

RESEARCH BRIEF

Tourism and Long-Run Economic Growth in Thailand: From 1960 to 2018

Part Sungkaew

King Mongkut's University of Technology North Bangkok, Thailand
part5559@gmail.com

This study examines the role of tourism in the long-run economic development of Thailand. Cointegration and causality confirm that tourism leads the country's long-run economic growth. The results indicate that, over the last half-century, the multiplier effect from cointegration confirms that international tourism expansion has had a positive effect on the country's economy. From the empirical analysis, it can be summarized that tourism helps to promote economic activity regional- and macro-economically, especially in developing countries. However, tourism expansion can also have a negative impact, and this will be a challenge for future studies.

Tourism plays an important role in regional economic development. Predictably, it promotes economic activity in rural areas and can generate currency income for entrepreneurs for distribution to local tourist attractions and support local businesses (Briedenhann & Wickens, 2004). Moreover, the study evidence indicates that tourism affects long-run economic growth in some countries (Balaguer & Cantavella-Jordá, 2000).

Tourism development has been one of the most important aspects of economic development planning in Thailand. The country's tourism promotion policy began in 1950, and the Tourism Authority of Thailand Organization was established in 1959, subsequently changing its name to the Tourism Authority of Thailand (TAT) in 1979. In 2002, the Ministry of Tourism and Sports was established to promote, support, and develop the tourism industry. The Ministry of Tourism

and Sports is responsible for the policy and budget for tourism development, whereas the Tourism Authority of Thailand takes care of marketing and promoting Thai tourism. Based on historical data, the number of tourists in Thailand has continuously increased every year and, through the tourism promotion policy, is an important source of revenue for national development. From 1960–1968, the ratio between tourism receipts and gross domestic product (GDP) was less than 1%. Nevertheless, it has increased in every period. In 2000, the ratio between tourism receipts and GDP was over 5%, and in 2018, it was over 12%. The number of tourists reached over 38 million in 2018, representing an increase of 172 times of the 1960 figure (Tourism Authority of Thailand, 2018), indicating that tourism now plays a greater role in the Thai economy.

Literature Review

Previous literature emphasizes the important effect of tourism on the economic system. Dritsakis (2004) studied tourism in Greece and found that it created economic growth for the country. His findings also indicated that there is a significant relationship between receipts from tourism and long-run economic growth. His study applied a multivariate autoregressive (MAR) model to examine the period from the first quarter of 1960 to the fourth quarter of 2000. The results of the model showed a co-integrated vector between real GDP and earnings from international tourism (Dritsakis,

2004). In addition, the Granger causality test indicated long-run economic growth as a result of tourism.

Moreover, Kim and Chen (2006) studied tourism and economic development in Taiwan. According to the results of the Granger causality test and cointegration approach, tourism expansion led to long-run economic growth in Taiwan. In addition, Eugenio-Martin et al. (2004) and Lee and Chang (2008) studied tourism in Latin American countries and the OECD, including non-OECD countries and also found a relationship between tourism and long-run economic growth.

On the other hand, many literature studies have found no long-term equilibrium relationship between tourism expansion and economic growth. For instance, Gjergji (2016) studied the long-run relationship between tourism and economic growth in Western Balkan countries, concluding that some independent tourism variables such as capital investment and visitor exports contributed to economic growth in the four countries, but that no long-run relationship exists between tourism and economic growth in Western Balkan countries. Oh (2005) studied the contribution of tourism development to economic growth in Korea. The results of a cointegration test indicated that there is no equilibrium between tourism and long-run economic growth, and the output of the Granger causality test showed a one-way causal relationship for economy-driven tourism growth. This shows that tourism does not led to economic growth in Korea. Katircioglu (2009) formulated a tourism-led growth hypothesis for Turkey using annual data from 1960–2006 and found no long-run relationship between international tourism and economic growth.

Some studies exist on tourism and economic growth in Thailand. Wattanakuljarus and Coxhead (2008) analyzed tourism and economic development in Thailand using the applied general equilibrium (AGE) method. The paper suggested that tourism is a component of the development strategy in lower and middle-income countries. In the case of Thailand, tourism expansion has an economic effect on every sector. Tourism increases foreign currency inflow and household income. More than half of the industrial and economic activities in Thailand depends on the performance of tourism, both directly and indirectly.

Moreover, Chancharat (2011) reviewed previous studies on the relationship between tourism development and economic growth, and found that tourism development improves not only the tourism

industry but also the country's economic development. Consequently, developing countries use tourism as part of their national development strategy. Thailand, in particular, is one of the most popular destinations for tourists. Economically, the tourism industry leads to increased employment and creates currency income from related exports. This demonstrates the importance of tourism development to the national economy. However, in analyzing the documentation for this research, it appears that there are insufficient studies on tourism development and economic growth in Thailand.

In addition, many studies support that tourism leads to economic development in regions of Thailand. For instance, Dearden (1991) studied tourism and sustainable development in northern Thailand, and Baedcharoen (2000) considered the impact of religious tourism in Thailand. However, tourism inevitably has a negative impact as it can create income inequality, as well as environmental and national resource problems (Archer et al., 2005). Therefore, studies on tourism and long-run economic growth are tools for indicating that tourism promotion affects long-term national development. The promotion of tourism represents great value to trade; it has a negative impact on various other aspects but still promotes economic growth in the long run.

Methods

To analyze the relationship between tourism and long-run economic growth in Thailand, this study uses secondary data from the Tourism Authority of Thailand (TAT), National Statistical Office of Thailand, Office of the National Economic and Social Development Council (NESDB), and the Bank of Thailand. The model in this study applies the Solow (1988) growth theory, Johansen's cointegration methodology, and the Granger causality test to find a relationship between tourism and long-run economic growth in the case of Thailand.

The Solow model is applied by adding together foreign tourist revenue and the real exchange rate, assuming no technological progress. Physical capital and labor are constant. The production function is set out as:

$$Y_t = f(R_t, EX_t) \quad (1)$$

Assuming the Cobb-Douglas production function as

$$Y_t = (R_t)^\alpha (EX_t)^\beta \quad (2)$$

Taking the logarithm to generate the linear form

$$\ln Y_t = \alpha \ln R_t + \beta \ln EX_t + e \quad (3)$$

where: Y_t is the real GDP data from the Office of the National Economic and Social Development Council,
 R_t is the foreign tourist revenue data from the Tourism Authority of Thailand and National Statistical Office of Thailand
 EX_t is the real exchange rate according to the data collected from the Bank of Thailand.

Long-Term Relationship Testing

The long-run relationship is tested in equation 3 using Johansen's cointegration test. The Johansen method is suitable for analyzing non-stationary variables and stationarity in first-difference, in particular. The method is suitable for more than two variables, without specifying the dependent variables and independent variables. The Johansen test is in the multivariable cointegration form based on the vector autoregressive (VAR) model. It can be estimated by:

$$Y_t = \sum_{j=1}^p A_j Y_{t-j} + \varepsilon_t \quad (4)$$

From equation 4, it transforms into the vector error correction model (VECM) as:

$$\Delta Y_t = \sum_{j=1}^p \pi_j \Delta Y_{t-j} + \pi Y_{t-p} + \varepsilon_t \quad (5)$$

when $\pi = -\left[I - \sum_{j=1}^p A_j\right]$ and $\pi_j = -\left[I - \sum_{j=1}^j A_j\right]$.

Setting p is the optimal lag, α is the $n \times n$ matrix from the coefficient of variables at different levels, indicating long-run relationship equilibrium. When $\alpha = \alpha\beta'$, is the speed of adjustment in the equilibrium coefficient with size $n \times r$, β is the $n \times r$ matrix of the long-run relationship coefficient, and r is the number of long-run relationships in equilibrium.

$$\text{So } VECM = \Delta Y_t - \sum_{j=1}^{p-1} \Delta Y_{t-1} + \begin{bmatrix} \beta \\ \mu_1 \\ \delta_1 \end{bmatrix} (Y_{t-1} 1t) Y_{t-1} + \mu_2 + \delta_2 + \varepsilon_t \quad (6)$$

where μ_1 & δ_1 is the coefficient of constant value and the trends in the cointegration equation μ_2 & δ_2 model is the coefficient of constant value and the trends of the VAR.

According to Johansen and Juselius (1990), before an examination of the number of cointegration vectors, the optimal lag (p) must first be tested. Ender (1995) recommended that the Akaike information criterion (AIC) and Schwarz information criterion (SIC) be used to test the optimal lag.

Equation 6 estimates the rank (r) of matrix π or the number of cointegration vectors. It shows the long-run relationship using the trace test and maximum eigenvalue test in three cases.

Case 1. Full rank "n" indicates that all variables in Y_t are stationary. It can estimate the variable.

Case 2. Zero rank indicates that all variables are non-stationary or have no-cointegration vector. Therefore, the data must be adjusted at the first differential before estimating.

Case 3. Rank "r" and $0 < r < n$ indicates that all variables are non-stationary and a number of cointegration vectors are equal to r .

The statistics used for examination of the cointegration vector (r) are the Trace Test and Maximal Eigen Value Test, as shown in the following equations :

Trace Test:

$$\lambda_{\text{Tract}(v)} = -T \sum_{i=r+1}^n \ln(1 + \hat{A}) \quad (7)$$

Maximum Eigen Value Test:

$$\lambda_{\text{Max}(r, r+1)} = -T \ln(1 - \hat{\lambda}_{r+1}) \quad (8)$$

When T is the number of observations, $\hat{\lambda}_i$ is the maximum eigenvalue of matrix π . The hypothesis is:

Trace test:

- H0 is the number of cointegrations
- H1 is the number of cointegrations

Maximize Eigen Value test:

- H0 is the number of cointegrations
- H1 is the number of cointegrations +1

The Johansen test method indicates the number of cointegration vectors or the number of vectors in a long-run relationship. This proves the long-run relationship between tourism expansion and economic growth and confirms the results of the Johansen test. The Granger causality test is used to confirm the results.

When represents the vectors α , and variables in equation 3.

Granger Causality Test

Granger causality is a method for testing two variables in constant time series data. When the variables are X and Y, the Granger (1969) test is performed to establish whether a change in X variable causes a change in variable Y or if a change in the Y variable causes a change in X variable. The equation to test the hypothesis with X does not Granger cause Y, as shown below:

$$Y_t = \alpha + \sum_{j=1}^m \beta_j Y_{t-j} + \sum_{i=1}^n \delta_i X_{t-i} + \varepsilon_{Ut} \quad (\text{unrestricted regression})$$

$$Y_t = \alpha + \sum_{j=1}^m \beta_j Y_{t-j} + \varepsilon_{Rt} \quad (\text{restricted regression})$$

The equation to test the hypothesis Y does not Granger cause X:

$$X_t = \alpha + \sum_{j=1}^m \beta_j X_{t-j} + \sum_{i=1}^n \delta_i Y_{t-i} + \varepsilon_{Ut} \quad (\text{unrestricted regression})$$

$$X_t = \alpha + \sum_{j=1}^m \beta_j X_{t-j} + \varepsilon_{Rt} \quad (\text{restricted regression})$$

The hypothesis of the equations between unrestricted regression and restricted regression is:

$$H0: \beta_1 = \beta_2 = \dots = \beta_n = 0$$

$$H1: \beta_1 \neq \beta_2 \neq \dots \neq \beta_n \neq 0$$

The null hypothesis means that X does not Granger cause Y or Y does not Granger cause X. If the results of the F-statistic (P-value) reject the null hypothesis, this means that X Granger causes Y or Y does not Granger cause X (H1).

When Y_t and X_t are Y_t , R_t , and EX_t are variables in equation 3.

Results

A stationarity test of the date is required to establish cointegration. This study uses the Augmented Dickey-Fuller (ADF) and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) tests for stationarity (unit root test). The results from ADF and KPSS tests show non-stationarity at the level of data (I(0)), but the data is stationary at first differential (I(1)). It can be summarized that the data can be used to find a long-run relationship because all three variables have unstable properties at I(0). Therefore, correlation analysis of the variable sets with regression equations may face an unreal relationship. However, the three variables may have a long-term equilibrium relationship or cointegration.

The multiple cointegration test using the Johansen method must find a suitable (optimal) lag. There are two popular methods for finding the optimal lag, namely the Akaike information criterion and Schwarz information criterion methods, the results of which are shown in Table 2. This research uses the Akaike information criterion method to test for cointegration with the Johansen method.

The results of multiple cointegrations using the Johansen test indicate that the trace statistic at a 5% significance level rejects the null hypothesis ($r=0$; Trace Statistic > Critical Value). However, the Max-Eigen Statistic at a 5% significance level cannot reject the null hypothesis ($r=0$; Trace Statistic < Critical Value). Hypothesis $r \leq 1$ (at most 1) and $r \leq 2$ (at most 2) cannot be rejected either. Therefore, consideration of the Trace Statistic and Max-Eigen Statistical test

Table 1*Unit Root Test*

Statistic	Variable			
	$\ln Y_t$	$\ln R_t$	$\ln EX_t$	Deterministic
ADF	I(1)***	I(1)***	I(1)***	Intercept, No-trend
KPSS	I(1)***	I(1)***	I(1)***	Intercept, No-trend

Note.*** indicates significance at a 1% level

Source. Author's estimates.

Table 2*Lag Order Selection Criteria*

Lag	AIC	SC
0	1.591683	1.701174
1	-8.401295	-7.963332*
2	-8.402651*	-7.636215
3	-8.221341	-7.126432
4	-8.334163	-6.910781

Note.* indicates optimal lag

AIC: Akaike information criterion

SC: Schwarz information criterion

Source. Author's estimates.

suggests that there is no cointegration. On the other hand, consideration of the Trace Statistic and Max-Eigen Statistic at a 10% significance level suggests that there is cointegration or a long-run relationship at $r \leq 1$ (at most 1) with variables $\ln Y_t$, $\ln R_t$, and $\ln EX_t$. The results are shown in Table 3.

The parameter estimates for cointegration vectors indicate that tourism ($\ln R_t$) has a positive effect on economic growth of Thailand ($\ln Y_t$) over time. It shows a long-run relationship between two variables, but the real exchange rate also has a positive effect on economic growth, as shown by the results in Table 4.

Table 3*Johansen Cointegration Test (1960-2018)*

Hypothesized	Eigenvalue	Trace Statistic	Critical value	P-value	Max-Eigen Statistic	Critical value	P-value
5% significance level							
None	0.301873	32.12603	29.79707	0.0265**	20.12387	21.13162	0.0687
At most 1	0.138314	12.00216	15.49471	0.1568	8.336395	14.26460	0.3455
At most 2	0.063363	3.665761	3.841466	0.0555	3.665761	3.841466	0.0555
10% significance level							
None	0.301873	32.12603	27.06695	0.0265*	20.12387	18.89282	0.0687*
At most 1	0.138314	12.00216	13.42878	0.1568	8.336395	12.29652	0.3455*
At most 2	0.063363	3.665761	2.705545	0.0555	2.705545	2.705545	0.0555*

Note.** indicates significant at 5% at level

* indicates significant at 10% at level

Source. Author's estimates.

Table 4

Cointegrating Coefficient

Parameter estimates (normalized)	
Variables	Cointegration vector
$\ln Y_t$	-1
$\ln R_t (+)$	0.350472
$\ln EX_t (+)$	0.101440

Note. All variables in the natural logarithm

Source. Author’s estimates.

However, an important point to address in the final step of this study is the subsistence of a long-run relationship between tourism expansion and economic growth in the case of Thailand, which means that every variable is causally related in at least one direction (Engle & Granger, 1987). The results of the Granger causality test in Table 6 raise certain questions: Does tourism causes economic growth, or does economic growth leads tourism? Simultaneously, is the real exchange rate causing economic growth or does economic growth lead the real exchange rate? Finally, do the independent variables (tourism, R_t) and real exchange rate create causality between each other? The reported F-statistics and probability values from this table fall under the null hypothesis of non-causality, implying that the independent variable is causing the dependent variable. Consequently, there

is one way to form the null hypothesis test such that $\ln R_t$ is causing $\ln Y_t$, or tourism receipts cause economic growth (tourism expansion leads to economic growth in Thailand). On the other hand, the null hypothesis cannot be rejected in other cases because $\ln Y_t$ does not Granger cause $\ln R_t$, $\ln EX_t$ does not Granger cause $\ln Y_t, \dots$, and does not Granger cause $\ln R_t$. The empirical results prove that tourism led to economic growth in Thailand over the long term from 1960–2018.

Conclusion

This study analyzes and tests the hypothesis in the long-run relationship between tourism and economic growth in Thailand during a 58-year period (1960–2018). The question is whether or not Thai tourism development has helped stimulate the country’s economy during the last half-century. The Johansen cointegration technique and Granger causality were applied to test the hypothesis. The Johansen cointegration method was used to find a cointegration relationship between the variables. The results indicate a unique cointegration vector in the variables. Therefore, the interpretation of the analysis indicates a straightforward long-term relationship with the variable. The Granger causality results help to prove the hypothesis of cointegration.

The cointegration results for 1960–2018 indicate that a long-run relationship exists between economic growth, tourism expansion, and the exchange rate.

Table 6

Granger Causality Test (1960–2018)

Null hypothesis	F-Statistic
$\ln R_t$ does not Granger Cause $\ln Y_t$	2.36966(0.0472)**
$\ln Y_t$ does not Granger Cause $\ln R_t$	0.31083(0.9276)
$\ln EX_t$ does not Granger Cause $\ln Y_t$	0.82113(0.4456)
$\ln Y_t$ does not Granger Cause $\ln EX_t$	2.33676(0.1067)
$\ln R_t$ does not Granger Cause $\ln EX_t$	2.19899(0.1211)
$\ln EX_t$ does not Granger Cause $\ln R_t$	0.50006(0.6094)

Note. The Granger causality test was carried out in three variables: $\ln Y_t$, $\ln R_t$, and $\ln EX_t$

* indicates a 5% significance level

Source. Author’s estimates.

The results of the parameter estimates of cointegration show that tourism expansion from international tourism positively affects the economic growth of Thailand. Tourism has a strong impact because the magnitude of the parameters demonstrates the existence of a significant long-run multiplier effect. However, the international exchange rate is also positively affected by the economic growth of Thailand. Therefore, both international tourism earnings and international exchange rate variables have a positive effect on the country's economic growth. According to the hypothesis, the international exchange rate should not affect economic growth in the long-term. For this reason, the hypothesis must be tested again using Granger causality in order to determine the causal variables such as economic growth, international tourism earnings, and the international exchange rate. The Granger causality test indicates that the earnings from international tourism are causal variables for economic growth. Thus, economic growth is not a causal variable for international tourism earnings, and the other variables do not cause each other.

Finally, from an analysis of the results of all studies, tourism is proven to contribute to the economic growth of Thailand in the long term. Tourism development from the government has resulted in infrastructure improvements to accommodate the increased volume of tourists, whereas the private sector and related agencies have cooperated by helping in Thai tourism's continuous development. This has resulted in the expansion of Thai tourism due to an increasing number of foreign tourists traveling to Thailand. Resource advantages are also important in attracting tourists. Tourism is an engine that helps promote economic activity regional- and macro-economically, especially in developing countries. However, tourism can also have a negative impact, such as the destruction of natural resources, increased pollution and waste disposal, as well as the issue of subsequent crime. Therefore, future studies on Thai tourism should involve a comparative study of the positive and negative effects of Thai tourism expansion.

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Declaration of ownership

This report is my original work.

Conflict of interest

None.

Ethical clearance

This study was approved by the institution.

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