

ECONOMIC GROWTH, TOURISM PERFORMANCE, AND CRISIS SENSITIVITY IN ASEAN: A REGIONAL PANEL ANALYSIS

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Abstract: This study examines the long-run relationship between economic growth and tourism performance in ASEAN countries, with particular attention to crisis sensitivity and regional heterogeneity. Using balanced panel data for eight ASEAN member states over the period 1999–2023, the analysis employs pooled ordinary least squares and fixed-effects estimators to assess how macroeconomic conditions and structural tourism intensity shape tourism outcomes. The results reveal a strong and robust positive association between economic output and tourism receipts, with estimated elasticities close to unity across specifications. This near-proportional relationship indicates a structurally embedded linkage between tourism performance and overall economic capacity, rather than a unidirectional tourism-led growth mechanism. Tourism intensity further reinforces tourism performance, highlighting the structural role of tourism within national economies. Crisis episodes exhibit asymmetric impacts on tourism dynamics, with the COVID-19 pandemic generating the most severe and persistent contraction, particularly in developing ASEAN economies. Comparative analysis indicates that while tourism intensity contributes similarly across development groups, developing countries display greater vulnerability to crisis shocks. The findings underscore the importance of macroeconomic stability, diversification, and regionally differentiated tourism policies to enhance resilience in crisis-prone environments. This study contributes to the regional tourism literature by clarifying the demand-side economic drivers of tourism performance in ASEAN under conditions of systemic shocks and developmental heterogeneity.

Keywords: tourism performance, economic growth, ASEAN, regional analysis, crisis impacts, tourism geography, panel data

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INTRODUCTION

Tourism has emerged as a dynamic driver of regional economic transformation across Southeast Asia, reinforcing the nexus between growth, integration, and sustainability. Recent evidence highlights that tourism receipts, foreign direct investment, and green innovation significantly enhance long-term economic expansion and spatial development within ASEAN economies (Trung, 2025; Zagoto et al., 2025). Empirical studies confirm that the tourism–growth relationship is bidirectional, strengthening local employment and infrastructural networks (Indriani, 2022; Maulana et al., 2025). Moreover, regional integration and SEZ-based tourism projects have restructured peripheral economies through capital inflows and community participation (Park, 2024). The interplay between digital infrastructure, policy harmonization, and sustainable tourism practices continues to define ASEAN’s competitive advantage, generating inclusive growth across diverse territorial contexts (Keorodom, 2023; Mohammad Nurul Huda et al., 2013; Titovich & Toropygin, 2023; Trifan, 2023).

Despite its growing importance, ASEAN’s tourism landscape remains spatially uneven, shaped by diverse institutional capacities, governance quality, and infrastructural readiness. Empirical analyses reveal that territorial disparities persist as advanced economies such as Singapore and Malaysia exhibit greater tourism productivity and environmental innovation compared to less developed members like Laos or Myanmar (An & Kim, 2022; Trung, 2025).

Studies employing spatial econometric and competitiveness frameworks highlight how innovation intensity, FDI spillovers, and institutional strength amplify regional clustering effects within tourism economies (Soh et al., 2023).

However, geopolitical risk and governance asymmetry exacerbate uneven participation in regional tourism networks, deepening intra-ASEAN heterogeneity (Chen et al., 2024). These dynamics underscore the urgency for territorially nuanced policies that integrate competitiveness, sustainability, and inclusiveness into ASEAN’s tourism-led growth agenda. The vulnerability of ASEAN’s tourism systems to external shocks has been acutely demonstrated through global crises that disrupted regional mobility and income structures. COVID-19, in particular, revealed deep asymmetries in recovery capacity and institutional resilience across member states, with uneven rebounds between advanced and tourism-dependent economies (Huynh et al., 2023; Polyzos et al., 2021). Empirical analyses emphasize how regional crises reshape

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spatial tourism flows and reconfigure destination hierarchies within the ASEAN bloc (Fornari & Allis, 2022; Koepke & Balasundharam, 2021). Case studies from Vietnam and Cambodia highlight that resilience is contingent on adaptive governance, social networks, and local entrepreneurial innovation (Ford & Im, 2023; Huynh et al., 2022). From a broader policy lens, strengthening systemic resilience requires coordinated regionalism, diversified markets, and digital transformation to mitigate exposure to future disruptions (OECD, 2022, 2023).

From a theoretical standpoint, the relationship between tourism activity and economic performance is widely acknowledged to be bidirectional rather than unidirectional (Bui Hoang, 2024; Kuok et al., 2023). While the tourism-led growth hypothesis has traditionally framed tourism as a driver of economic expansion, recent empirical studies increasingly emphasize the role of broader macroeconomic conditions in shaping tourism performance, particularly in regionally integrated economies (Jaroensutasinee et al., 2025; Nguyen & Le, 2026). Economic scale, income levels, and structural stability influence tourism demand, investment capacity, and destination competitiveness across ASEAN (Alsabhan et al., 2025; Indriani, 2022). Accordingly, tourism is better understood not only as a potential growth catalyst but also as an economic activity that responds to demand-side macroeconomic dynamics, especially under conditions of structural heterogeneity and external shocks (Phob-udom et al., 2025; Rohan & Suyanto, 2025).

Existing ASEAN tourism literature remains fragmented, often prioritizing national case studies or short-term econometric analyses that overlook spatial interdependencies and systemic crises. Recent studies underscore that crises such as COVID-19 reconfigured tourism's regional role, amplifying inequalities and exposing governance asymmetries (Liyushiana et al., 2022; Tuli & Vadiyala, 2022). Spatial analyses reveal persistent territorial disparities and the limited capacity of regional coordination mechanisms to foster balanced development (An & Kim, 2022; Chen & Zhang, 2023). Meanwhile, cross-country assessments identify that tourism's economic contribution fluctuates under crisis conditions, particularly in peripheral or tourism-dependent regions (Akita & Alisjahbana, 2023). Collectively, these findings point to a pressing need for integrative frameworks that combine regional resilience theory, territorial development, and tourism geography to capture ASEAN's evolving spatial-economic dynamics (Hoang, 2024).

Addressing this gap, the present study adopts a regional and territorial perspective to examine tourism–economic dynamics in ASEAN over a long-term period. By combining panel data analysis with explicit consideration of major crisis episodes, the study seeks to capture both structural relationships and temporal disruptions. The focus on spatial differentiation between developing and more advanced member states further strengthens the geographic relevance of the analysis. Accordingly, this study aims to address three core questions: first, how economic growth and structural tourism intensity shape tourism performance across ASEAN in the long run; second, how major crisis episodes affect tourism dynamics at the regional level; and third, whether these tourism–economic relationships differ across development groups. By addressing these questions, the study contributes to tourism geography and regional development literature, offering empirical insights relevant for spatially informed tourism planning and policy formulation.

While tourism is often conceptualised as a potential driver of economic growth, the relationship between tourism activity and economic performance is inherently bidirectional. In the ASEAN context, where development levels and structural characteristics differ substantially, understanding how economic growth conditions shape tourism performance becomes particularly relevant. Rather than testing tourism-led growth in a strict causal sense, this study focuses on identifying robust long-run structural associations between economic output, tourism intensity, and tourism receipts within a regional panel framework. By incorporating major crisis episodes, the analysis further captures how external shocks modify these relationships across heterogeneous economies.

LITERATURE REVIEW AND THEORETICAL BACKGROUND

Tourism has long been recognised as an important driver of economic activity, particularly in regions with strong natural, cultural, and environmental assets (Lee & Chang, 2008; Sobirov et al., 2025). Within economic geography and tourism studies, tourism is increasingly viewed not merely as a sectoral activity but as a spatially embedded system that interacts with regional structures, labour markets, and territorial governance (Kyophilavong et al., 2018; Saarinen & Rogerson, 2021). This perspective highlights the relevance of tourism in shaping regional development trajectories, especially in emerging and heterogeneous regions such as ASEAN (Fan & Ha, 2025; Maneejuk et al., 2022).

Tourism-led growth hypothesis in a regional and spatial context

The tourism-led growth hypothesis posits that tourism development stimulates economic growth through multiple channels, including foreign exchange earnings, employment creation, and infrastructure investment (Mahadevan et al., 2017; Wu et al., 2025). Early empirical studies provide evidence of a positive relationship between tourism receipts and economic growth, particularly in small open economies and developing regions (Li et al., 2016). These findings have positioned tourism as a potential engine of regional economic expansion (Bhatt et al., 2024; Paramati & Nguyen, 2024).

Subsequent research has extended this hypothesis by incorporating spatial and regional dimensions. From a geographic perspective, tourism-led growth is not spatially neutral, as benefits tend to concentrate in specific regions or destinations (Lin et al., 2019; Yang & Fik, 2014). Agglomeration effects, accessibility, and territorial endowments influence how tourism contributes to regional economies. Studies grounded in regional economics suggest that tourism may reinforce existing spatial inequalities if supporting institutions and regional linkages remain uneven (Adeleye, 2023; Calero & Turner, 2020; Tung, 2021). In multi-country regional settings, such as ASEAN, the tourism–economy relationship is increasingly recognised as bidirectional rather than strictly unidirectional. While tourism-led growth provides an important theoretical foundation, recent empirical evidence highlights that broader macroeconomic conditions, including economic

scale, income levels, and structural stability, play a central role in shaping tourism performance across heterogeneous economies (Trung, 2025; Wahab et al., 2023). Studies from Asia suggest that tourism outcomes respond differently to macroeconomic dynamics over time, indicating the presence of structural, institutional, and spatial moderators that condition tourism performance rather than a uniform growth mechanism (Qi & Ding, 2025; Shahzad et al., 2017).

Tourism, territory, and regional economic development

From the standpoint of tourism geography, tourism development is inherently territorial, relying on place-specific resources, environmental quality, and cultural landscapes (Golubičić et al., 2025; Reyabi & Boulaassal, 2025). Tourism activities reshape regional economies by altering land use, infrastructure distribution, and labour mobility (Popescu et al., 2025; Scolozzi & Villa, 2025). These transformations link tourism closely to broader processes of regional development and spatial planning. Regional development theories emphasise that tourism contributes most effectively to economic performance when embedded within diversified regional systems (Liwei & Yu, 2025; Mafrudoh et al., 2025). Strong backward and forward linkages between tourism and local industries increase value retention within regions (Tagherist & Toufik, 2025). Conversely, weak territorial integration may limit the broader economic impact of tourism, particularly in peripheral or less developed areas. This distinction is central to understanding uneven tourism outcomes across regions.

In ASEAN, tourism plays a critical role in regional integration and cross-border economic interaction (Arnakim et al., 2023; Lee, 2022; Sundram, 2025). Initiatives promoting tourism corridors and regional branding reflect attempts to leverage tourism for territorial cohesion (Rüland & Carrapatoso, 2022; Stoffelen & Vanneste, 2017). However, empirical assessments suggest that benefits remain uneven, often favouring capital cities and established destinations. This pattern underscores the need for regionally informed empirical analyses that account for territorial diversity and spatial structure.

Crisis impacts on tourism systems and regional resilience

Tourism is widely regarded as one of the most crisis-sensitive economic activities due to its dependence on mobility, perceptions of safety, and discretionary consumption (Hopkins, 2021; Senbeto & Hon, 2020; Williams & Baláz, 2015). Health crises, financial shocks, and geopolitical disruptions have repeatedly demonstrated the vulnerability of tourism systems (Cohen, 2012; Ferreira et al., 2025). Research on crisis impacts highlights sharp contractions in tourism demand, followed by uneven and prolonged recovery processes across regions (Plzáková & Smeral, 2022). From a regional resilience perspective, crises affect tourism destinations differently depending on economic structure, institutional capacity, and diversification (Phan et al., 2025; Tunca et al., 2025). Regions with high tourism dependence often experience deeper economic shocks, while those with diversified economies tend to recover more rapidly. The concept of territorial resilience has therefore gained prominence in tourism geography, focusing on the ability of regions to absorb, adapt, and recover from external disturbances (Fan et al., 2025; Grzenkowicz, 2025). In Southeast Asia, crisis events such as the SARS outbreak, the Global Financial Crisis, and the COVID-19 pandemic have exposed significant spatial disparities in tourism vulnerability and recovery (Akita & Alisjahbana, 2023; Plzáková & Smeral, 2022; Polyzos et al., 2021). While some destinations demonstrated adaptive capacity through domestic tourism or policy intervention, others faced prolonged downturns (Papagiannakis et al., 2018; Wang et al., 2023). These experiences suggest that crisis impacts are mediated by regional characteristics, reinforcing the need for long-term and regionally comparative analyses (Dutta, 2024; Gündüz et al., 2025).

Developmental heterogeneity in tourism performance

A recurring theme in tourism economics and geography is the distinction between developed and developing economies in tourism performance and outcomes. More advanced economies typically exhibit higher tourism productivity, stronger institutional frameworks, and more diversified tourism offerings (Kozáková et al., 2025; Lestan et al., 2025; Lin & Xing, 2020; Rismayani et al., 2025). In contrast, developing economies often rely heavily on tourism revenues but face volatility and limited capacity to manage shocks (Kadyrbekova et al., 2025). This disparity reflects broader patterns in economic development, infrastructure, and institutional maturity (Godinez et al., 2025; Upadhyaya et al., 2025).

Empirical studies indicate that tourism intensity and its growth effects differ across development levels (Nguyen & Le, 2026; Smolčić Jurdana & Agbaba, 2025). While tourism activity may benefit from economic expansion in developing economies, it may simultaneously amplify exposure to external shocks, whereas developed economies tend to display more stable tourism performance due to diversified economic bases and stronger macroeconomic buffers (Parray et al., 2025; Samarathunga et al., 2024). Developed economies, by contrast, tend to display more stable tourism contributions due to diversified economic bases and established infrastructure (Cheng, 2025; Londe et al., 2025). These differences suggest that development level moderates tourism–growth relationships. Within ASEAN, developmental heterogeneity is particularly pronounced, encompassing both high-income service-oriented economies and lower-income tourism-dependent states (Akarsu, 2022). This diversity offers a valuable context for examining how tourism contributes to regional development under varying structural conditions (Elgin & Elveren, 2024; Shah, 2025). Comparative approaches are therefore essential to identify differentiated patterns and avoid overly generalised conclusions (Pham, 2020).

Literature synthesis and hypothesis development

The reviewed literature highlights several key insights. First, tourism is widely recognised as a potential driver of economic growth, yet its effects are shaped by spatial, institutional, and developmental contexts. Second, tourism development is territorially embedded, influencing and being influenced by regional structures. Third, crises play a critical role in disrupting tourism systems, with uneven impacts across regions and development levels.

Despite extensive research, gaps remain in long-term, regionally comparative studies that jointly examine macroeconomic drivers of tourism performance, crisis sensitivity, and territorial heterogeneity within a single empirical framework. In the ASEAN context, such integrated analyses remain limited. Addressing this gap, the present study formulates the following hypotheses:

1. **H1:** Economic growth has a positive and significant effect on tourism performance across ASEAN countries in the long run.
2. **H2:** Major crisis events exert a negative impact on tourism performance in ASEAN.
3. **H3:** The relationship between economic growth and tourism performance differs between developing and more advanced ASEAN economies.
4. **H4:** Crisis impacts on tourism performance are more pronounced in developing ASEAN countries than in more advanced member states.

These hypotheses guide the empirical analysis and provide a structured framework for examining tourism–economic dynamics from a regional and territorial perspective that is consistent with the empirical model employed.

METHODOLOGY

This study adopts a quantitative panel-data approach to examine the relationship between tourism development and economic growth across ASEAN countries. The methodological design emphasises transparency and replicability, combining regional comparability with temporal depth. Figure 1 illustrates the overall research flow, starting from data collection and variable construction, followed by model estimation, diagnostic testing, and robustness assessment. This structured workflow supports a coherent linkage between theoretical expectations and empirical implementation.

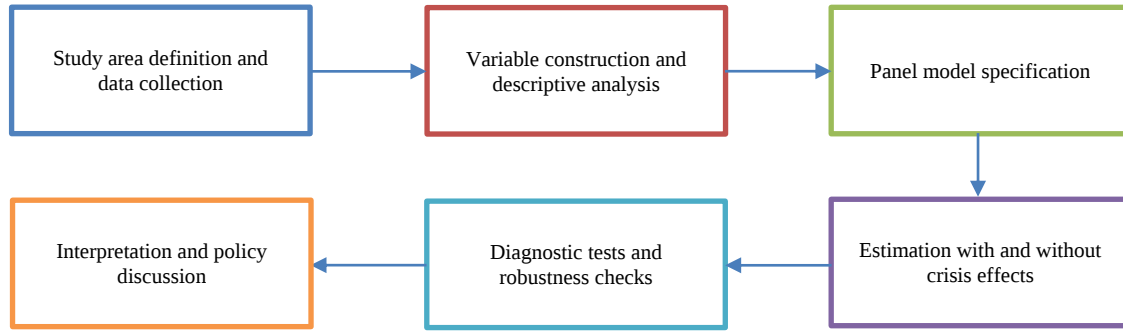


Figure 1. Research Flow

To capture both cross-country and temporal variation, the study employs panel regression techniques using annual data for eight ASEAN countries over 1999–2023. Panel models are preferred because they allow the joint analysis of regional heterogeneity and dynamic change over time. In line with the study’s objective, tourism performance is treated as the outcome variable, while economic growth and structural tourism characteristics are modelled as key explanatory factors. The baseline specification relates tourism performance to economic output while controlling for macroeconomic conditions. This approach is consistent with prior tourism–growth studies in regional and multi-country contexts.

The core empirical model is specified as follows:

$$\ln(TR_{it}) = \alpha + \beta_1 \ln(GDP_{it}) + \beta_2 TI_{it} + \beta_3 X_{it} + \mu_i + \varepsilon_{it} \quad (1)$$

where i denotes country and t denotes time. TR represents tourism receipts, GDP denotes gross domestic product, TI is tourism intensity, and X is a vector of control variables. The term μ_i captures unobserved country-specific effects. This specification follows and extends standard panel formulations employed in tourism–growth studies (Balaguer & Cantavella-Jordá, 2002; Brida et al., 2016; Lee & Chang, 2008). Regional heterogeneity is a central concern in ASEAN due to differences in development levels, tourism structures, and institutional capacity. To account for unobserved time-invariant characteristics, fixed effects estimators are applied alongside pooled ordinary least squares. This strategy controls for country-specific factors such as geography, long-term policy orientation, and structural tourism endowments, thereby reducing omitted variable bias in the estimated relationships. Accordingly, the fixed-effects framework is employed to capture stable long-run associations rather than short-term fluctuations or strict causal mechanisms.

Crisis effects are incorporated to capture major disruptions affecting tourism systems across the region. Dummy variables are introduced for key crisis episodes, allowing the model to isolate structural breaks associated with external shocks. This specification enables the assessment of how tourism–economic relationships behave under stress conditions, consistent with regional resilience and tourism vulnerability frameworks. Following the tourism-led growth framework extended to account for macroeconomic shocks, the augmented panel model incorporating crisis effects is specified as:

$$\ln(TR_{it}) = \alpha + \beta_1 \ln(GDP_{it}) + \beta_2 TI_{it} + \beta_3 X_{it} + \gamma C_t + \mu_i + \varepsilon_{it} \quad (2)$$

where i denotes country and t denotes time. TR_{it} represents tourism receipts, GDP_{it} denotes gross domestic product, and TI_{it} captures tourism intensity measured as the share of tourism receipts in GDP. X_{it} is a vector of control variables including inflation and unemployment, which account for macroeconomic conditions affecting tourism demand. The term C_t represents a vector of crisis dummy variables corresponding to the SARS outbreak (2003), the Global Financial Crisis

(2008–2009), and the COVID-19 pandemic (2020 onwards), taking the value of one during crisis periods and zero otherwise. The coefficient γ captures the average structural shift in tourism performance associated with crisis events relative to normal conditions. μ_i denotes unobserved country-specific effects, while ε_{it} is the idiosyncratic error term. This specification follows established empirical approaches that incorporate crisis indicators into tourism–growth models to identify structural disruptions in tourism activity (Brida et al., 2016; Gössling et al., 2021; Lee & Chang, 2008).

Estimation is conducted using heteroskedasticity-consistent standard errors to account for potential variance instability across countries and time. This choice improves inference reliability in panels characterised by structural diversity and uneven tourism scales. Results are reported for alternative specifications to confirm the stability of key coefficients.

Table 1. Variables Description (Source: Authors' compilation and own calculations)

Variable	Definition	Measurement	Expected Effect
Tourism Receipts (TR)	International tourism earnings	USD, logarithmic	Dependent variable
GDP	Economic output	USD, logarithmic	Positive
Tourism Intensity (TI)	Tourism share of GDP	Percentage	Positive
Inflation	Consumer price inflation	Annual percentage	Ambiguous
Unemployment	Unemployment rate	Percentage	Ambiguous
Crisis 2003	SARS outbreak	Dummy	Negative
Crisis 2008–09	Global Financial Crisis	Dummy	Negative
Crisis 2020+	COVID-19 pandemic	Dummy	Negative

Several diagnostic procedures are employed to validate the empirical results. Correlation analysis is first conducted to examine potential multicollinearity among explanatory variables. Fixed effects estimation is preferred where country-specific heterogeneity is statistically relevant. Model fit and explanatory power are assessed using within and overall goodness-of-fit measures, while coefficient stability is evaluated across specifications. It is acknowledged that tourism activity and economic growth may be jointly determined; therefore, the empirical results are interpreted as indicative of robust long-run associations rather than definitive causal relationships. Table 1 presents the definition and measurement of all variables used in the analysis, providing clarity and reproducibility. Figure 1 summarises the methodological flow, linking data preparation, model estimation, and result interpretation. Together, these elements reflect methodological practices consistent with high-quality regional and tourism geography research.

EMPIRICAL RESULTS

This section presents the empirical findings in a structured and systematic manner, moving from descriptive patterns to multivariate estimations and comparative regional assessments. The emphasis is placed on reporting statistically and economically meaningful results while maintaining analytical clarity. Interpretation is grounded in empirical magnitudes rather than speculative inference, allowing subsequent discussion to draw explicitly on observed patterns in ASEAN tourism and economic dynamics.

Descriptive Analysis

The descriptive statistics indicate marked heterogeneity in tourism and economic performance across ASEAN countries during 1999–2023. For the full sample, average tourism receipts amount to USD 8,643 million, accompanied by a large standard deviation of USD 11,116 million, reflecting substantial dispersion across destinations. This wide variation signals uneven tourism development trajectories and differences in destination scale and maturity across the region, as reported in Table 2. Average GDP for the pooled sample reaches USD 229,519 million, with a standard deviation exceeding USD 270,000 million, underscoring deep structural economic disparities within ASEAN.

Table 2. Descriptive Statistics of Tourism and Macroeconomic Variables in ASEAN (1999–2023) (Source: Authors own calculation)

Group	Tourism Receipts (USD million)	GDP (USD million)	Tourism Intensity (%)	Tourism Growth (%)	GDP Growth (%)	Inflation (%)	Unemployment (%)	Countries
Developing	3,067 (3,718)	199,627 (323,126)	4.04 (4.06)	9.53 (35.09)	10.22 (14.56)	6.55 (7.64)	2.97 (2.22)	5
Developed	17,937 (13,003)	279,338 (133,224)	6.44 (2.42)	5.81 (20.83)	7.23 (8.82)	1.95 (1.79)	2.98 (1.48)	3
All	8,643 (11,116)	229,519 (270,474)	4.94 (3.71)	8.14 (30.52)	9.10 (12.77)	4.82 (6.53)	2.98 (1.97)	8

Tourism intensity averages 4.94 percent of GDP, confirming that tourism represents a relevant but uneven economic pillar. Tourism growth exhibits pronounced volatility, with a mean of 8.14 percent and a standard deviation above 30 percent, indicating strong exposure to cyclical fluctuations and external shocks.

These descriptive patterns are further illustrated in Figure 2. Figure 2(A) depicts long-term tourism receipts trends across ASEAN countries and highlights clear discontinuities during major crisis periods. While tourism revenues follow sustained upward trajectories in normal years, abrupt contractions appear during SARS, the Global Financial Crisis, and most prominently COVID-19, reinforcing the volatility documented in Table 2. A clear development divide emerges between country groups, both statistically and visually. Developing ASEAN members record average tourism receipts of

USD 3,067 million, compared to USD 17,937 million in developed economies, while tourism intensity is lower at 4.04 percent versus 6.44 percent. This contrast is clearly captured in Figure 2(B), where developed economies cluster at higher tourism intensity levels, indicating stronger structural integration of tourism within their economic systems.

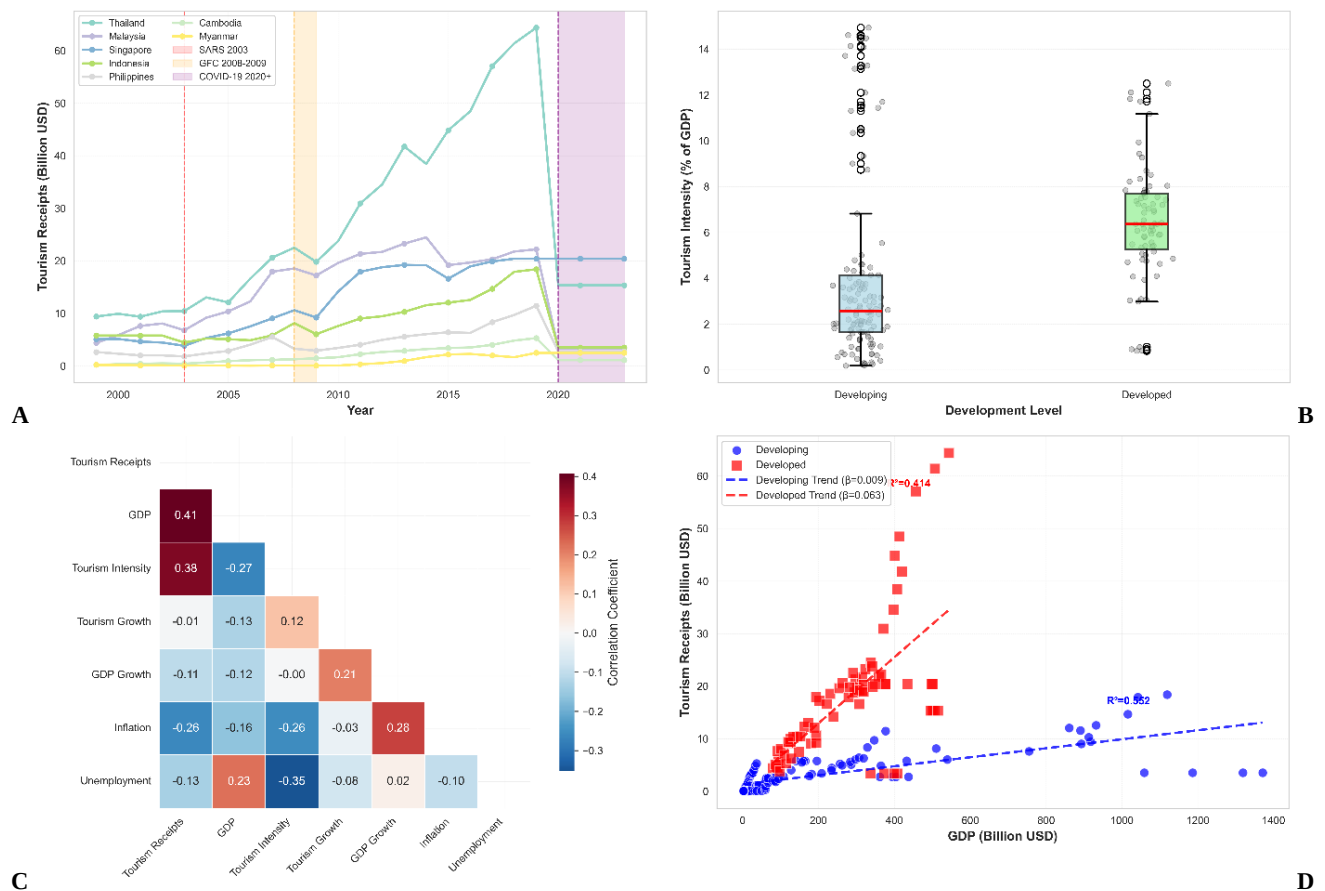


Figure 2. Descriptive Statistics of Tourism and Macroeconomic Variables in ASEAN. (A) Tourism receipts trends with crisis periods; (B) Tourism intensity by development level; (C) Correlation matrix of key tourism and macroeconomic variables; (D) GDP–tourism receipts relationship by development level. (Source: Authors' own calculations and visualization).

Macroeconomic conditions further reinforce regional asymmetries. Developing countries exhibit higher average inflation of 6.55 percent, compared to 1.95 percent in developed economies, while unemployment remains close to three percent in both groups. Figure 2(C) complements this evidence by summarising correlation patterns in which tourism receipts are positively associated with GDP and tourism intensity, yet negatively related to inflation, suggesting that macroeconomic instability is systematically linked to weaker tourism performance.

Finally, Figure 2(D) provides a bivariate illustration of the tourism–GDP relationship across development levels. The steeper fitted slope for developed economies and the wider dispersion among developing countries imply that economic scale supports tourism expansion across contexts, but structural conditions and development stage shape the strength and stability of this linkage. Taken together, Table 2 and Figure 2 justify the subsequent use of panel regression techniques to evaluate tourism–economic relationships while accounting for heterogeneity and crisis effects.

Correlation Analysis

The correlation results offer initial evidence on the association between tourism activity and economic performance in ASEAN. Tourism receipts are positively and significantly correlated with GDP, with a coefficient of 0.408 significant at the one percent level, as reported in Table 3.

Table 3. Correlation Matrix of Tourism and Macroeconomic Variables. (Source: Authors own calculation)

Variable	Tourism Receipts	GDP	Tourism Intensity	Tourism Growth	GDP Growth	Inflation	Unemployment
Tourism Receipts	1.000	0.408***	0.379***	−0.006	−0.108	−0.262***	−0.133
GDP	0.408***	1.000	−0.268***	−0.127	−0.119	−0.163*	0.225**
Tourism Intensity	0.379***	−0.268***	1.000	0.119	−0.003	−0.255***	−0.352***
Tourism Growth	−0.006	−0.127	0.119	1.000	0.209**	−0.026	−0.079
GDP Growth	−0.108	−0.119	−0.003	0.209**	1.000	0.279***	0.024
Inflation	−0.262***	−0.163*	−0.255***	−0.026	0.279***	1.000	−0.101
Unemployment	−0.133	0.225**	−0.352***	−0.079	0.024	−0.101	1.000

Notes: *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively

This association indicates that larger and more developed economies tend to generate higher tourism revenues, although it does not imply a unidirectional causal relationship between tourism and economic growth. Tourism intensity also shows a positive and statistically significant correlation with tourism receipts at 0.379, indicating that economies with a higher tourism share generally achieve greater tourism income. In contrast, tourism receipts display weak and statistically insignificant correlations with tourism growth at -0.006 and GDP growth at -0.108 .

These patterns imply that short term growth fluctuations do not directly translate into changes in tourism scale. Macroeconomic stability appears relevant for tourism performance. Inflation is negatively correlated with tourism receipts at -0.262 , significant at the one percent level, while unemployment shows a strong negative association with tourism intensity at -0.352 . Importantly, no correlation coefficient among explanatory variables exceeds conventional thresholds, suggesting that multicollinearity is unlikely to bias subsequent panel regressions.

Baseline Regression Results

The baseline panel estimations provide strong evidence of a close association between tourism activity and economic output in ASEAN countries. Across pooled OLS and fixed effects specifications, the coefficient on logarithmic GDP remains positive and statistically significant at the one percent level. In the fixed effects model, the estimated elasticity equals 0.952, indicating that a one percent increase in GDP is associated with an almost proportional increase in tourism receipts, as reported in Table 4. This finding highlights the strong note of tourism performance on broader macroeconomic capacity rather than indicating tourism-led economic expansion.

Table 4. Panel Regression Results for Tourism Receipts (Source: Authors own calculation)

Variable	OLS	Policy	FE Panel
Constant	-3.693^{***} (0.306)	-3.690^{***} (0.318)	-3.339^{**} (1.240)
ln(GDP)	0.962^{***} (0.012)	0.965^{***} (0.011)	0.952^{***} (0.049)
Tourism Intensity	0.230^{***} (0.013)	0.225^{***} (0.014)	0.206^{***} (0.021)
Inflation	-0.012 (0.010)	-0.012 (0.010)	-0.002 (0.007)
Unemployment	0.068^{***} (0.019)	0.062^{**} (0.022)	0.068^{*} (0.027)
Crisis 2003	-	0.055 (0.080)	-0.003 (0.087)
Crisis 2008	-	-0.170 (0.152)	-0.206 (0.128)
Crisis 2020	-	-0.121 (0.126)	-0.159 (0.139)
Observations	200	200	200
R squared	0.963	0.963	0.790

Notes: *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively

Tourism intensity also exhibits a consistently positive and significant effect on tourism receipts. In the fixed effects specification, the coefficient reaches 0.206, suggesting that a higher tourism share within the economy translates into greater tourism revenues. This result highlights the importance of structural tourism orientation beyond overall economic scale, reinforcing arguments from tourism geography regarding embeddedness within regional economic systems.

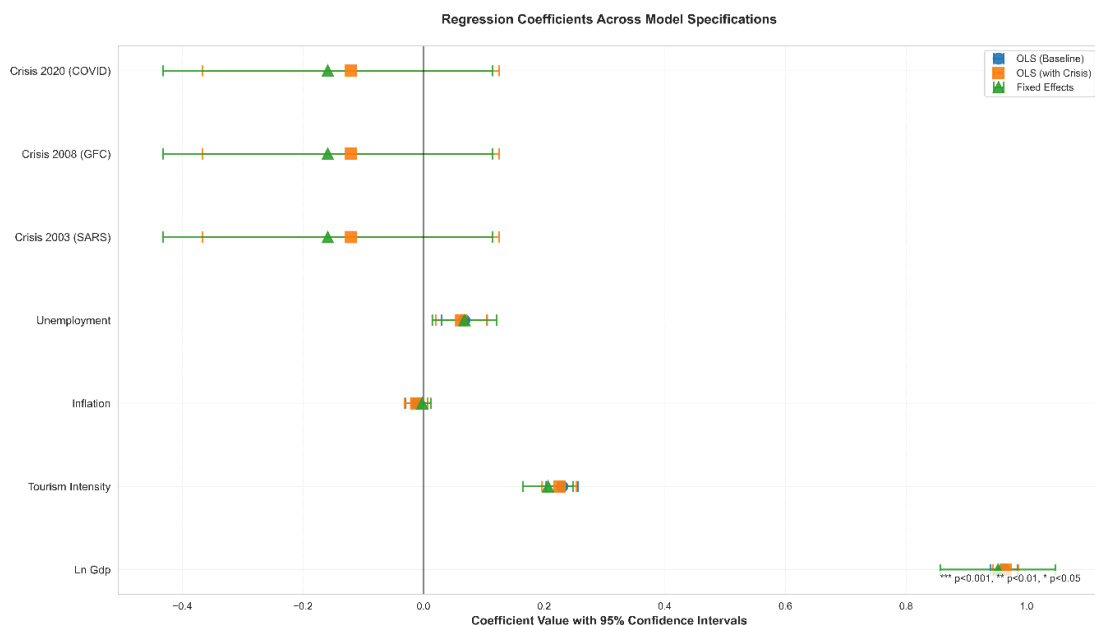


Figure 3. Regression Coefficient Plot with 95 Percent Confidence Intervals. (Source: Authors' own calculations and visualization)

Macroeconomic controls display differentiated effects. Inflation is statistically insignificant in the fixed effects model, with a coefficient of -0.002 , indicating that price level changes do not directly influence tourism receipts once country

specific characteristics are accounted for. In contrast, unemployment retains a positive but weakly significant coefficient of 0.068, which may reflect context-specific labour market dynamics in tourism-oriented economies rather than a generalised employment effect. Model performance remains high across specifications. The pooled OLS and policy augmented models both report R squared values of 0.963, while the fixed effects model achieves an R squared of 0.790. Although the inclusion of country fixed effects reduces overall explanatory power, the remaining fit confirms that the selected variables capture a substantial portion of tourism revenue variation across ASEAN countries.

The stability of key coefficients is further illustrated in the regression coefficient plot. Figure 3 shows narrow confidence intervals for GDP and tourism intensity across model specifications, confirming the robustness of these effects. The visual evidence complements the numerical results and supports the reliability of the baseline estimations.

Crisis Impact Assessment

The crisis impact analysis reveals pronounced differences in both the magnitude and spatial distribution of tourism shocks across crisis episodes. Figure 3 provides a comprehensive visual summary of these dynamics by illustrating the distribution of tourism growth during crisis periods, comparing average impacts across development groups, tracing post-crisis recovery paths over a three-year horizon, and presenting a country-level tourism resilience index relative to normal growth conditions. As shown in Figure 4 (A), the SARS outbreak in 2003 is associated with moderate contractions in tourism growth, with observations clustering around negative values close to -15 percent on average. This distributional pattern is consistent with the regression results, which indicate a small and statistically insignificant fixed effects coefficient of -0.003. Together, these findings suggest that SARS generated short-term disruptions without producing persistent structural effects on tourism performance at the regional level. Figure 4 (B) highlights marked asymmetries in crisis impacts across development levels. During the Global Financial Crisis, developing ASEAN economies experienced an average contraction in tourism growth of approximately -18.0 percentage points, compared to -6.8 percentage points in more developed member states. This divergence mirrors the regression estimate of -0.206 and reflects the higher exposure of less diversified tourism systems to global demand shocks and financial instability.

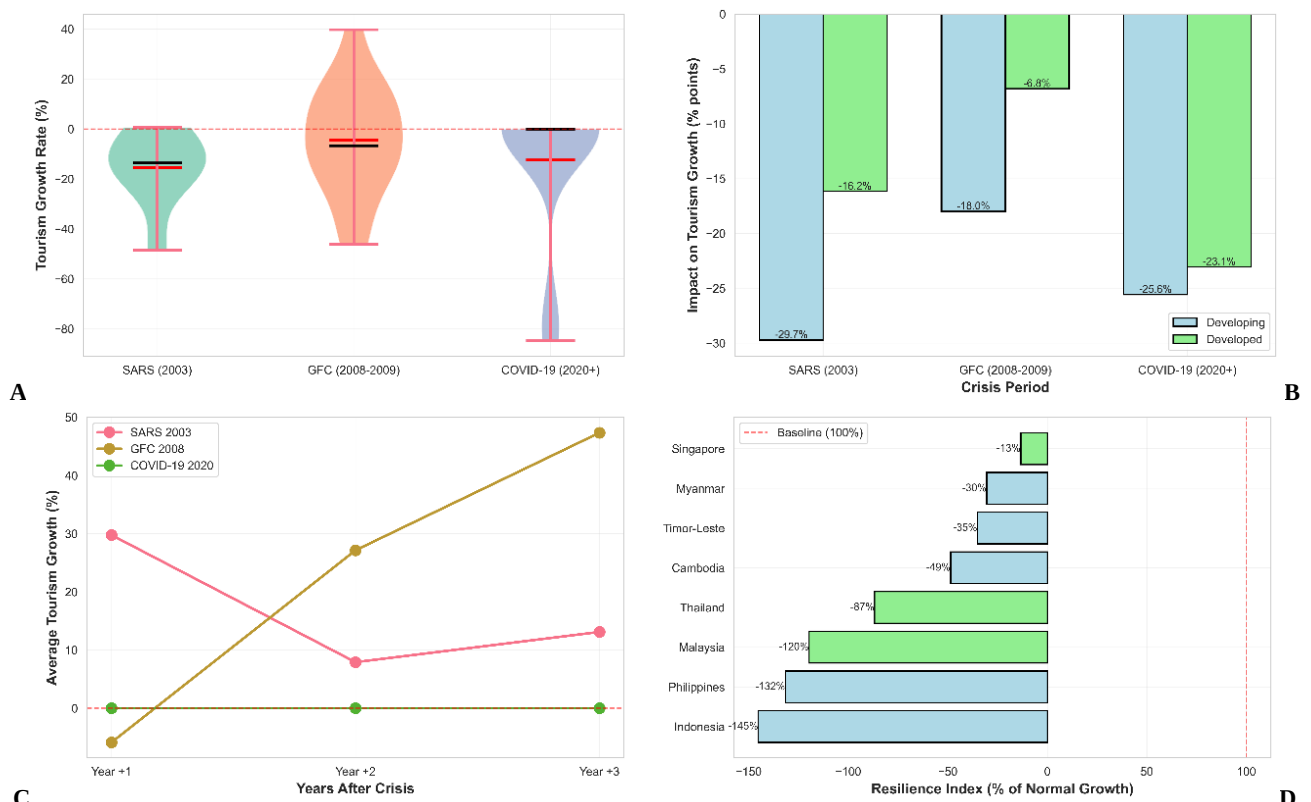


Figure 4. Crisis Impact Analysis on Tourism Receipts in ASEAN. (A) Tourism Growth Distribution During Crises; (B) Crisis Impact by Development Level; (C) Tourism Recovery Patterns after Crises; (D) Tourism Crisis Resilience by Country. (Source: Authors' own calculations and visualization)

The COVID-19 pandemic emerges as the most disruptive shock across all dimensions. Average tourism declines reached -25.6 percentage points in developing economies and -23.1 percentage points in developed ones, indicating a region-wide collapse in tourism activity. While the fixed effects coefficient captures an average negative shift, the descriptive and recovery analyses reveal substantial cross-country heterogeneity in both the depth and persistence of the shock. Post-crisis recovery dynamics further reinforce these patterns. Figure 4 (C) indicates that tourism growth rebounded relatively quickly following SARS and the Global Financial Crisis, reaching approximately 13 percent and 47 percent, respectively, by the third year after the shock. In contrast, recovery following COVID-19 remains subdued. Figure 4 (D) underscores pronounced cross-country

heterogeneity in resilience, with Singapore retaining about 87 percent of normal growth, while Indonesia and the Philippines record losses exceeding –130 percent, highlighting deep territorial differences in adaptive capacity.

Regional and Development Group Comparison

The group specific regressions reveal clear heterogeneity in tourism economic dynamics across ASEAN. As reported in Table 5, developing countries exhibit a GDP elasticity of tourism receipts equal to 0.911, slightly higher than the 0.888 observed in developed members. This difference suggests that tourism performance in developing economies is more sensitive to changes in economic scale, reflecting a higher relative dependence on macroeconomic conditions.

Table 5. Group Comparison between Developing and Developed ASEAN Countries (Source: Authors own calculation)

ASEAN Group	ln(GDP)	Tourism Intensity	Inflation	Unemployment	Crisis Impact	R squared	Observations
Developing	0.911	0.202	–0.008	0.067	–0.167	0.954	125
Developed	0.888	0.202	0.020	0.018	–0.093	0.921	75

Tourism intensity shows identical coefficients of 0.202 for both groups, indicating that the structural role of tourism contributes similarly to tourism receipts regardless of development status. In contrast, crisis impacts differ markedly. Developing economies record an average crisis coefficient of –0.167, nearly twice the –0.093 estimated for developed countries, highlighting greater vulnerability in less diversified economic systems.

Model performance remains strong across both subsamples. The R squared value reaches 0.954 for developing countries and 0.921 for developed members, confirming substantial explanatory power. These results underscore the importance of regional context and development level in shaping tourism resilience, economic linkages, and differential responses to external shocks across ASEAN.

DISCUSSION

The estimated tourism–GDP elasticity of approximately 0.96 indicates a strong and robust association between economic scale and tourism performance in the ASEAN context (Fan & Ha, 2025; Pratoomchat, 2020). Rather than providing evidence of tourism-led growth in a strict causal sense, this near-unitary elasticity suggests that tourism revenues expand almost proportionally with gross domestic product, reflecting a tight structural linkage between tourism systems and regional economies (Öztürk et al., 2019; Tang & Tan, 2015). Accordingly, the result supports the study’s first hypothesis concerning the positive role of economic growth in shaping tourism performance, and aligns with theoretical perspectives that emphasise demand-side macroeconomic capacity in open and regionally interconnected economies.

The magnitude of the estimated elasticity exceeds that reported in many earlier cross-country studies, which often document weaker or statistically insignificant effects (Rattanasirivilai, 2023; Tung, 2021). Such differences may stem from the greater regional coherence of ASEAN economies and the extended time horizon employed in this analysis (Jiranyakul, 2016). By embedding tourism within a spatially defined regional framework, the findings extend prior evidence and clarify how regional integration and spatial proximity condition tourism performance through macroeconomic scale and structural stability, rather than through a uniform growth transmission mechanism (Balaguer & Cantavella-Jordá, 2002; Lee & Chang, 2008). Crisis resilience emerges as a central dimension influencing tourism performance across ASEAN. The heterogeneous impacts of SARS, the Global Financial Crisis, and the COVID-19 pandemic partially support the second hypothesis by revealing asymmetric and episode-specific disruptions, demonstrating that shocks differ markedly in their structural consequences (Martin & Sunley, 2015; Yong, 2022). While the disruption caused by SARS was largely temporary, COVID-19 produced deeper and more persistent contractions, consistent with resilience theory emphasising shock magnitude, duration, and adaptive capacity as key recovery determinants.

Cross-country recovery trajectories further highlight the spatially embedded nature of tourism resilience. Economies characterised by greater diversification and stronger institutional capacity display faster recovery, whereas regions heavily dependent on tourism face more difficult adjustment paths (Odeleye et al., 2022). These results resonate with tourism geography literature that conceptualises resilience as territorially grounded, shaped by governance structures, connectivity, and regional adaptive capacity rather than by sectoral characteristics alone (Saarinen & Rogerson, 2021).

The development divide identified in the group analysis provides clear empirical support for the third and fourth hypotheses, as developing ASEAN economies exhibit slightly higher sensitivity of tourism revenues to changes in economic scale, alongside substantially larger crisis-induced losses (Tan et al., 2025). This combination reflects a dual role of tourism in less advanced economies, where tourism performance is closely tied to macroeconomic conditions while simultaneously exposing these economies to heightened vulnerability during systemic shocks. Such asymmetry is a well-documented feature in tourism and development studies (Telfer & Sharpley, 2015).

An important nuance arises from the finding that tourism intensity coefficients are identical across development groups (Maneejuk et al., 2022). Tourism orientation contributes similarly to revenue generation in both developed and developing economies, yet its stabilising role differs markedly. In advanced economies, tourism is embedded within diversified economic systems that can absorb shocks more effectively. In developing contexts, tourism plays a more exposed role, amplifying volatility during crisis periods and moderating recovery capacity.

From a theoretical standpoint, these findings refine and extend tourism–growth theory by incorporating a spatially differentiated and crisis-sensitive perspective. Rather than treating tourism as a uniform growth engine, the results

demonstrate that tourism performance is contingent on regional structure, development level, and exposure to systemic shocks (Karimi et al., 2024). This interpretation bridges tourism economics with concepts of territorial resilience and uneven regional development, offering a more nuanced understanding of tourism's economic role.

The study also addresses gaps in ASEAN-focused literature, which has frequently relied on short time horizons or single-country analyses (Kyophilavong et al., 2018; Tang & Tan, 2013, 2015). By employing a long-term, multi-country panel framework, the analysis captures both enduring structural relationships and episodic disruptions. This contribution strengthens the empirical foundation for regional tourism research in emerging economic blocs and offers a more comprehensive understanding of tourism dynamics over time.

Clear policy implications follow from these results. ASEAN tourism strategies should move beyond aggregate growth targets toward spatially differentiated planning approaches (Kholil et al., 2025; Sobirov et al., 2025). Developing economies would benefit from reducing excessive dependence on tourism through stronger intersectoral linkages, while developed members should prioritise innovation, diversification, and resilience-building measures. Such differentiation aligns closely with principles of regional planning and territorial policy.

Overall, the findings support all proposed hypotheses within an association-based analytical framework and demonstrate that tourism plays a central yet uneven role in ASEAN economic development (Bassil et al., 2015). Growth effects are substantial but asymmetric, with development level shaping both contribution and susceptibility to crises. By integrating economic analysis with a regional and spatially informed perspective, the study contributes new insights into how tourism both shapes and is shaped by regional development processes in an increasingly crisis-prone global economy.

CONCLUSION

This study aimed to analyze the long-run relationship between tourism development and economic growth in ASEAN at a regional, territorial level, including crisis dynamics and development heterogeneity. Based on balanced panel data for eight ASEAN countries between 1999 and 2023, the empirical evidence obtained is strong for the role of tourism as an integral component of regional economic activity rather than as an independent causal engine of growth. The results provide evidence that the relationship between tourism revenue and economic output is one of joint proportionate increase, indicating a close structural association between tourism performance and overall economic capacity within a spatially integrated region.

A number of empirically important conclusions can be drawn from the analysis. First, the derived tourism–GDP elasticity of around 0.96 suggests a robust and structurally embedded association between tourism systems and regional economies. This magnitude implies that tourism expansion in ASEAN closely follows broader macroeconomic dynamics, reinforcing the view that tourism operates as part of a larger economic process rather than as a standalone growth driver. Furthermore, crises themselves have asymmetric effects on tourism performance. In contrast, the SARS epidemic caused only temporary disruptions, whereas the Global Financial Crisis and, more particularly, the COVID-19 outbreak led to massive and long-lasting reductions in tourism activity, illustrating the vulnerability of tourism to systemic shocks.

Third, the discrepancy in development between ASEAN member countries is significant when comparing developing and developed states. There is moderate heterogeneity in the tourism output response estimates by level of development, with lower-income economies showing a slightly greater sensitivity of tourism revenues to economic growth than higher-income ones, but substantially more susceptibility when crisis periods are considered. Against this backdrop, crisis sensitivity is lower and recovery capacity stronger in developed ASEAN economies where economic structures are more diversified and where institutions are better able to support adjustment processes.

These findings provide empirical support for the proposed hypotheses within an association-based analytical framework and underscore the region-specific nature of tourism–economic linkages. From a theoretical perspective, the paper adds to the literature by relaxing linear and homogeneous assumptions often embedded in tourism-led growth analyses. By combining crisis dynamics with regional heterogeneity, the study reveals the conditionality of tourism–economic relationships on territorial structure, development level, and exposure to external shocks. Rather than advancing a strict tourism-led growth mechanism, the findings emphasise how tourism performance is shaped by macroeconomic conditions and territorial resilience, thereby enriching tourism geography and regional development theory.

The policy implications of such findings are highly pertinent to ASEAN. Regional and local tourism policies must not remain focused solely on aggregate growth objectives but should apply more spatially differentiated approaches according to diverse development conditions. In the case of developing member countries, it will be necessary to reduce excessive tourism dependence by strengthening intersectoral linkages and economic diversification as a means of lowering vulnerability to future shocks. In more mature destinations, policy priorities should concentrate on innovation, sustainability, and resilience-enhancing measures that increase the adaptive capacity of tourism systems. At the regional level, greater coordination within ASEAN can promote more sustainable tourism development and improved collective crisis preparedness.

There are, however, several potential limitations to this study. This analysis is based on national-level aggregate data and may obscure significant subnational differences in tourism performance and regional resilience. Moreover, tourism receipts as the main proxy for tourism activity do not capture qualitative aspects related to sustainability, employment quality, or environmental impacts. Crisis effects are also modelled using dummy variables, which capture average shifts and may not fully reflect more complex non-linear or lagged responses.

These constraints motivate a number of potentially fruitful avenues for further research. Future studies may employ subnational or destination-level data to better capture spatial heterogeneity within countries. Integrating environmental, social, and institutional indicators would enable a richer assessment of sustainable tourism development. Further work could also apply non-linear or spatial econometric methods to investigate spillover effects and cross-border interactions among ASEAN

economies. Lastly, comparative analysis across other regional blocs would help assess the extent to which observed tourism–economic relationships are context-specific or generalisable across different institutional and geographic settings.

Overall, this research evidences that tourism continues to be a significant component of regional economic systems in ASEAN, although its contribution is uneven and closely conditioned by development level and crisis exposure rather than uniformly growth-leading. By combining rigorous empirical analysis with a regional and spatially informed perspective, the study contributes to a more nuanced understanding of tourism–economic dynamics in an increasingly volatile global context. The results provide a robust empirical basis for regionally differentiated tourism policy and open new research directions at the intersection of tourism geography and regional development.

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