result

Variabel	ADF Statistic	Critical Value	Prob.	Unit Root	Notes
NFT	-3.242625	-2.771926	0.0038	First Difference	Stationary
NIP	-2.976535	-2.792154	0.0069	First Difference	Stationary
INF	-3.612141	-2.754993	0.0016	First Difference	Stationary

PDB	-5.042518	-2.771926	0.0001	Second Difference	Stationary
-----	-----------	-----------	--------	----------------------	------------

Source: Processed data, 2026

Based on the results in Table 1, it can be concluded that all independent variables in this study have achieved stationarity at the first difference level, with probability values of less than 0.05. Meanwhile, the dependent variable exhibits stationarity at the second difference level. Therefore, the use of the ARDL method in this research is considered appropriate and can proceed to the next stage of analysis

ARDL Bound Testing for Cointegration

Table 2. ARDL Bound Testing for Cointegration

<u>Statistic Test</u>	<u>Value</u>
F-statistic	4,788
Number Of Independent Variable (k)	3

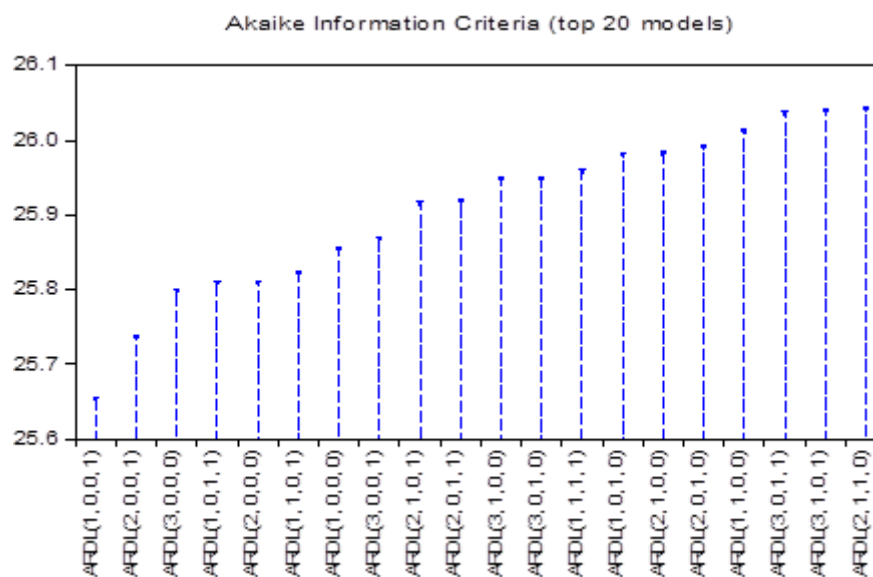
Critical Value Bounds Test (Asymptotic, $n = 1000$)

<u>Significant value</u>	<u>I(0)</u>	<u>I(1)</u>
10%	2,37	3,20
5%	2,79	3,67
2,5%	3,15	4,08
1%	3,65	4,66

Source: Processed data, 2026

Based on the output in Table 2, the cointegration test results through the bound test show that the F-Statistic value is $4.788233 > 3.67$. This indicates that the cointegration assumption has been met; therefore, it can be concluded that there is a long-term relationship among the variables that can be utilized for analysis and forecasting

Optimal Lag Selection

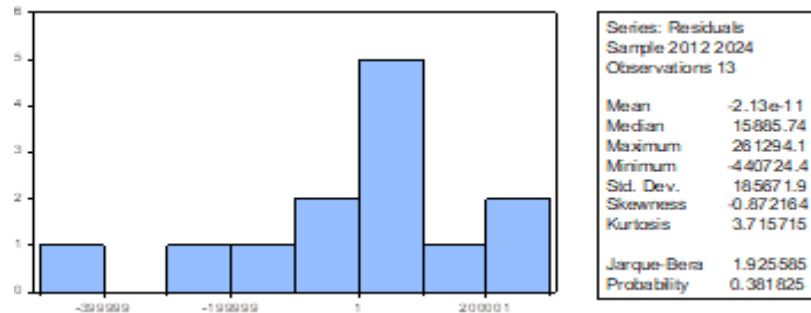


Source: Processed data, 2026

Figure 1. Optimal Lag Selection

Based on the lowest Akaike Information Criterion (AIC) value of approximately 25.65 from the twenty tested models, this study determines ARDL(1,0,0,1) as the optimal lag model, as it is the most balanced in explaining the data without overfitting. In this model, the dependent variable is influenced by one previous period, GDP and Foreign Tourists (NFT) have a direct effect in the current period, and International Passengers (NIP) or Inflation (INF) impact with a one-period lag. Therefore, this model is appropriate for further analysis of long-term relationships.

Classical Assumption Tests



Source: Processed data, 2026

Figure 2. Jaquerbera Test Result

The output shows the results of the normality test, with a probability value of $0.381825 > 0.05$. Therefore, it can be concluded that the data used is normally distributed.

Table 3. Heteroskedasticity Test (Breusch-Pagan-Godfrey test)

F-statistic	0.849948	Prob. F(5,7)	0.5558
Obs*R-squared	4.910926	Prob. Chi-Square(5)	0.4268
Scaled explained SS	1.933423	Prob. Chi-Square(5)	0.8583

Source: Processed data, 2026

The output above explains the results of the heteroskedasticity test; the obtained probability value is $0.4268 > 0.05$. Therefore, it is concluded that the data used passed the heteroskedasticity test.

Table 4. Serial Correlation LM Test

F-statistic	0.650153	Prob. F(2,5)	0.5611
Obs*R-squared	2.683040	Prob. Chi-Square(2)	0.2614

Source: Processed data, 2026

The output above explains the results of the autocorrelation test; the obtained p-value is $0.2614 > 0.05$. Therefore, it is concluded that the data used passed the autocorrelation test.

Long Term Test**Table 5.** Long Term Test

Variable	Koefisien	Std. Error	t-Statistic	Probability
D(WISMAN)	-0,1434	0,1112	-1,2891	0,0283
D(JPI)	0,1712	0,0962	1,7803	0,0382
D(INF)	-154.332,6	109.978,3	-1,4033	0,0633
Konstanta (C)	273.387,8	78.629,0	3,4769	0,0003

Source: Processed data, 2026

Based on the Bound Testing results in the long-term equation with the assumption of a restricted constant without a trend, foreign tourists (NFT) show a negative and significant influence, indicating that an increase in the number of tourists tends to suppress the dependent variable in the long run. Conversely, the number of international flights (NIP) has a positive and significant effect, reinforcing the importance of flight connectivity in driving the performance of the variables studied.

Meanwhile, inflation (INF) has a negative effect with relatively weak significance, indicating that inflationary pressure has the potential to hinder economic performance in the long term. The positive and significant constant indicates the role of other factors outside the model, while simultaneously strengthening the existence of a long-term relationship (cointegration) among variables in the ARDL model

ECT dan Short Term Test**Table 6.** ECT dan Short Term Test

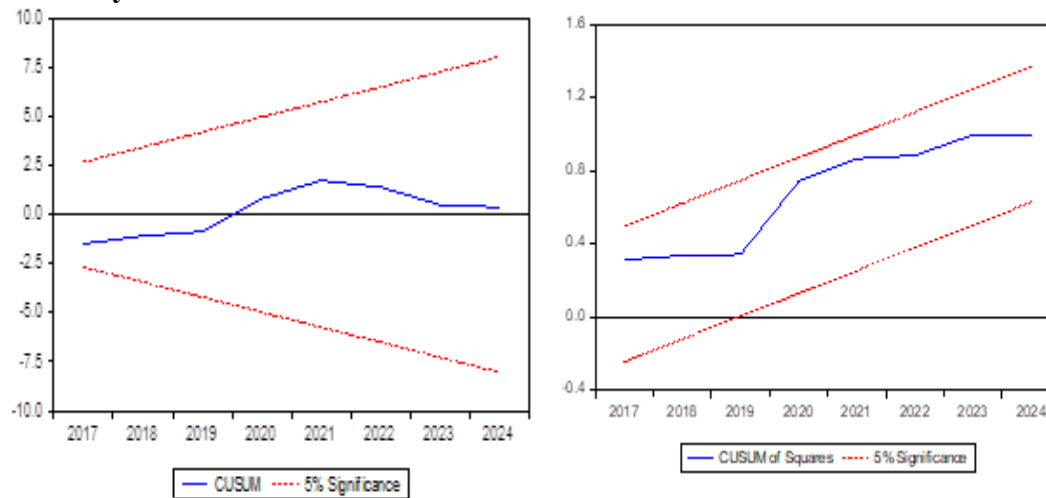
Independent Variable	Notation Model	Koefisien	Std. Error	t-Statistic	Probability	Notes
Inflation Change Short Term	$\Delta^2\text{INF}$	-64.252,82	35.120,66	-1,83	0,1100	Not Significant
Error Correction Term	ECTt-1	-0,9447	0,1540	-6,13	0,0005	Significant

Source: Processed data, 2026

The Error Correction Term (CointEq(-1)) coefficient is -0.944742 and is significant at the 1% level (Prob. 0.0005), indicating a very strong short-term adjustment toward long-term equilibrium. Approximately 94.47% of the previous period's imbalance can be corrected within

a single period, suggesting a rapid adjustment process. In the short term, inflation ($D(INF,2)$) has a negative coefficient of -64,252.82 but is not significant (Prob. 0.1100), thus it does not yet have a tangible impact on GDP. This confirms that short-term dynamics are driven more by the long-term equilibrium correction mechanism rather than the direct influence of inflation.

Stability Test Model



Source: Processed data, 2026

Figure 3. CUSUM Stability Test and ARDL Stability Test (CUSUMQ)

Based on the stability test results using the CUSUM and CUSUM of Squares methods, it can be concluded that the research model is in a stable and consistent condition throughout the 2017 to 2024 period. This is evidenced by the blue line remaining within the red dashedline corridor at the 5% significance level, with no parts crossing or exiting these boundaries. In the absence of indications of extreme structural changes, this model is highly reliable and valid for further analysis.

Conclusion

This study aims to examine the relationship between the number of foreign tourists, inflation, and Indonesia's economic growth, with international flight demand as an intervening variable, using the Autoregressive Distributed Lag (ARDL) approach for the 2010-2024 period. The results of the analysis indicate the existence of long-term cointegration, signifying that the tourism sector, aviation, and economic growth are interconnected and move together in the long run. Empirically, the research findings reveal that in the long term, the number of foreign tourists and international passengers have a significant influence on economic growth, while inflation does not provide a meaningful impact as long as it remains at a controllable level.

In the short term, economic growth is more influenced by the economic conditions of the previous period, which indicates that the impacts of the tourism and aviation sectors require time to be fully channeled into the economy. Based on these results, the government needs to continue encouraging the development of the tourism sector and strengthening flight connectivity, while simultaneously maintaining inflation stability to ensure sustainable economic growth.

Nevertheless, this research is still limited to a few macroeconomic variables; therefore, future research is recommended to include other variables to obtain a more comprehensive understanding of the factors affecting Indonesia's economic growth. Future studies are advised to add relevant variables such as exchange rates, foreign investment, government spending, transportation infrastructure, and tourism policies, so that the relationship of the tourism and

aviation sectors to economic growth can be analyzed more thoroughly. Additionally, the use of alternative methods, separation of analysis by region, and the extension and increased frequency of data could be conducted to strengthen the analysis of short-term and long-term dynamics.

References

- [1] P. Yakup and T. Haryanto, "Pengaruh Pariwisata terhadap Pertumbuhan Ekonomi di Indonesia," *Bina Ekonomi* , vol. 23, no. 2, p. 39, May 2021, doi: 10.26593/be.v23i2.3266.39-47.
- [2] O. Ölçen, "Inflation and Monthly Stock Returns Relationship in the Airline Market," *Journal of Research in Economics* , vol. 2, no. 2, p. 151, Jan. 2023, doi: 10.29228/jore.29.
- [3] Suryani, A. Sagiyo, and I. Leliana, "Strategi Komunikasi dalam Industri Pariwisata Pasca Pandemi Covid-19," *Jurnal Public Relations (J-PR)* , vol. 3, no. 1, p. 93, May 2022, doi: 10.31294/jpr.v3i1.1177.
- [4] Munifatussaidah, J. N. Zahara, and S. Zubaidah, "Confirming the Receipts of International Tourism in Indonesia after the COVID-19 Pandemic: Analyzed with Macroeconomic Indicators," *Airlangga Journal of Innovation Management* , vol. 4, no. 2, p. 208, Dec. 2023, doi: 10.20473/ajim.v4i2.48535.
- [5] W. Dyah, E. Mulyani, A. Afriyanti, and H. Cahyono, "Analysis of the Impact of Tourism on Economic Growth of Gunung Kidul District," *Ekulilibrium Jurnal Ilmiah Bidang Ilmu Ekonomi* , vol. 17, no. 2, p. 182, Sep. 2022, doi: 10.24269/ekulilibrium.v17i2.2022.pp182-189.
- [6] C.-V. Nguyen, "Air Transport Resilience, Tourism and Its Impact on Economic Growth," *Economies* , vol. 12, no. 9, p. 236, Sep. 2024, doi: 10.3390/economies12090236.
- [7] Xue, Y.-T. Tu, M. Ananzeh, A. I. Aljumah, L. M. Trung, and T. Q. Ngo, "The role of economic conditions and sustainable rural development on the sustainability of tourism development: evidence from China," *Environmental Science and Pollution Research* , vol. 30, no. 11, p. 30588, Nov. 2022, doi: 10.1007/s11356-022-24062-w.
- [8] Y. B. Ganar, Z. Zulfitri, and S. R. Sampurnaningsih, "Pengaruh Nilai Investasi, Tenaga Kerja dan Pengeluaran Pemerintah terhadap Pertumbuhan Ekonomi Indonesia Periode 1999-2019," *Jurnal Disrupsi Bisnis* , vol. 4, no. 1, p. 44, Jan. 2021, doi: 10.32493/dr.b.v4i1.9120.
- [9] E. W. Sabrina and S. Huda, "ANALISIS PENGARUH SEKTOR PARIWISATA TERHADAP PRODUK DOMESTIK REGIONAL BRUTO," *EQUILIBRIA PENDIDIKAN Jurnal Ilmiah Pendidikan Ekonomi* , vol. 8, no. 1, p. 12, Aug. 2023, doi: 10.26877/ep.v8i1.16408.
- [10] D. Setiawati, W. Widyastutik, and M. A. Firdaus, "Role and Determinants of Domestic Tourism Demand in Indonesia," *Economics Development Analysis Journal* , vol. 12, no. 3, p. 293, Aug. 2023, doi: 10.15294/edaj.v12i3.68495.
- [11] F. Fahmi, M. A. Musadieg, C. R. Damayanti, and E. Pangestuti, "Corporate agility and government regulation as drivers of airport performance and airport sustainability: an SEM-based study in Indonesian airports," *Frontiers in Sustainability* , vol. 6, Sep. 2025, doi: 10.3389/frsus.2025.1581348.
- [12] M. Alius, A. Shofia, H. Triha, T. F. Satria, B. Harma, and J. R. Mulia, "Analisis Pengaruh Pertumbuhan Angkatan Kerja, Inflasi dan Suku Bunga terhadap Jumlah UMKM," *Indonesian Journal of Multidisciplinary on Social and Technology* , vol. 1, no. 3, p. 290, Aug. 2023, doi: 10.31004/ijmst.v1i3.232.
- [13] İ. H. Uçar and E. Alsü, "Enflasyon, Döviz Kuru ve Turist sayısının Turizm Gelirleri Üzerindeki Etkisi: Bir ARDL Yaklaşımı," *DergiPark (Istanbul University)* , Mar. 2025, Accessed: Oct. 2025. <https://dergipark.org.tr/en/pub/ijgtr/issue/92237/1655667>
- [14] M. L. A. Kurniawan and I. Q. A'yun, "Dynamic Analysis On Export, FDI and Growth in Indonesia: An Autoregressive Distributed Lag (ARDL) Model," *Journal of Economics*

- Business and Accountancy Ventura , vol. 24, no. 3, p. 350, Jun. 2022, doi: 10.14414/jebav.v24i3.2717.
- [15] R. M. Solow, "A Contribution to the Theory of Economic Growth," *The Quarterly Journal of Economics*, vol. 70, no. 1, pp. 65–94, Feb. 1956, doi: 10.2307/1884513.
- [16] Archer and C. Cooper, "The Positive and Negative Impacts of Tourism," in *Global Tourism: The Next Decade*, W. Theobald, Ed. Oxford, UK: Butterworth-Heinemann, 1994, pp. 73–91.
- [17] R. Doganis, *Flying Off Course: The Economics of International Airlines*, 5th ed. London, UK: Routledge, 2019.
- [18] N. G. Mankiw, *Principles of Macroeconomics*, 9th ed. Boston, MA, USA: Cengage Learning, 2019.
- [19] Sakuntala, E. M. Theodora, A. Hou, and A. Tampubolon, "From Stability To Volatility: The Asymmetric Effects Of Macroeconomic Factors On Indonesia's Sustainable Stocks," *Jurnal Ekonomi*, vol. 13, no. 04, pp. 1775–1784, 2024, doi: 10.54209/ekonomi.v13i04.
- [20] Sakuntala, M. S. A. Majid, Aliasuddin, and M. S. S. Abdul-Majid, "Causality between green stock market with monetary policy, global uncertainty, and environmental damage in Indonesia," *International Journal of Energy Economics and Policy*, vol. 12, no. 6, pp. 215–223, Nov. 2022, doi: 10.32479/ijEEP.13348.
- [21] Tampubolon, A. Hou, and D. Sakuntala, "The Impact Of Exchange Rate, Inflation And Interest Rates On Indonesian Mining Product Exports," *Jurnal Ekonomi*, vol. 13, no. 03, pp. 811–819, 2024, doi: 10.54209/ekonomi.v13i03.
- [22] D. Sakuntala and A. Tampubolon, "Can the Demographic Bonus be a Strength or a Weakness for Economic Growth in Indonesia?," *Postgraduate Department, Universitas Pembangunan Panca Budi*, 2024. [Online]. Available: <https://ssrn.com/abstract=4752536>.
- [23] P. Valentine, S. Sabilyana, A. Zulfa, L. N. Nasution, and D. Sakuntala, "Minimum Wage, Inflation, Interest Rate and Household Consumption In Indonesia," *International Journal of Accounting, Management and Economics Research (IJAMER)*, vol. 2, no. 1, pp. 173–182, Jun. 2024, doi: 10.29888/ijamer.v2i1.
- [24] Rosliana et al., "Quality Based Productivity of Fertilizer, Technology and Capital," *The 1st Proceeding of The International Conference on Economics and Business*, vol. 1, no. 1, pp. 65–71, Jun. 2022.
- [25] Rosliana et al., "Post-Covid-19 Disposable Income Resistance Against Community Welfare In Regency Aceh Singkil," *International Journal of Science, Technology & Management*, vol. 3, no. 6, pp. 1694–1702, Nov. 2022, doi: 10.46729/ijstm.v3i6.657.
- [26] D. Aryani, Noviandi, N. S. Fatolah, and H. Akbar, "Implementation Of The Multimedia Development Life Cycle (MDLC) In Solar System Application Design," *International Journal of Science, Technology & Management*, vol. 5, no. 2, pp. 381–390, Mar. 2024, doi: 10.46729/ijstm.v5i2.1105.
- [27] Abdiyanto et al., "ARDL Panel Model In Control Of Exchange Rate Systems Through Post-Covid-19 Open Economy Model," *The 1st Proceeding of The International Conference on Economics and Business*, vol. 1, no. 1, pp. 49–57, Jun. 2022.
- [28] P. Harianja et al., "The Role Of Brand Image In Mediated Amenities In Increasing Tourist Satisfaction," *The 1st Proceeding of The International Conference on Economics and Business*, vol. 1, no. 1, pp. 58–64, Jun. 2022.