RESEARCH ARTICLE

https://doi.org/10.17059/ekon.reg.2025-1-12
JEL C23, O15, O10, O53, Z32

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Tourism's Impact on Economic and Human Development: Evidence from ASEAN 5 [1]

Abstract. Tourism can serve as a driver of economic development, but economic growth does not always lead to better human development outcomes. This is particularly evident in post-pandemic tourism when analyzed through the Human Development Index. Supporting Amartya Sen's argument that well-being should not be measured by income alone, this paper evaluates the impact of tourism within the capability approach. The analysis extends beyond economic indicators to incorporate health, education, and living standards, offering a more comprehensive view of well-being. Focusing on ASEAN 5 countries, the study finds a significant long-term relationship between tourism and human development. Panel cointegration analysis shows that increased tourism activity enhances key human development indicators, particularly healthcare, education, and overall living standards. A well-developed tourism sector can thus contribute to broader societal well-being, aligning with Sen's emphasis on expanding individual capabilities and improving quality of life. The study advocates for tourism strategies that prioritize human development alongside economic gains, fostering a healthier and more prosperous society. It also presents policy implications and recommendations for promoting tourism in ASEAN 5, addressing gaps in existing literature. Future research could explore whether similar relationships hold across different tourism sectors, such as eco-tourism, medical tourism, and sports tourism.

Keywords: human development, tourism, economic growth, panel cointegration, ASEAN 5 countries, Sen's capability approach

For citation: Tan, Y.-T., Gan, P.-T., Hadi, F. S. A., & Gamal, A. A. M. (2025). Tourism's Impact on Economic and Human Development: Evidence from ASEAN 5. *Ekonomika regiona / Economy of regions, 21(1)*, 166-179. https://doi.org/10.17059/ekon.reg.2025-1-12

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ИССЛЕДОВАТЕЛЬСКАЯ СТАТЬЯ

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ВЛИЯНИЕ ТУРИЗМА НА ЭКОНОМИЧЕСКОЕ И ЧЕЛОВЕЧЕСКОЕ РАЗВИТИЕ: ДАННЫЕ СТРАН АСЕАН

Аннотация. Туризм может рассматриваться как один из инструментов экономического развития. Однако более высокие темпы экономического роста не всегда приводят к ускоренному развитию человеческого потенциала, особенно в контексте трансформаций туристической индустрии в постпандемийную эпоху, что демонстрирует индексе человеческого развития (ИЧР). Настоящее исследование подтверждает тезис Амартии Сена о том, что благополучие не может измеряться только доходом. Исследование опирается на «возможностный подход» и базируется не только на экономических показателях, но и на ИЧР, который, в свою очередь, включает такие показатели, как здравоохранение, образование и уровень жизни, что позволяет получить более полную картину. На основе данных пяти стран АСЕАН продемонстрирована существенная долгосрочная взаимосвязь между туризмом и человеческим развитием. Анализ с применением метода панельной коинтеграции показывает, что по мере роста туристической активности наблюдается соответствующее улучшение различных показателей человеческого развития, особенно в области здравоохранения, образования и общего уровня жизни. Развитый туризм способствует повышению благосостояния общества в целом. Это согласуется с возможностным подходом, который подчеркивает важность предоставления людям возможности реализовать свой потенциал и улучшить качество жизни. Отмечается польза стратегий развития туризма, которые делают упор не только на достижение экономической выгоды, но и на человеческое развитие, что в конечном итоге способствует созданию более здорового и процветающего общества. Представленные результаты могут использоваться при разработке мер продвижения туризма в каждой из стран АСЕАН. Дальнейшие исследования могут быть посвящены аналогичной взаимосвязи между экономическим и человеческим развитием и различными видами туризма, например, экотуризмом, медицинским туризмом и спортивным туризмом.

Ключевые слова: человеческое развитие, туризм, экономический рост, панельная коинтеграция, страны АСЕАН, возможностный подход Сена

Для цитирования: Тан, Я.-Т., Ган, П.-Т., Хади, Ф.С.А., Гамаль, А.А.М. (2025). Влияние туризма на экономическое и человеческое развитие: данные стран АСЕАН. *Экономика региона, 21(1)*, 166-179. https://doi.org/10.17059/ekon.reg.2025-1-12

1. Introduction

Tourism is widely recognized as a key driver of economic growth, contributing to GDP, job creation, and foreign exchange revenue. While many studies have used GDP to measure tourism's economic impact, its effects extend beyond economic growth to influence social, cultural, and overall societal development (Cárdenas-García et al., 2015). Despite its widespread use, GDP alone has limitations in assessing tourism's full impact, as it focuses solely on economic factors and overlooks crucial sociocultural dimensions (Tan et al., 2019). To address this gap, this study explores human development as a more comprehensive measure of national welfare. By examining the relationship between tourism and human development, the paper aims to provide deeper insights into tourism's broader role in fostering economic and social progress.

In developed countries, tourism generates significant revenue, which positively impacts the Human Development Index (HDI) (Biagi et al., 2017). It contributes to the growth of infrastructure, skill development, business start-ups, and community advancement. The influx of both domestic and international tourists also stimulates various industries, including hospitality, retail, clothing, and other tourism-related sectors. In developing nations, tourism plays a crucial role in fostering employment, increasing income, and improving essential sectors such as health and education. However, it should also be noted that tourism has potential negative consequences. In the early stages of tourism growth in low-income countries, its benefits to human development may be limited (Chattopadhyay et al., 2022). Other challenges may include the displacement of local communities, limited access to education, increased poverty and inequality, and resource shortages. Additionally, a lack of adequate government support and regulation can hinder the development of tourism that is both sustainable and inclusive.

Tourism, which relies heavily on labour, was significantly impacted by the COVID-19 pandemic, with widespread layoffs and a decline in economic activity (Keh & Tan, 2021). This led to millions of workers losing their jobs and incomes, pushing many into poverty. While some businesses recovered quickly, others struggled, exacerbating existing inequalities (Škare et al., 2021). Employees seeking new jobs were often forced to accept insecure positions with low wages and poor working conditions. Prolonged unemployment, along with disruptions to education and training, made it more difficult for workers to re-enter the workforce, ultimately affecting the long-term productivity and competitiveness of the tourism industry (Mahboubi & Mokaya, 2021). Furthermore, O'Malley et al. (2022) highlight that concerns about mass tourism, which were prevalent before the pandemic, are now being replaced by a focus on specialist markets. Off-season travel, cultural tourism, and community-based tourism offer more authentic experiences and distribute benefits more broadly in the post-pandemic era. For these reasons, investigating the impact of tourism on the HDI is crucial.

This study relies on the capability approach developed by Amartya Sen (2000). He suggested a definition of development as expanding a person's options and capabilities has received little attention. Human development in this study is understood as the control of fundamental abilities, such as the ability to live a long and healthy life, expand knowledge, and lead meaningful, creative lives (Alkire, 2002; Sen, 2000). The idea of human development prioritizes people over businesses and profits (Croes, 2012). Thus, the discussion shifts from an income-centred perspective to a human development perspective. Croes (2012) argues that an increase in tourism first brings more jobs and higher sales in the tourism sector at the destination. Subsequently, more jobs and sales boost economic activity, which increases tax revenues. This enables the government to raise public spending, improving citizens' economic, social, and health conditions. Additionally, the influx of tourism would lead to population growth at the destination, ultimately improving quality of life through better health, education, and nutrition. As human development progresses, people would become more productive.

The structure of the paper is as follows: the literature review is presented next, followed by the methodology. The empirical results are then presented, and the final section discusses conclusions and policy implications.

2. Literature Review

Tourism has been widely studied for its significant impact on both economies and societies, with effects that can be either positive or negative. Numerous studies have examined the concept of tourism-induced growth across various countries and regions (Brida et al., 2016; Corrie et al., 2013; Kumar & Patel, 2023; Wu et al., 2021). This concept is particularly relevant for small open economies, where the opportunity cost of specialization is lower (Croes, 2011). In such economies, the tourism industry contributes to economic growth through improved terms of trade, as stable export income from tourism goods enhances the national trade balance (Croes et al., 2018).

Research consistently shows a strong correlation between tourism and economic growth (Croes et al., 2018; Ridderstaat et al., 2016; Schubert et al., 2011). Tourism influences growth through multiple channels, making it essential to explore these pathways in greater depth (Vu et al., 2020). Tourist spending on attractions, accommodations, restaurants, transportation, and souvenirs generates direct monetary flows to governments, businesses, and households. Furthermore, tourism has indirect effects on economic growth through productivity spillovers (Croes et al., 2021). For example, hospitality firms introduce new technology, knowledge, and skilled labor to local destinations, which leads to increased productivity, the creation of new goods and services, and the exploration of new markets (Croes et al., 2021).

Additionally, the concept of growth-induced tourism is supported by research that shows economic downturns typically result in reduced travel spending (Garau-Vadell et al., 2018). Local communities often view a decline in tourism as detrimental to their culture and society. Therefore, this study hypothesizes that there is a significant relationship between tourism and economic growth.

In recent years, researchers have increasingly integrated human development and sustainability into tourism studies (Croes et al., 2021; Seetanah & Fauzel, 2019; Stryzhak et al., 2021; Tan et al., 2019). Historically, tourism development was primarily assessed in terms of its economic impact (Ridderstaat et al., 2016). However, the role of human development in tourism literature has been gaining scholarly interest. It is now understood that while increased income can boost human development, a country's well-being should not be defined solely by traditional indicators like GDP (Tan et al., 2019; Wu et al., 2014).The Human Development Index (HDI) rankings are often used

as a benchmark when selecting destinations for tourism or relocation (Wu et al., 2014). The study by Croes (2012) was pivotal in broadening the perspective on tourism development, shifting the focus from purely economic measures to more holistic views. In his study of Nicaragua and Costa Rica, Croes (2012) examined the relationship between tourism and human development. The results revealed that tourism development improved human development in Nicaragua, enhancing services in the tourism sector and establishing a two-way connection between tourism and human development. In contrast, the impact in Costa Rica weakened over time, possibly due to seasonality-driven unemployment in the tourism industry, which lowered productivity and negatively affected public health, education, and living standards. This suggests a significant relationship between tourism and human development.

There is a symbiotic link between tourism competitiveness and human development (Croes et al., 2022). Competitive tourism offers the necessary infrastructure and human capital to sustain human development. Environmentally friendly infrastructure, for example, not only boosts tourism demand but also contributes to human development (Boonyasana & Chinnakum, 2020). Research by Chattopadhyay et al. (2022) and Puig-Cabrera et al. (2023) highlights a non-linear relationship between tourism and the HDI, particularly when economic diversification is considered, which suggests that countries should adopt tailored tourism policies to effectively promote human development. However, according to Stryzhak et al. (2021), in some nations, the link between tourism and the HDI is unclear, as tourism's contribution to their economies remains limited, which may constrain its positive impact.

In the context of the ASEAN 5 countries, previous research has discussed on tourism and economic growth. Such relationship has been explored in countries including Singapore (Lee, 2012; Raihan & Tuspekova, 2022), Malaysia (Shahbaz et al., 2017; Tang, 2011, 2013; Tang & Tan, 2015), Thailand (Chulaphan & Barahona, 2018; Wongsanun et al., 2022), and Indonesia (Narayan et al., 2021; Widodo & Sugiyanto, 2019). However, despite tourism's significant impact on the region, there has been limited attention given to the relationship between tourism and human development among the ASEAN 5 nations. Only a few scholars have explored this relationship in the case of ASEAN 5 countries (Tan et al., 2019). This paper attempts to bridge the above said gaps and contributes to the existing understanding regarding the connection between tourism and human development.

3. Methodology

When dealing with the long-run relationship between tourism, economic growth, and human development that captured by panel data, cointegration technique is deemed most appropriate. This study employs a three-stage empirical approach. Firstly, panel unit root tests are conducted to assess the stationarity of the variables. Secondly, co-integration tests are employed if the variables are found to be integrated of the same order. Lastly, if the series are cointegrated, the vector of long-term integration is estimated using methods such as Fully Modified OLS (FMOLS), Dynamic OLS (DOLS), and Panel Mean Group (PMG). These techniques may allow for a comprehensive examination of the interplay between tourism, economic growth, and human development, offering insights into their long-term relationship.

3.1 Data

This study uses annual data from 1995 to 2022, covering both pre – and post-pandemic periods to provide more informed recommendations for developing a resilient and sustainable tourism industry that supports long-term HDI growth.

Table 1

Data Description

Variable	Description	Source
LY	Logarithm of GDP per capita (2010=100)	World Bank (2023)
LK	Logarithm of physical capital (gross capital formation)	World Bank (2023)
LH	Logarithm of human capital (government expenditure on education, total (% of GDP)	World Bank (2023)
LT	Logarithm of tourism (international tourism receipts, USD)	World Bank (2023)
LHD	Logarithm of human development (Human Development Index)	United Nations Development Programme (2023)*

* United Nations Development Programme, UNDP (2023). Retrieved from : https://hdr.undp.org/data-center/human-development-index#/indicies/HDI (Accessed 17 Jan 2023).

The analysis focuses on the ASEAN 5 countries: Malaysia, Indonesia, Singapore, Thailand, and the Philippines. Table 1 provides a description of the selected variables.

3.2 Model Specification

This study develops a tourism-led growth model that incorporates key income components, including physical capital, human capital accumulation, and tourism development, as factors (independent variables) influencing economic growth. To estimate the Cobb-Douglas production model, ordinary least squares regressions are employed. The relationship between tourism and economic growth is examined using the following production function:

$$Y = f(K, H, T)$$

Where the real output or productivity, Y is the function of physical capital, K and human capital, H respectively. The elementary growth model is modified, which suggest the variable T denotes as tourism capital in the production function. This modification mainly applies to the empirical cases of the relationship between the tourism and economic growth (Croes et al., 2020; Holzner, 2011). Logarithmic form of the function is stated as below:

$$LY_{it} = \beta_0 + \beta_1 LK_{it} + \beta_2 LH_{it} + \beta_3 LT_{it} + \varepsilon_{it}$$

where ε is the error term. The physical capital such as investment in tourism infrastructure is expected to be positively related to real output. High-quality human capital, characterized by educated and skilled workers in tourism-related firms, is expected to enhance real output. Additionally, tourism creates employment opportunities for locals, helping to improve their living standards (Yang & Wall, 2009). An increase in tourism receipts can stimulate economic growth (Manzoor et al., 2019). Therefore, it can be hypothesized that tourism has a positive effect on economic growth.

We can infer that an individual's achievements (performance) depend on the availability of resources and the ability to utilize them effectively. A production process can model the relationship between achievements and resources, where resources act as inputs and achievements (performance) are the outputs. Human development and productivity are closely linked in an economy. Human development encompasses the overall enhancement of human capabilities, such as education, health, and standard of living. In contrast, productivity refers to a worker's output over a specific period. Higher levels of human development typically lead to greater productivity, as individuals become better educated, healthier, and enjoy improved living conditions. This, in turn, enhances their skills and abilities, contributing to a more efficient workforce, and vice versa. Hence, we replace the productivity level with human development as below:

$$HD = f(K, H, T)$$

In line with this, we assess achievement (performance) using Sen's capability approach, as measured by the HDI. The HDI represents human development, which consists of three components: health, education, and standard of living. Health is indicated by life expectancy at birth, while education is measured by the average years of schooling for adults aged 25 and older and the expected years of schooling for children. Additionally, GNI per capita is used to measure the standard of living.

The HDI is calculated as the average of three key indices: $\text{HDI} = \left(I_{health} \cdot I_{education} \cdot I_{income}\right)^{\frac{1}{3}}$. Based on prior research indicating that no nation had a life expectancy below 20 years during the 20th century, the minimum life expectancy of 20 years was established in Table 2 (Maddison, 2010). The maximum life expectancy is set at 85 years, a reasonable goal for many nations due to improved living conditions and medical advancements. Society can function effectively with official schooling, justifying the minimum of zero years of education. In most countries, completing 18 years of schooling is typically equivalent to earning a master's degree. The predicted maximum for this indicator by 2025 is 15 years. The minimum value for gross national income (GNI) per capita is set at $100, accounting for unmeasured subsistence and nonmarket production in economies. The maximum GNI per capita is capped at $75,000, as research by Kahneman and Deaton (2010) suggests that human development and well-being show little improvement beyond this threshold.

The index of each dimension serves as a representation of the capabilities in that specific dimension. The dimension indices are calculated as:

$$Dimension\ \ index\ \ = \frac{actual\,value - minimum\,value}{maximum\,value - minimum\,value}$$

Tourism can generate jobs, increase income, and improve local living standards, which in turn can positively affect health by enhancing access to healthcare, nutritious food, and other essential services. As tourism grows, it may also create opportunities for investment in education and training programs, leading to improvements in

Table 2

Three Dimension Indices

Dimension	Indicator	Minimum	Maximum	Sources
Health	Life expectancy (years)	20	85	UNDESA (2019)
Education	Expected years of schooling (years)	0	18	UNESCO Institute for Statistics (2020)
	Mean years of schooling (years)	0	15	UNESCO Institute for Statistics (2020)
Standard of living	GNI per capita (2017 PPP$)	100	75,000	World Bank (2023)*

* World Bank (2023). World Development Indicators. Retrieved from: https://databank.worldbank.org/source/world-development-indicators (Accessed 17 Jan 2023).

educational infrastructure and resources such as schools, libraries, and training centres. Therefore, it is hypothesized that tourism is positively related to human development.

3.3 Panel Unit Root

At the beginning of this section, we are going to verify that all variables are integrated to the same order. The panel unit tests employed in this study are those of Levin et al. (2002) and Im et al. (2003). The Im et al. (2003) test assumes that each individual has a unique unit root process, whereas the Levin et al. (2002) panel unit root test assumes that all individuals follow the same unit root process. Although Levin et al. (2002) do not account for heterogeneity in the autoregressive coefficient, the Im et al. (2003) test allows for heterogeneity between countries in a dynamic panel framework. The equation for the panel unit root is as below:

$$\Delta y_{i,t} = \alpha_i + \rho_i y_{i,t-1} + \sum_{j=1}^{p} \phi_{ij} \Delta y_{i,t-j} + \varepsilon_{i,t}$$

where $i = 1, 2, \ldots N$; $t = 1, 2, \ldots T$; $y_{i,t}$ indicates each variable in the model, α_i shows the individual – specific fixed effect, and p is used to make the residuals independent over time. ε is the error term. The null hypothesis is that $\rho_i = 0$ for all i versus the alternative hypothesis that $\rho_i < 0$ for some $i = 1,\ldots,N1$ and $\rho_i = 0$ for $i = N1 + 1,\ldots, N$.

The Levin et al. (2002) panel unit root test examines whether the panel dataset exhibits a unit root. The model used in this test is based on a common factor structure, which assumes that the time series in the panel data share a common stochastic trend. The model is defines as:

$$y_{it} = \alpha_i + \partial_t + \gamma_i Ft + \varepsilon_{it}$$

where ∂_t is the time-specific fixed effect, F_t is the common factor representing the stochastic trend. The null hypothesis is that the common factor is stationary against the non-stationary alternative hypothesis.

Additionally, the study applies the Im et al. (2003) panel unit root test. This model incorporates individual-specific fixed effects and time-specific deterministic trends. Specifically, the model is defined as:

$$y_{it} = \alpha_i + \partial_t + \beta_{it} + \varepsilon_{it}$$

where β_{it} is the individual-specific slope. The null hypothesis of Im et al. (2003) test is that $\beta = 0$ against the alternative hypothesis where $\beta < 0$. The test is based on the assumption that the individual-specific slope is negative, then the individual time series in the panel will converge to a common stochastic trend. Both the Levin et al. (2002) and Im et al. (2003) panel unit root tests are widely used for stationarity testing and have demonstrated strong performance, even in the presence of cross-sectional dependence and heterogeneity.

3. 4 Panel Cointegration Test

After determining the stationarity of the variables, the study proceed to cointegration test. Pedroni (1999) proposed the panel cointegration test which considers the heterogeneity across the individual samples. The long-run equations for the economic growth model and the HDI model are estimated as follows:

$$Y_{it} = \beta_{0i} + \beta_{1i} K_{it} + \beta_{2i} H_{it} + \beta_{3i} T_{it} + \varepsilon_{it}$$

and

$$HD_{it} = \alpha_{0i} + \alpha_{1i} K_{it} + \alpha_{2i} H_{it} + \alpha_{3i} T_{it} + \varepsilon_{it}$$

for $i = 1,\ldots, N$; where N indicates the number of individual samples in the panel; $t = 1,\ldots, T$, where T refers to the number of observations over time. The structure of the estimated error terms is as below:

$$\hat{\varepsilon}_{it} = \hat{\theta}_i \hat{\varepsilon}_{it-1} + \mu_{it}$$

Pedroni has proposed seven statistics to examine the cointegration: panel v – statistic, panel rho – statistic, panel PP – statistic, panel ADF – statistic, group rho – statistic, group PP – statistic and group ADF – statistic. The first four statistics are focus on the null hypothesis of no-cointegration, while the alternative hypothesis is $\theta_i = \theta < 1$ for all *i*. On the other hand, the last three statistics are based on the null hypothesis of no-cointegration and alternative hypothesis of $\theta_i < 1$, for all *i*. The test statistics are generated through Monte Carlo simulations. The calculated test statistic value must be less than the critical value to reject the null hypothesis and conclude the existence of long-run cointegration.

In addition, the Kao test examines if there is a long-term link between two or more variables. When panel data is stationary, which means that there are no long-term trends or cycles affecting the data, the Kao test should be applied. The test is based on the estimated results from a pooled OLS regression, in which the independent variables are the lagged levels of the same variables and the dependent variable is the first-differenced series of the relevant variables. The Kao test conducts unit root tests for ε ^_*it* to test the null hypothesis of no cointegration. This test is based on the residuals from a hypothesized cointegrating regression and uses a modified Dickey-Fuller or Augmented Dickey-Fuller test statistic to assess the stationarity of these residuals. In contrast, the Johansen Fisher test is more flexible and can be applied to panel data that is both stationary and non-stationary. This test is based on the estimation of a vector error correction model (VECM) and combines individual cointegration tests across the panel to assess overall significance. It uses p-values from the individual tests to create a combined statistic.

$$X^2 = -2\sum_{i=1}^{N}\log(\pi_i)$$

The study applies Johansen's cointegration trace and maximum eigenvalue tests, which differ in methodology and assumptions. The Johansen Fisher test applies to both stationary and non-stationary data, while the Kao test, using pooled OLS regression, assumes stationarity. The Kao test checks for one cointegrating relationship, whereas the Johansen Fisher test considers multiple links.

3.5 Panel Cointegration Estimations

Pedroni's methodology enables researchers to test for cointegration, however it is unable to estimate the long-term relationship. Several estimators are suggested for panel frameworks when cointegration is present, namely, Fully Modified OLS (FMOLS), Dynamic OLS (DOLS) and Pooled Mean Group (PMG).

3.5.1 Fully Modified OLS (FMOLS) and Dynamic OLS (DOLS)

After the cointegration relationship between the variables is confirmed, we can proceed to estimate the long-run coefficients. The estimators available to estimate a vector co-integration panel data are fully modified OLS (FMOLS) estimators and dynamic OLS (DOLS) estimators. The FMOLS method takes into account the possibility of spurious regression. By taking into account the endogeneity, autocorrelation, and heteroscedasticity of the data, the approach alters the OLS estimator. This estimate takes into account the short-run dynamics of the errors as well as the endogenous regressors. To correct for the effect of endogeneity of the regressors, the dependent variable is adjusted for the part of the error that is correlated with the regressor:

$$Y_{it}^{+} = Y_{it} - \varnothing_{i,\varepsilon\mu}\sum_{i,\varepsilon\varepsilon}^{-1}\Delta X_{it}$$

On the other hand, in the DOLS (Dynamic Ordinary Least Squares) method, the dependent variable is modeled as a function of both its own lagged values and the lagged values of the independent variables in the dynamic specification. DOLS is applied when the variables are cointegrated. Panel DOLS improves the panel cointegration regression equation by incorporating cross-section specific lags and leads of Δ*X*_(*it*) to address issues of asymptotic endogeneity and serial correlation. The general form can be represented as:

$$Y_{it} = \alpha + \beta X_{it} + \sum_{j=1}^{\rho}\vartheta_j \Delta X_{i,t+j} + \gamma_{it}$$

The purpose of DOLS is to take into consideration the likelihood that the model's variables may have long-term associations, but that short-term dynamics may also influence how they behave. As a result, FMOLS is more suitable for simulating long-run linkages between variables than DOLS, which is more suited to modelling short-run dynamics.

3.5.2 Pooled Mean Group (PMG)

A statistical method called pooled mean group (PMG) is used in panel data analysis to estimate the parameters of a dynamic heterogeneous panel. By assuming that the long-run parameters

are the same across all individuals (fixed-effects assumption) and allowing the short-run coefficients to vary among individuals (random-effects assumption), it is a model that combines the benefits of fixed-effects and random-effects models. While the long-run coefficients must be the same, the PMG model permits different short-run dynamic specifications for different nations. The panel data is pooled across individuals to remove individual fixed effects in the PMG model, and the dependent variable and independent variables are first-differenced. The model's parameters are then estimated using the first-differenced variables. The model can be used to test hypotheses regarding the relationship between the dependent variable and the independent variables. The error correction equation (ECM) is formed as below:

$$\Delta Y_{it} = \delta_i(Y_{it-1} - \beta_0 - \beta_1 X_{it}) + \theta_i \Delta X_{it-1} + \varepsilon_{it}$$

The PMG restriction is that the elements of β are common across countries. All the dynamics and the ECM terms are free to vary. If $\delta_i \neq 0$ there will be sufficient evidence for a long-run relationship. The parameter is expected to be significantly negative that the variable show a return to a long run equlibrium.

4. Empirical Results

4.1 The Results of Panel Unit Root Tests

The analysis begins with the panel unit root test. It is conducted to examine the order of integration for the variables. Ensuring that no variables are integrated at the second differencing is also compulsory. The results of the panel unit root tests are presented in Table 3. The unit root tests by Levin et al. (2002) and Im et al. (2003) are used to examine the order of integrating variables in the study. According to the Levin et al. (2002) unit root test, the variables Y and T are stationary at the level form. On the other hand, the Im et al. (2003) unit root test indicates that the variables H and T are stationary at the level form. Both unit root tests show that all the variables are integrated at the first order, rejecting the H0 of the unit root. The summary in Table 3 confirms that all the variables are integrated at order I (1). The study then moves on to investigate the long run cointegration between the variables.

4.2 The Results of Panel Cointegration Tests

This study tests two hypotheses: (1) a long-run cointegration between physical capital, human capital, tourism, and economic growth, and (2) a long-run relationship between these factors and human development. Panel cointegration tests (Pedroni and Johansen Fisher) confirm the first hypothesis (see Table 4). The null hypothesis of no cointegration is rejected at the 1 % significance level under the panel v-statistic, panel PP-statistic, panel ADF statistic, group PP statistic, and group ADF statistic. The Fisher test's trace and max-eigenvalue statistics indicate more than one long-run relationship at the 1 % significance level.

The second hypothesis posits that there is a long-run relationship between tourism, physical capital, human capital and human development. The null hypothesis of no cointegration is rejected by using panel v-statistic under the Pedroni cointegration test (Table 5). The trace statistic and max-eigen value report the results where more than one cointegrations occur at 1 % significance level in the long run. In short, the results suggest that there is a long-run relationship between the selected variables. The study proceeds to estimate the long-run coefficients.

Table 3

Results of Panel Unit Root

	Levin et al. (2002)	Im et al. (2003)
Level		
LY	–1.6715***	–1.0825
LHDI	0.4198	1.6750
LK	–0.8268	–0.9728
LH	0.3403	–1.5099*
LT	–3.5260***	–3.5809***
First Difference		
DLY	–8.1061***	–7.0023***
DLHDI	–8.7883***	–7.9977***
DLK	–8.3427***	–7.9991***
DLH	–7.6249***	–9.0688***
DLT	–2.4852***	–10.7399***

Notes: *, ** and *** indicate significance at 10 %, 5 % and 1 % levels, respectively.

Table 4

Results of Panel Cointegration: Y as the Dependent Variable

Residual-based cointegration Hypothesized No of CE		Johansen Fisher Panel Cointegration		
		Fisher Test (Trace)	Fisher Test (Max-eigen)	
Pedroni		None	57.52***	48.87***
Panel v-statistic	22.6078***	At most 1	19.40***	19.29***
Panel rho-statistic	–0.6805	At most 2	7.259	6.736
Panel PP-statistic	–4.4101***	At most 3	9.452	9.452
Panel ADF-statistic	–4.5011***			
Group rho-statistic	0.0777			
Group PP-statistic	3.9534***			
Group ADF-statistic	–3.7423***			
Kao				
ADF	0.3141			

Notes: *, ** and *** indicate significance at 10 %, 5 % and 1 % levels, respectively.

Table 5

Results of Panel Cointegration: HDI as the Dependent Variable

Residual-based cointegration Hypothesized No of CE		Johansen Fisher Panel Cointegration		
		Fisher Test (Trace)	Fisher Test (Max-eigen)	
Pedroni		None	60.72***	33.06***
Panel v-statistic	14.2605***	At most 1	34.62***	26.08***
Panel rho-statistic	1.2475	At most 2	17.78*	14.14
Panel PP-statistic	0.2225	At most 3	19.27	19.27
Panel ADF-statistic	0.9198			
Group rho-statistic	1.2648			
Group PP-statistic	–0.2274			
Group ADF-statistic	0.2009			
Kao				
ADF	0.461909			

4.3 The Results of Long-Run Elasticity

To begin with the FMOLS, DOLS and PMG estimation, several requirements are needed. Firstly, all variables should be integrated at I (1) order. Secondly, there must be a confirmed cointegration among the variables in the long-run. Having previously fulfilled these requirements, the study estimates the long-term effects of physical capital, human capital, and tourism on economic growth and HDI respectively. Table 6 demonstrates the results of long run elasticity from the DOLS, FMOLS, and PMG estimations.

In Model (1), physical capital, human capital, and tourism significantly impact economic growth at the 1 % significance level. A 1 % increase in physical capital raises economic growth by 0.1686 %, 0.1860 %, and 0.2024 % in FMOLS, DOLS, and PMG estimations, respectively. Human capital shows mixed effects: a 1 % increase reduces growth by 0.0769 % and 0.1134 % in FMOLS and DOLS but increases it by 0.0911 % in PMG. Tourism positively influences growth, with a 1 % increase leading to a rise of 0.0134 % to 0.0266 %. These findings align with Croes et al. (2022). PMG results are consistent with FMOLS and DOLS and also provide short-run coefficients, showing that physical capital, human capital, and tourism significantly affect short-run growth at the 1 % and 10 % levels. The adjustment coefficient is negative and significant at the 1 % level.

In Model (2), the elasticities of physical capital are 0.0018 %, 0.0338 %, and 0.1071 % in DOLS, FMOLS, and PMG estimations, respectively. The estimated coefficients for human capital are 0.0145 % (FMOLS), 0.0513 % (DOLS), and 0.0565 % (PMG). Tourism significantly increases HDI, with a 1 % rise leading to gains of 0.0076 % (DOLS), 0.0939 % (FMOLS), and 0.1096 % (PMG), all significant at the 1 % level, consistent with Tan et al. (2019). The PMG model also shows a negative and significant adjustment coefficient at the 1 % level, reinforcing the long-run

Table 6

Results of Panel Cointegration Estimation

Y as the Dependent Variable Model (1)				HDI as the Dependent Variable Model (2)		
Explanatory Variables	**FMOLS**	**DOLS**	**PMG**	**FMOLS**	**DOLS**	**PMG**
Long Run						
LK	0.1686*** (0.0297)	0.1860*** (0.0273)	0.2024*** (0.0392)	0.0018 (0.0078)	0.0338 (0.0354)	0.1071** (0.0468)
LH	–0.0769*** (0.0276)	–0.1134*** (0.0288)	0.0911*** (0.0239)	0.0145 (0.0081)	0.0513 (0.0319)	0.0565** (0.0255)
LT	0.02113*** (0.0058)	0.0266** (0.0121)	0.0134*** (0.0135)	0.0076*** (0.0017)	0.0939*** (0.0073)	0.1096*** (0.0265)
Adjustment coefficient			–0.5191** (0.2583)			–0.1165*** (0.1211)
Short Run						
LK			0.0829*** (0.0300)			0.0178** (0.0088)
LH			0.0712* (0.1479)			0.0054 (0.0095)
LT			0.0275*** (0.0094)			0.0117 (0.0102)
Constant			2.8869* (1.5827)			0.0154*** (0.0159)

Notes: ( ) standard error

equilibrium. However, PMG results indicate that short-run tourism effects on HDI are insignificant, likely due to tourism revenue leakage. In many developing economies, including ASEAN nations, tourism earnings often leave the local economy, as hotels and resorts rely on imports, and many tourism businesses are foreign-owned. As a result, profits are remitted abroad instead of supporting local industry growth, limiting funds for social development programs that enhance human development (Musikavanhu et al., 2020).

5. Conclusion

While GDP is a key indicator of economic growth, it does not fully capture a country's well-being, as high GDP can coexist with significant income inequality. This study argues that well-being should not be measured solely by income but by broader factors. To provide a more comprehensive assessment, the HDI is used, as it accounts for life expectancy, education, and income. Unlike GDP, which reflects economic output, the HDI offers a clearer picture of both economic health and societal well-being. Within this context, the study examines tourism through the lens of Sen's capability approach.

The findings from FMOLS, DOLS, and PMG estimations consistently show that tourism plays a significant role in promoting long-term economic growth and enhancing human development. Since human development is both an end in itself and a driver of productivity, policies should prioritize it alongside economic expansion. By integrating tourism into broader development strategies, policymakers can align economic and social goals. As sustainable development becomes increasingly important, understanding the link between tourism and human development can guide more effective tourism policies and maximize their socio-economic benefits..

5.1 Policy Implications and Recommendations

The study highlights that human development indicators can be used to assess tourism's impact on a country's or region's quality of life. Key indicators such as literacy rates, education levels, and healthcare facilities are influenced by tourism development.

For the ASEAN 5 nations—Malaysia, Indonesia, Thailand, Singapore, and the Philippines—targeted strategies can enhance tourism's role in human development:

— Malaysia: With its diverse Malay, Chinese, and Indian cultures, Malaysia could invest in education and workforce training, particularly in English and Mandarin language skills. Enhancing cultural awareness programs for tourism workers can improve visitor experiences and job opportunities.

— Indonesia: Known for its rich cultural heritage, Indonesia can promote community-based tourism, such as homestays and cultural tours, to preserve traditions and boost local economies. Vocational training in tourism-related skills can further improve employment prospects.

— Thailand: With its religious and natural attractions, Thailand can strengthen sustainable tourism by enforcing waste management systems and certifying eco-friendly accommodations. Cultural exchange programs and guidelines for visiting religious sites can foster respectful tourism, ultimately improving the country's HDI ranking.

— Singapore: Recognized for its safety and efficiency, Singapore can focus on high-value tourism, such as hosting major international events. Revenue generated from tourism can be reinvested in infrastructure and social programs, positioning Singapore as a model for inclusive tourism.

— The Philippines: With its diverse landscapes, the Philippines can expand into eco-tourism, adventure tourism, and culinary tourism. Investments in sustainable infrastructure and hospitality training can enhance tourism workers' skills and attract a broader range of visitors.

Tourism can drive human development when properly managed. To maximize its impact, ASEAN 5 policymakers should prioritize transportation and connectivity improvements to facilitate intra-regional travel. Joint initiatives can create cross-border tourism circuits that highlight the region's cultural and historical richness. Additionally, investing in multilingual education for tourism professionals can enhance service quality. Involving local communities in tourism planning ensures inclusive benefits and strengthens destination competitiveness.

Beyond tourism, human development indicators can inform policies across various industries. HDI's health component, for example, helps assess healthcare systems and workforce well-being, which are crucial for economic competitiveness. Future research could explore how different tourism sectors—such as eco-tourism, medical tourism, and sports tourism affect human development. Additionally, this study can contribute to research efforts in universities, institutions, and United Nations organizations by refining methodologies for evaluating tourism's broader socio-economic impact.

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Конфликт интересов

Авторы заявляют об отсутствии конфликта интересов.

Conflict of interests

The authors declare no conflicts of interest.

Дата поступления рукописи: 09.11.2023.
Прошла рецензирование: 14.11.2024.
Принято решение о публикации: 17.12.2024.

Received: 09 Nov 2023.
Reviewed: 14 Nov 2024.
Accepted: 17 Dec 2024.