


A Dynamic Panel Model of Tourism Performance and Income Inequality in Indonesia

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Received: 7th Mei 2025; Last Revised: 27th July 2025; Accepted: 28th July 2025

Available Online: 30th July 2025; Published Regularly: June 2025



Abstract

This study investigates the dual role of tourism performance in shaping income inequality across Indonesia's 33 provinces from 2014 to 2019. Although the sector's contribution to the national economy declined during this period, its potential for future growth, particularly through youth-driven innovation, remains significant. Using a dynamic panel GMM approach, we analyze both the short and long-term effects of tourism performance on income inequality, capturing immediate and persistent impacts often overlooked in cross-sectional studies. Our findings reveal that tourism growth exacerbates income inequality in both temporal dimensions, underscoring the need for inclusive policies that engage stakeholders from government and businesses to local communities and youth innovators to ensure tourism becomes a driver of equitable development. As a novel contribution, this study systematically examines the immediate and sustained effects of tourism on wealth distribution while assessing causal relationships between income inequality and key economic indicators, including poverty levels, human development index, population dynamics, and unemployment. These insights advance understanding of the complex interplay between tourism development and socioeconomic disparities in Indonesia.

Keywords: Tourism Performance, Income Inequality, Dynamic Panel GMM, Development, and Socioeconomic

JEL Classifications: D33, D63, and Z32

 <https://doi.org/10.14710/djoe.50958>



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Introduction

Tourism holds significant potential as a driver of economic growth, offering multifaceted benefits that have been increasingly recognized in recent decades. It stimulates economic expansion through foreign exchange earnings, attracts foreign investment, broadens the tax base, and most importantly, generates employment opportunities for a substantial portion of the population.

Much of the existing research on this topic focuses on the direct and indirect effects of tourism performance on economic growth. However, many studies assume that economic stability can be achieved by prioritizing growth alone, often overlooking dynamic socioeconomic factors (Alam & Paramati, 2016)

Although tourism plays an important role in driving the economy on a large scale, the impact of tourism development remains theoretically inconclusive. Research has shown that tourism development can contribute to reducing regional inequality (Cárdenas-García et al., 2015; Lv, 2019; Mahadevan & Suardi, 2019; Nguyen et al., 2020). This means that tourism is not only important as one of the determinants of economic growth and development, but also as an effective tool for achieving regional development stabilization. Furthermore, the heterogeneous nature of tourism can have a positive impact on poverty reduction, although it may negatively affect income equality (Kim et al., 2016). In line with this, several researchers have argued that tourism development can exacerbate income inequality (Carrascal Incera & Fernández, 2015; Haddad et al., 2013; Mahadevan et al., 2017). Long-term elasticity analyses revealed that tourism contributes significantly to widening income disparities. However, the long-term elasticity of squared tourism income supports the Kuznets curve hypothesis, indicating a non-linear relationship between tourism income and inequality. Specifically, if tourism revenue doubles, this could eventually lead to a substantial reduction in income inequality within developing economies (Alam & Paramati, 2016). Porto and Espinola (2019) state that employment in tourism leads to income inequality among workers. Other studies have concluded that tourism has an impact on regional disparities in terms of clean water distribution because tourism development is carried out using a differential approach (Sinha et al., 2020).

The inconclusiveness of the research results above is the basis for researchers to further analyze the impact of tourism performance on income inequality in Indonesia with a different approach that is expected to add to the literature review and fill the current research gap.

Classic problems such as disparities in income distribution are usually measured by the Gini Index, which is still a problem for developing countries in the world, including Indonesia. The Gini coefficient in Indonesia has decreased over the last five years, although the decline is not significant year on year. Various factors affect the income gap in Indonesia, such as uneven economic growth, most of which are still moving in Java at almost 50 percent. Poverty is still quite high in Eastern Indonesia, and the Human Development Index is still relatively small; thus, it has not been able to reduce existing inequality, inflation, and unemployment, which have tended to decrease in the last decade but still need hard efforts to reduce them.

The potential that exists makes Indonesia a country with enormous natural wealth, one of which is tourism. However, tourism has not been a major contributor to the Indonesian economy. According to Mahadevan et al. (2017) concluded that tourism had a positive impact on reducing poverty but, at the same time, was driving towards increasing income inequality.

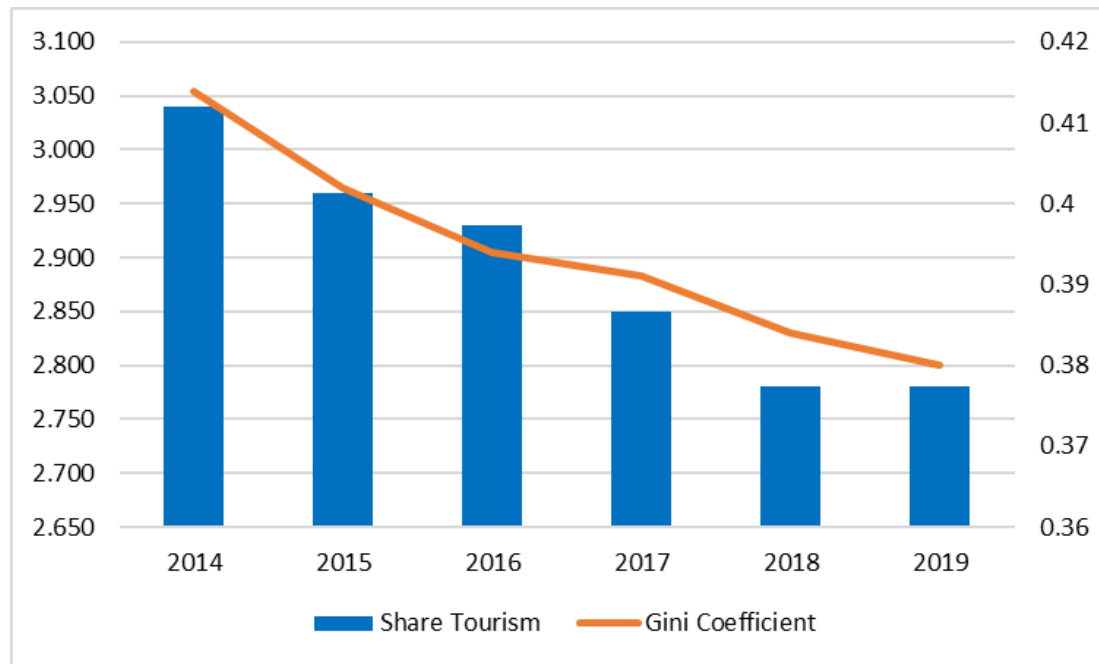


Figure 1. Share Tourism and Gini Coefficient 2014-2019

Source: Central Bureau of Statistics Indonesia

Figure 1 shows that from 2014 to 2019, the share of tourism in the Indonesian economy decreased and increased slightly by the end of 2019. At the same time, however, income inequality tends to shrink. Various programs run by the government in terms of budget politics, such as fiscal transfer instruments, and various productive programs, such as MSME assistance and subsidies for seeds and fertilizers for farmers.

Tourism has emerged as a promising driver of economic growth in Indonesia, with trend data indicating its significant contribution to the nation's aggregate economy. Notably, this sector has fostered a dynamic creative industry in which young entrepreneurs compete both domestically and globally. Additionally, tourism is a major source of employment, supporting numerous micro, small, and medium enterprises (MSMEs) while harnessing the potential of a young, skilled workforce. Approximately 63% of workers in this sector hold high school or undergraduate degrees, enabling them to produce distinctive and innovative products (Herawaty & Raharja, 2018).

However, research on tourism and income inequality in Indonesia, such as Mahadevan et al. (2017), suggests that tourism development may exacerbate income disparities. Using a General Equilibrium Model, their analysis simulates the effects of tourism output on inequality. Building on these findings, this study investigates the relationship between tourism performance and income inequality in Indonesia through dynamic panel analysis. Specifically, it evaluates how tourism's share of total output correlates with income inequality using regional panel data from 2014 to 2019.

Our research fills this gap by providing the first comprehensive provincial-level assessment using dynamic panel data methodology. This study advances prior research through four fundamental differentiators, each of which addresses critical limitations in the existing literature. First, whereas previous investigations have relied predominantly on Computable General Equilibrium (CGE) models or static panel approaches, our analysis employs a dynamic panel Generalized Method of Moments

(GMM) framework with comprehensive endogeneity controls. The estimator controls for unobserved heterogeneity through fixed effects, addresses endogeneity concerns via instrumented lagged variables, and distinguishes between short-term dynamics and long-term equilibrium effects. This approach rigorously accounts for the reverse causality between tourism performance and income inequality, which is a critical limitation of prior studies. This represents significant methodological progression, enabling robust causal inference while accounting for simultaneity bias and unobserved heterogeneity. Second, previous studies have been constrained by national-level aggregation, obscuring important subnational variations. Our research achieves unprecedented spatial resolution through province-level analysis across all 33 Indonesian provinces, revealing critical heterogeneities in the distributional impacts of tourism that aggregate models cannot detect. Third, existing studies have typically relied on single-year cross-sections, limiting the understanding of dynamic processes. We overcome this through a longitudinal analysis spanning 2014-2019, capturing both immediate effects and evolutionary patterns in the tourism-inequality relationship. Finally, while earlier studies remained largely theoretical in their policy discussions, we derive empirically grounded inequality mitigation strategies. Our evidence-based approach identifies specific leverage points for more equitable tourism development, moving beyond abstract postulations to actionable policy insights.

As previously highlighted, Indonesia's tourism sector has immense potential as a leading economic catalyst. It can boost revenue, expand job opportunities, and stimulate the creative economy, thus positioning itself as a critical sector for future development. With a strategic focus, tourism can increase employment and alleviate poverty. Nevertheless, the theoretical implications of this relationship remain debated, warranting further empirical research.

Literature Review

This section re-examines prior academic investigations into the connection between tourism development and income disparity. Initially, we establish a fundamental conceptual framework that explains this relationship, followed by a critical evaluation of the findings derived from quantitative research in this field.

Theoretical frameworks addressing income inequality provide diverse analytical lenses through which to examine both the trajectory and societal consequences of an uneven income distribution. Scholarly discourse frequently converges around two dominant paradigms: anticipating a gradual decline in disparities and projecting their persistent escalation (Gagliani, 1987; Piketty, 2003).

Extensive scholarly research has examined the connection between tourism development and disparities in income distribution (Cárdenas-García et al., 2015; Lee & O'Leary, 2008; Lv, 2019; Nguyen et al., 2020). Empirical findings indicate that tourism activities reduce income disparities in Africa, with the magnitude of this effect being dependent on tourism market segmentation (Dossou et al., 2024).

The empirical results imply that, while tourism expansion may temporarily moderate inequality at intermediate development stages, its long-term efficacy as an equalizing mechanism appears limited, challenging conventional assumptions about tourism's redistributive potential (Chi, 2021, 2024).

The longitudinal analysis further establishes a statistically significant inverse correlation between tourism sector expansion and the Gini coefficient measurements

across the sampled Indian Ocean African microstates. Notably, the econometric results suggest that archipelagic nations with more mature tourism economies demonstrate systematically superior income distribution outcomes compared with their regional counterparts (Andry et al., 2025). In line with this, the empirical analysis reveals a statistically significant inverse relationship between tourism sector expansion and income inequality metrics across the nine studied nations. This correlation suggests progressive improvements in wealth distribution equity concomitant with tourism industry growth (Fang et al., 2020; Subramaniam et al., 2022).

Another empirical findings demonstrate a nonlinear, inverted U-shaped relationship between tourism development and income inequality over extended temporal horizons, providing evidentiary support for the theoretical propositions underlying the Kuznets Curve framework (Akarsu, 2022; Kumail et al., 2023; Zhang, 2023). The analysis conducted by Zhang and Zhang (2021) reveals statistically significant results regarding the impact of tourism on income distribution disparities, particularly when examining both national-level data and regional samples from western China.

Mahadevan et al. (2017) demonstrate that growth in both domestic and international tourism sectors in Indonesia exhibits dual socioeconomic effects: a measurable decline in poverty incidence alongside rising income disparity indicators across all geographic classifications. This paradoxical outcome manifests consistently in both rural and urban localities, suggesting that tourism development generates simultaneous yet opposing distributional consequences.

Methods

This study used regional-level panel data for Indonesia from 2014 to 2019. This study further employs panel data analysis with a fixed effects model (FEM) and further develops dynamic panel data analysis by employing the generalized method of moments (GMM). To estimate the correlation between tourism performance and income inequality in Indonesia, this study uses the share of tourism in the total economic output as the main proxy for tourism performance. This study also emphasizes the importance of partially examining another factor to determine its correlation with income inequality in Indonesia. An argument using a panel dynamic model is to examine the long and short effects of tourism performance on income inequality in Indonesia, rather than just a static model that cannot capture the long-run effect of tourism performance on income inequality. The data used in this study were obtained from the Central Bureau of Statistics of Indonesia.

The main dependent variable in this study is income inequality, and the main independent variable is share tourism, as summarized in the equation below:

$$Ineq_{i,t} = \gamma_0 Ineq_{i,t-1} + \alpha_1 share_{tourism}_{i,t} + \sum \theta_k X_{i,t,k} + \omega_i + \mu_{i,t} \quad (1)$$

where $Ineq_{i,t}$ is the rate of the Gini coefficient in region i at time t ; $Ineq_{i,t-1}$ is the lag of income inequality of province i ; γ is the regression coefficient of the lag of the Gini coefficient; α is the regression coefficient of share tourism; θ_k are the regression coefficients of control variables $X_{i,t,k}$; ω_i is the fixed effect; and $\mu_{i,t}$ is the error.

Table 1. Definition of Variables

No.	Variables	Definition	Scale	Source
1	Income Inequality (Gini Ratio)	A coefficient used to measure the degree of inequality in population distribution, displayed using a Lorenz curve.	Percentage	Statistic Indonesia (BPS)
2	Share Tourism	Proportion of Tourism Contribution to GDP	Percentage	Statistic Indonesia (BPS)
3	Poverty	Poverty is defined as a condition in which a person or group of people is unable to fulfill their basic rights to maintain and develop a dignified life.	Percentage	Statistic Indonesia (BPS)
4	Unemployment	People who are not working but are looking for work or preparing to start a business	Percentage	Statistic Indonesia (BPS)
5	Human Development Index (HDI)	A composite indicator for measuring progress in human development. This index is formed from the average of three main dimensions of human development, namely long life and healthy living, knowledge, and decent living standards.	Percentage	Statistic Indonesia (BPS)
6	Population	The number of permanent residents is counted where they usually reside.	Million People	Statistic Indonesia (BPS)

Following the econometric conventions established by Hendry and Krolzig (2004) and Hoover and Perez (2004). The model adheres to the "general-to-specific" modeling approach. The compact representation acknowledges all relevant controls, while focusing on the core theoretical relationship between tourism development (share_tourism) and inequality dynamics (through the lagged dependent variable).

This study employs the System Generalized Method of Moments (Sys-GMM) estimator, following Blundell and Bond's (1998) methodological framework, to analyze dynamic panel data across 34 regions in Indonesia. The Sys-GMM approach addresses the well-documented limitations inherent in the Difference GMM estimator (Arellano, M. and Bond, 1991), particularly concerning finite-sample bias. As established in the economic growth literature (Aghion et al., 2009), this estimator

effectively captures the temporal dynamics in longitudinal datasets. The methodology offers distinct advantages over conventional OLS estimation by (1) treating all regressors as potentially endogenous and (2) systematically controlling for autocorrelation and simultaneity bias through appropriate instrument construction.

This study examines the statistical properties of the first-difference GMM (FD-GMM) estimator in dynamic panel data models under conditions of (moderate to) high persistence and unrestricted initial conditions. The analysis demonstrates that the estimator's convergence rate depends fundamentally on both the initial state configuration and persistence level, particularly when the autoregressive process follows a local-to-unity specification. A key theoretical contribution reveals that the FD-GMM maintains consistency under strong persistence regimes when mean nonstationarity characterizes the data-generating process (Hayakawa & Nagata, 2016).

Result and Discussion

To establish a robust empirical foundation for our analysis, we begin by examining the fundamental characteristics of our dataset using descriptive statistics. These preliminary observations offer critical insights into the distribution and variability of key socioeconomic indicators across the Indonesian provinces during the 2014-2019 study period.

Table 2. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
inequality	204	.361	.039	.262	.459
lsharetourism	204	.499	.882	-1.47	3.157
lpoverty	204	2.272	.517	1.23	3.346
lunemp	204	1.562	.393	.104	2.352
lhdi	204	4.239	.06	4.039	4.391
lpopulation	204	15.26	1.017	13.335	17.714

The descriptive statistics reveal important patterns in Indonesia's provincial socioeconomic landscape during the 2014-2019 study period. The inequality measure, represented by the Gini coefficient, averaged 0.36 across provinces but showed meaningful variation, ranging from relatively equitable (0.26) to more unequal (0.46) regions. This variation provides the necessary dispersion to analyze the differential impacts of tourism on inequality across diverse provincial contexts.

Tourism's economic footprint, measured through the log-transformed share of tourism in the total output, displays particularly striking disparities. While the average province derived about half of its output from tourism (0.50), some provinces were virtually tourism-independent (minimum -1.47), while others were heavily tourism-dependent (maximum 3.16). This extreme range suggests that tourism development followed highly uneven spatial patterns across the archipelago.

The control variables paint a picture of Indonesia's developmental challenges. Poverty rates (log-transformed) varied substantially, with the poorest provinces experiencing rates nearly three times higher than those of the least poor. Unemployment showed similar regional disparities, while human development levels clustered more closely together, indicating that while basic development outcomes were somewhat evenly distributed, economic opportunities and tourism development remained highly unequal.

These patterns set the stage for the core analysis of the study. The substantial variation in both the dependent variable (inequality) and key independent variable (tourism share), coupled with meaningful differences in the control factors, creates an ideal natural experiment. The dynamic panel approach can leverage these variations to isolate the causal effect of tourism on inequality, while accounting for provincial differences in development, labor markets, and demographics.

The statistics highlight how uneven provincial development of tourism might contribute to inequality patterns. Regions with very high tourism dependence (upper range of *lsharetourism*) may exhibit different inequality dynamics compared with those with minimal tourism sectors. Similarly, the interaction between tourism, poverty, and unemployment across provinces is crucial to understanding the sector's distributional impacts. These descriptive patterns motivate the need for a sophisticated econometric approach outlined in this study.

Furthermore, we present the results of this study and discuss them based on our empirical estimation. Table 3 presents the estimation output of the relationship between share tourism and income inequality in Indonesia during 2014-2019.

Table 3. Dynamic Panel Data Estimation

	FDGMM	SYSGMM	FEM	PLS
Ineq(-1)	-0.1188	0.1741	-0.1201	0.7623***
<i>lsharetourism</i>	-0.0017	0.0956*	-0.067	-0.00009
<i>lpoverity</i>	0.1194	0.0567	0.1568*	0.0312**
<i>lunemp</i>	0.0028	-0.0184	-0.0056	-0.014
<i>lhdi</i>	-0.3429	-0.7351	0.1143	0.1692
<i>lpopulation</i>	-0.121	-0.0128	-0.2775*	0.0072
_cons	1.8731	2.3088	2.2817	-1.1372*
R-Squared			0.7661	0.7604
AR(2)	0.623	0.3055		
(p-value)	0.1308	0.0871		

Note: Table 3 shows the regression estimates of the panel data analysis of regional-level data in Indonesia during 2014-2019. P-values in parentheses; ***, **, and * are significant at 1%, 5%, and 10%. The dependent variable was the rate of income inequality (*Ineq*). Regression estimates include constants in the econometric model. Model 1,2 provides GMM estimates. Model 3,4 provides FEM and PLS estimates.

Table 3 presents the estimates of panel data regression with FDGMM, SYSGMM, FEM, and PLS, which provide the correlation between share tourism and income inequality in Indonesia from 2014 to 2019. Models 1 and 2 provide estimates of GMM, and Models 3 and 4 provide the results of the FEM and PLS estimates in the model, which consider the lag of income inequality in the model. Preliminary exploration in the study indicates that PLS estimates appear to be biased because of autocorrelation issues and low R2 estimates in Model 1. The lag of income inequality in the dynamic panel data model results in unbiased estimates, which is proved by the p-value of the AR Sargan Test in the model (Table 3). The lag estimate shows the dynamic correlation of income inequality within each period. Thus, this study further focuses on GMM estimates, which potentially provide unbiased estimates that resolve autocorrelation issues in the model.

The robustness of this model requires a valid instrument, consistency, and unbiased estimation. The validity of the instrument was tested using the Sargan test.

Sargan test based on the estimation of FDGMM and SYSGMM, as shown in the table below:

Table 4. Sargan Test for Validity

	FDGMM	SYSGMM
chi2(13)	9.807789	16.32129
Prob > chi2	0.1308	0.0871

Note: Sargan test of overidentifying restrictions. H0: overidentifying restrictions are valid.

The Sargan test in the table above shows that the probability for FDGMM is 0.1308 and SYSGMM is 0.08, both greater than 0.05; thus, this model is valid. Furthermore, we test for the arellano bond test to make sure this model is consistent. In order 2, both FDGMM and SYSGMM p-values more than 0.05 indicate the GMM model is consistent.

Table 5. Arrelano Bond Test for Consistency

Order	FDGMM		SYSGMM	
	z	Prob > z	z	Prob > z
1	-2.6016	0.0093	-3.1158	0.0018
2	0.63527	0.1308	1.0237	0.306

Note: Arellano-Bond test for zero autocorrelation in first-differenced errors. H0: no autocorrelation.

The third is to check whether the unbiased test that compares the coefficient lag dependent variable of the FDGMM model in this case is the inequality between FEM and PLS, which means that the coefficient lag dependent FDGMM must be more than the coefficient lag independent FEM and less than the coefficient lag independent PLS. The coefficient lag dependent FDGMM must be more than FEM and less than PLS. This means that the unbiased test is successful.

The coefficient lag dependence of FDGMM is -0.1188, that of FEM is -0.1201, and that of PLS is 0.7623. According to this value, the coefficient lag dependent on FDGMM is between that of FEM and PLS.

Because the coefficient lag dependent FDGMM is not too different from the coefficient lag dependent FEM, we continue to estimate dynamic panel data with SYSGMM.

Comparing the FDGMM and SYSGMM coefficients, the best model is the SYSGMM. According to the SYSGMM results, this study's main finding shows a consistent and significant correlation between tourism performance, measured by the share of tourism to total output, and income inequality in Indonesia's GMM estimates. Specifically, the SYSGMM estimates show a positive and significant correlation between share tourism and income inequality in Indonesia. Model 1 shows that share tourism insignificantly correlates with the decrease in income inequality by 0.0017 %, Model 2 shows that share tourism significantly correlates with the increase in income inequality by 9.56%, and Models 5 and 6 show that share tourism insignificantly correlates with the increase in income inequality. This result implies that, partially, shared tourism has a higher correlation with income inequality in Indonesia.

Table 6. Short-Run and Long-Run Elasticity Results

Variables	Elasticity	
	Short-run	Long-run
Ineq(-1)	0.17417712	0.7623
lsharetourism	.09564525*	0.1158181
lpoverty	0.05675817	-0.0223955
lunemp	-0.01849474	-0.8902282
lhdi	-0.73517085	0.0687292
lpopulation	-0.01284816	-0.015558

Table 6 shows the short- and long-term effects of each independent variable on income disparities. Because there are dynamics that use lag, adjustments can be calculated in subsequent periods; thus, long-term effects can be calculated. The long-term effect can be interpreted as the accumulation of short-term effects of each period that is accumulated onwards, and the entire period will be calculated as a long-term effect. Based on long-term estimates, share tourism will have a positive effect on income inequality in Indonesia; this is a serious concern for all components.

Accordingly, the result of the study shows the significant correlation of tourism performance with the increase in income in Indonesia during the period 2014-2019. An argument could explain this based on average, foreigners spend at least 8.5 times more than local tourists, and they have different spending patterns. Most local tourists use domestic transportation, and temporary accommodation hotels constitute the main part of people's consumption. Foreigners also have a higher share of art, culture, entertainment, and entertainment than local residents. After restaurant shopping, the next largest purchase for locals is for non-food products. These consumption differences can lead to different impacts and interrelationships between the economic sectors, leading to emissions and income (Mahadevan et al., 2017). This result shows that the contribution of tourism to Indonesia may enable an increase in income inequality. This result highlights that the impact of tourism activities on income inequality depends, to a large extent, on how economic value flows from tourism activities to households. When the expenditure of foreign and domestic tourists flows more to low- and middle-income groups, tourism activities can reduce inequality, as in 2014 and 2015. However, when the expenditures of foreign tourists and domestic tourists shift to middle- and high-income groups, the tourism industry can exacerbate income inequality, as in 2016. This result is consistent with the findings of (Carrascal Incera & Fernández, 2015; Haddad et al., 2013; Mahadevan et al., 2017; Sinha et al., 2020).

However, the study shows a positive, insignificant correlation of poverty, a negative, insignificant correlation of unemployment, a negative, insignificant correlation of human development index, and a negative, insignificant correlation of population on income inequality in Indonesia.

Conclusion

This study examined the correlation between tourism performance and income inequality in Indonesia. Thus, our hypothesis is rejected based on the estimation results. It mainly concludes that tourism performance in Indonesia significantly correlates with the increase in income inequality during 2014-2019. This study also highlights the correlation between poverty rate, human development index,

unemployment, and population; they evidently have an insignificant correlation with the increase in income inequality in Indonesia.

Although this research has made an important contribution to the literature, it must be noted that there are some limitations. First, the potential causality mechanism of tourism and income inequality described in the theoretical background has not yet been studied at the micro level. This study attempts to explain the impact of all potential mechanisms in the tourism sector from a macro perspective through tourism outcomes in GDP reports from the Indonesia Statistic Board (BPS). Future research could address this problem at the micro level. For example, it is possible to analyze the number of tourist visits in Indonesia, room occupancy rate, and average length of stay of international visitors, all of which can impact the tourism industry and their impact on income distribution. Second, the Gini Index is used to express disparities in the income distribution. In this case, the estimation results may be sensitive to the measured income inequality variable. Future research can also focus on a new theoretical mechanism for the relationship between tourism and income inequality. Therefore, the introduction of new theoretical mechanisms will help establish sustainable tourism policies and income distribution.

Author Contributions Statement

Yusrin S. Hasan and Roy Anshor contributed to engaged in conceptualizing ideas, conducting formal analysis, writing, and responding to reviewer comments. Fathimah Kurniawati contributed to conceptualizing ideas, served as an advisor and supervisor for data collection and analysis, reviewed the manuscript, and examined relevant literature. Annisa Pratiwi Katili and Refinna Cesari Jacobus focused on writing, reviewing, and preparing edits, as well as addressing reviewer comments. Zumran Ibrahim and Mega Nurannisa Hippy contributed to being responsible for data collection, review, and preparing edits.

References

- Aghion, P., Bacchetta, P., Rancière, R., & Rogoff, K. (2009). Exchange rate volatility and productivity growth: The role of financial development. *Journal of Monetary Economics*, 56(4), 494–513. <https://doi.org/10.1016/j.jmoneco.2009.03.015>
- Akarsu, G. (2022). Spatial panel data analysis of the relationship between tourism and income inequality. *Anatolia*, 33(4), 537–549. <https://doi.org/10.1080/13032917.2021.1969959>
- Alam, M. S., & Paramati, S. R. (2016). The impact of tourism on income inequality in developing economies: Does Kuznets curve hypothesis exist? *Annals of Tourism Research*, 61, 111–126. <https://doi.org/10.1016/j.annals.2016.09.008>
- Andry, A. H., Constant, F. D., & Lefe, Y. D. H. (2025). Does tourism development matter in reducing income inequality in Africa's Indian Ocean Island countries? *SN Business and Economics*, 5(1), 1–14. <https://doi.org/10.1007/s43546-024-00769-5>
- Arellano, M. and Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *Review of Economic Studies*, 58, 277–297.
- Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, 234, 115–143.

- <https://doi.org/10.1016/j.jeconom.2023.03.001>
- Cárdenas-García, P. J., Sánchez-Rivero, M., & Pulido-Fernández, J. I. (2015). Does tourism growth influence economic development? *Journal of Travel Research*, 54(2), 206–221. <https://doi.org/10.1177/0047287513514297>
- Carrascal Incera, A., & Fernández, M. F. (2015). Tourism and income distribution: Evidence from a developed regional economy. *Tourism Management*, 48, 11–20. <https://doi.org/10.1016/j.tourman.2014.10.016>
- Chi, J. (2021). Revisiting the tourism-inequality nexus: Evidence from a panel of developed and developing economies. *Current Issues in Tourism*, 24(6), 755–767. <https://doi.org/10.1080/13683500.2020.1743243>
- Chi, J. (2024). Tourism development and income inequality in OECD countries: New insights from method of moments quantile regression. *Tourism Economics*, 30(3), 767–784. <https://doi.org/10.1177/13548166231184796>
- Dossou, T. A. M., Asongu, S. A., Dossou, K. P., & Alinsato, A. S. (2024). The role of the internet in moderating the effect of industrialization on income inequality in Africa. *Information Technology for Development*, 1–28. <https://doi.org/10.1080/02681102.2024.2414404>
- Fang, J., Gozgor, G., Paramati, S. R., & Wu, W. (2020). The impact of tourism growth on income inequality: Evidence from developing and developed economies. *Tourism Economics*. <https://doi.org/10.1177/1354816620934908>
- Gagliani, G. (1987). Income inequality and economic development. *Annual Review of Sociology*, 13, 313–334.
- Haddad, E. A., Porsse, A. A., & Rabahy, W. (2013). Domestic tourism and regional inequality in Brazil. *Tourism Economics*, 19(1), 173–186. <https://doi.org/10.5367/te.2013.0185>
- Hayakawa, K., & Nagata, S. (2016). On the behaviour of the GMM estimator in persistent dynamic panel data models with unrestricted initial conditions. *Computational Statistics and Data Analysis*, 100, 265–303. <https://doi.org/10.1016/j.csda.2015.03.007>
- Hendry, D. F., & Krolzig, H.-M. (2004). We ran one regression. *Oxford Bulletin of Economics and Statistics*, 66(5).
- Herawaty, T., & Raharja, S. J. (2018). Creative industry development strategy in Bandung, Indonesia. *Review of Integrative Business and Economics Research*, 7(2), 394–403. http://www.sibresearch.org/uploads/3/4/0/9/34097180/riber_7-s2_tk18-078_394-403.pdf
- Hoover, K. D., & Perez, S. J. (2004). Truth and robustness in cross-country growth regressions. *Oxford Bulletin of Economics and Statistics*.
- Kumail, T., Sadiq, M., Ali, W., & Sadiq, F. (2023). The impacts of tourism development on income inequality: How does tourism capital investment contribute to income distribution? Tourism Agenda 2030. *Tourism Review*, 78(2), 630–645. <https://doi.org/10.1108/TR-08-2022-0378>
- Lee, S., & O’Leary, J. T. (2008). Determinants of income inequality in U.S. nonmetropolitan tourism- and recreation-dependent communities. *Journal of Travel Research*, 46(4), 456–468. <https://doi.org/10.1177/0047287507312425>
- Lv, Z. (2019). Deepening or lessening? The effects of tourism on regional inequality. *Tourism Management*, 72(November 2018), 23–26. <https://doi.org/10.1016/j.tourman.2018.11.009>
- Mahadevan, R., Amir, H., & Nugroho, A. (2017). Regional impacts of tourism-led

- growth on poverty and income: Inequality: A dynamic general equilibrium analysis for Indonesia. *Tourism Economics*, 23(3), 614–631. <https://doi.org/10.5367/te.2015.0534>
- Mahadevan, R., & Suardi, S. (2019). Panel evidence on the impact of tourism growth on poverty, poverty gap and income inequality. *Current Issues in Tourism*, 22(3), 253–264. <https://doi.org/10.1080/13683500.2017.1375901>
- Nguyen, C. P., Schinckus, C., Su, T. D., & Chong, F. H. L. (2020). The influence of tourism on income inequality. *Journal of Travel Research*. <https://doi.org/10.1177/0047287520954538>
- Piketty, T. (2003). Income inequality in France, 1901 - 1998. *Journal of Political Economy*, 111(5), 1004–1042.
- Porto, N., & Espinola, N. (2019). Labor income inequalities and tourism development in Argentina: A regional approach. *Tourism Economics*, 25(8), 1265–1285. <https://doi.org/10.1177/1354816619828143>
- Sinha, A., Driha, O., & Balsalobre-Lorente, D. (2020). Tourism and inequality in per capita water availability: Is the linkage sustainable? *Environmental Science and Pollution Research*, 27(9), 10129–10134. <https://doi.org/10.1007/s11356-020-07955-6>
- Subramaniam, Y., Masron, T. A., & Loganathan, N. (2022). Tourism and income inequality. *Journal of Business and Socio-Economic Development*, 2(2), 181–194. <https://doi.org/10.1108/JBSED-07-2021-0102>
- Zhang, J. (2023). Tourism, urbanization, and urban income inequality in China. *Tourism Economics*, 29(6), 1423–1441. <https://doi.org/10.1177/13548166221108121>
- Zhang, J., & Zhang, Y. (2021). Tourism, transport infrastructure and income inequality: A panel data analysis of China. *Current Issues in Tourism*, 0(0), 1–20. <https://doi.org/10.1080/13683500.2021.1928012>