

TOURISM AND ECONOMIC GROWTH NEXUS IN INDONESIA: THE DYNAMIC PANEL DATA APPROACH

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Abstract

The positive impact of tourism on economic growth is generally influenced by various indicators at both global and national levels. However, the question remains whether tourism encourages economic growth or vice versa. This paper examines the importance of tourism as a conditioning factor for economic growth in Indonesia. The validity of the relationship between tourism and economic growth can be examined by using the dynamic panel data estimation approach and convergence analysis to provide evidence of the impact of tourism on economic growth in Indonesia. In accordance with the initial hypothesis on tourism and economic growth, the result shows that the former can encourage the latter, although there is no indication of convergence among provinces in Indonesia. Therefore, if the supply characteristics of the tourism sector are improved, then it can be considered as an alternative source for stimulating economic growth in Indonesia.

Keywords: Economic Growth, Tourism, Dynamic Panel Data, Convergence

JEL classification: C23, L83, O40, O53

1. Introduction

Conceptually, economic growth and welfare are often linked to the growth of key sectors, such as agriculture, construction, and manufacturing. It is also attributed to the growth of foreign capital inflows for investment purposes (Sinclair, 1998). This condition has not emphasized the important role of tourism in economic growth. In its development, empirical data show that tourism is one of the largest and most rapidly growing services sectors in the world. Tourism is recognized as an alternative to boost economic growth (Belloumi, 2010; Chou, 2013; Clancy, 1999). For this reason, economists have shown an increased interest in conducting in-depth research on the role of tourism in economic growth.

According to the estimates of experts involved in forecasting global economic trends, the future of the economy will be marked by the continued development of the tourism industry as one of the main pillars of economic growth (especially in the case of developing countries). This fact is also supported by the United Nations World Tourism Organization estimate that between 2011 and 2021, the direct contribution of tourism to global GDP will be about 4%. Moreover, within the same period, tourism will generate an additional 69 million jobs (through direct or indirect impacts to other sectors).

In Indonesia, tourism development can be seen in the increased number of foreign tourist arrivals from 2000 to 2014. Despite the fluctuations, the number of foreign tourist arrivals in 2000 (5.1 million) continued to increase, reaching 9.4 million in 2014. The same thing can be observed in the development of tourism receipts from 2000 to 2014, which also indicated an increase. In 2000, tourism receipts reached US\$5748.8 million, and then further increased to US\$11166.13 million in 2014.

Geographically, Indonesia is located in the Southeast Asia region, which has abundant natural resources as capital to tourism development. Tourism in Indonesia is an important economic sector. By 2015, tourism ranked fourth in terms of foreign exchange earnings after oil and gas commodities, coal and palm oil, with earnings of US\$12,225.89 million. Based on the data for 2016, the number of foreign tourists who came to Indonesia further increased to 11.9 million, thus indicating an increase of 15.03% compared with the previous year (Ministry of Culture and Tourism, RI).

In general, the positive impact of tourism on economic growth is influenced by various indicators at the global and national levels. However, the question remains as to whether tourism encourages economic growth or vice versa. In an attempt to provide an answer, the current work examines the validity of one of three relevant hypotheses (i.e., the tourism-led growth hypothesis, the hypothesis of economic growth as a driver of tourism growth, and the hypothesis of causality between tourism and economic growth) on the type of relationship between tourism and economic growth (Oh, 2005).

Aside from being a driver of economic growth, tourism contributes to job creation, production activities and per capita income, private sector growth, and infrastructure development. Tourism also has the potential to encourage increased state revenues from taxes, especially indirect taxes. With such activities, this sector serves as a major source of income, employment, private sector growth, and infrastructure development in many countries. Due to these advantages, tourism development not only stimulates industry growth, but also induces overall economic growth (Lee and Chang, 2008).

Tourism can also reduce regional or economic growth disparities (Li et al., 2016). The fundamental problem of economic asymmetry is due to inequalities in economic potential. For example, some regions or provinces may have abundant natural resources so they will not experience problems in building economic activities as a center of growth. By contrast, many other areas lack ample natural resources and sufficient dry land conditions. Nevertheless, there are areas with less than ideal natural conditions that are adequate for agricultural activities; often, these areas have strategic positions and receive maximum assistance from the central government to help them establish industrial estates as centers of economic growth in their respective regions.

The increasing importance of tourism has been studied, especially in terms of distributing inter-regional development, encouraging regional economic growth, and reducing regional disparities. Shaw and Williams (1991) argue that tourism distributes development from economic centers to less developed areas. Thus, tourism development has often been used as a tool to narrow the regional gap. Proença and Soukiazis (2008) find that international tourism has a prominent influence on reducing regional disparities between different locations in Spain, Italy, Greece, and Portugal. Similarly, Soukiazis and Proença (2008) show that tourism (tourism capacity as a proxy) increases the level of convergence within the NUTS-2 and NUTS-3 regions in Portugal.

As tourism can encourage the reduction of regional disparities through economic growth, tourism is considered an important factor in examining the issue of regional growth convergence. In relation to convergence analysis, convergence is increasingly becoming the center of attention due to several factors: (1) the existence of poor countries that are getting worse while there are countries experiencing high economic growth, (2) the development literature model of economic growth after the Solow growth model, and (3) the continued misunderstanding of the meaning of the word "conditional" in terms of conditional convergence (conditionals contain the meaning of the essence or sterilization of actual differences in growth rates affecting other variables, especially physical investment and human resources), and (4) the differences in concepts and methodologies employed in various studies on convergence.

Determining the speed of convergence in Indonesia is an interesting research topic, especially if it is incorporated with other factors, such as tourism, in terms of regional economic growth acceleration in the region. Given that various regions in Indonesia have excellent natural resources and also diverse cultures, natural and cultural riches are an important component of tourism in Indonesia. The country has a combination of tropical climates, 17,508 islands of which 6,000 are uninhabited, and the world's third longest shoreline after Canada and the EU. Indonesia is also the largest and most populous island

nation in the world. The beaches of Bali, the diving sites in Bunaken, Mount Rinjani in Lombok, and various national parks in Sumatra are examples of natural tourism destinations in Indonesia. The attractions are supported by a rich cultural heritage that reflects the dynamic history and diversity of Indonesian ethnic groups with 719 regional languages spoken throughout the islands. Meanwhile, Prambanan and Borobudur, Toraja, Yogyakarta, Minangkabau, and Bali are examples of cultural tourism destinations in Indonesia. Based on the above-described background, the research problems in this study are formulated in the form of the following research questions:

- (1) What is the role of tourism to regional economic growth in Indonesia?
- (2) Can tourism be considered as a conditional factor to improve the living standards of residents in Indonesia?

2. Literature Review

The importance of tourism to national economic development has been widely recognized, especially for its contribution to the balance of payments and production and labor (Shaw and Williams, 1991). In addition, there exists an important link between economic development and tourism in the sense that tourism can stimulate domestic demand levels. The ability of the national economy to benefit from tourism depends on the availability of investments to develop the necessary infrastructure. Benefits can be obtained as long as the country is able to provide the services needed by travelers, such as accommodation, food, transport facilities, entertainment, and others. Thus, there exists a strong relationship between tourism and other economic sectors, including transportation, retail, wholesale, manufacturing, agriculture, arts and crafts, and other services.

Balaguer and Cantavella-Jordá (2002) studied the role of tourism in Spain's economic growth by using export-driven growth approaches for the period 1975–1997. The tourism-led growth hypothesis is confirmed through co-integration and causality testing. The results of their work show that economic growth in Spain has been influenced by the continuous expansion of international tourism. They also found the multiplier effects on growth through the expansion of the tourism sector.

Eugenio-Martin (2004) studied the relationship between tourism and economic growth in Latin American countries from 1985–1998. Their analysis was based on a panel data approach with dynamic GMM estimation techniques. The author found a significant relationship between economic growth and growth in the tourism sector, which is conditioned by other macroeconomic variables. The presented evidence suggests that tourism is favorable for economic growth in middle- or low-income countries, but not necessarily in developed countries.

Several studies have examined the relationship between tourism and economic growth by applying convergence approaches. One such study is that of Proença and Soukiazis (2008), who used the ordinary least square (OLS), LSDV, and GLS methods of studying the relationship of tourism and the convergence of economic growth in four European countries (Greece, Italy, Portugal, and Spain) from 1990–2004. Using international tourism revenue as a tourism proxy, they found that tourism contributes significantly to economic growth and acts as a convergence factor. Furthermore, Soukiazis and Proença (2008) examined the relationship of tourism to regional economic growth in Portugal from 1993–2001. They used the LSDV, GLS, and GMM-System estimator methods as well as used accommodation capacity in the tourism sector as a proxy for tourism variables. Their results indicate that tourism (through accommodation capacity) has a positive impact on regional economic growth in Portugal, which also increases convergence. In addition, tourism can be considered as an alternative source to stimulate higher regional economic growth in Portugal.

Cortés-Jiménez (2008) used time series data from 1990–2000 and examined tourism relations and regional economic growth in 20 regions in Italy and 17 regions in Spain. They divided the region into three parts: internal regions, coastal regions, and regions with the Mediterranean coast. That study used the GMM method developed by Arellano and Bond (1991) and the LSDV method developed by Bruno (2005). It used nights spent by residents and non-residents and the arrival of domestic and international tourists as tourism variable proxies. The results show that for coastal areas, both domestic and international tourism is an

important factor for the convergence of regional economic growth. The same results also apply to areas with the Mediterranean coast. However, for internal areas, only domestic tourism is relevant in increasing the convergence of regional economic growth.

Sequeira and Nunes (2008) used a dynamic panel data approach to examine whether tourism influenced economic growth in small countries and poor countries from 1980–2002. They used the GMM (Blundell and Bond, 1998) estimators and the corrected least square dummy variables (LSDVC). Sequeira and Nunes also used international tourist arrivals, tourism receipts derived from percentages of exports as well as tourism receipts obtained from a percentage of GDP as proxies for tourism variables. The results show that tourism is a positive determinant factor for economic growth for poor countries, although this impact is not significant in small countries.

Andraz et. al. (2015) examined the influence of tourism on regional economic growth in the five administrative regions of Portugal, North, Center, Lisbon, Alentejo and Algarve during the period 1987–2011. They used the number of overnight stays in hotels, apartments hotels, tourist apartments, tourist villages, motels, bed and breakfasts, inns, guesthouses, and camping parks of domestic and international tourists as tourism variable proxies. Meanwhile, Li et al. (2016) examined the influence of tourism on regional economic growth in coastal and inland China, using time series data from 1997–2010. They used the first-differenced generalized method of moments as well as total tourism receipts and total number of hotel rooms as a proxy for tourism variables. Their result indicates that tourism development in China has a positive effect on regional economic growth and can reduce regional economic disparities in the country. In addition, inland areas (inland areas or less developed regions) grow faster (have faster conditional convergence) than coastal areas (coastal areas or underdeveloped areas). In addition, Li et al. (2016) also examined the relationship between tourism and regional economic growth in 30 provinces in China from 1997–2010, by using the autoregressive spatiotemporal method. The tourism variables used in their study include total tourism receipts and total number of hotel rooms. Their results show that tourism development contributes significantly to the reduction of regional economic imbalances, where domestic tourism contributes more than international tourism.

From the literature review above, we can clearly see that tourism can play a valuable role in stimulating higher growth, reducing regional asymmetry, creating jobs and bringing about positive externalities that affect (directly or indirectly) other economic activities. Next, this paper will focus on the impact of tourism on regional growth by adopting a convergence approach.

3. Data and Methodology

3.1. Data Description

This study uses convergence analysis as a means of analyzing tourism as a driver of economic growth, using annual data from 2010–2016 from 33 provinces in Indonesia. This specific period is selected because of the regional expansion that occurred before 2010, making it difficult to determine the number of provinces to be studied. The data are collected from the Indonesian Central Bureau of Statistics (BPS) and the Ministry of Culture and Tourism of Indonesia.

This study uses regional gross domestic product (RGDP) per capita as a proxy of economic growth as well as investment ratio to RGDP, population growth rate, the population ratio of those who completed secondary and higher education to the total population, and tourism accommodation as proxy variables for tourism.

3.2. Model Specification

In this research, we use the commonly used concepts of convergence sigma (σ) and beta convergence (β) (Barro and Sala-i-Martin, 2004).

3.2.1. σ -Convergence

Here, σ -convergence is analyzed by measuring the dispersion rate of RGDP per capita and calculating the standard deviation of the RGDP per capita logarithm value. Convergence occurs when the dispersion between economies decreases with time.

3.2.2. β -convergence

β -convergence consists of two hypotheses, namely, absolute convergence and conditional convergence. Absolute convergence occur when there exists a negative relationship between the initial RGDP per capita and the average of RGDP per capita growth over the period under study. Barro dan Sala-i-Martin (1992) used absolute convergence in inter-regional studies in one country. Whereas by conducting a conditional convergence hypothesis test, we can gain greater benefits as it is able to identify what determinants of factors affect the ate of regional economic growth in the long term. The conditional convergence model used in this research is given by

$$\ln(y_{i,t}) = \gamma_i + b \ln(y_{i,t-1}) + a_1 \ln(s_{i,t}) + a_2 \ln(n_{i,t} + g + \delta) + a_3 \ln(h_{i,t}) + a_4 \ln(P_{i,t}) + u_{i,t},$$

where $y_{i,t}$ is the RGDP per capita at 2010 constant prices, $s_{i,t}$ is the ratio of real capital stock to real GDP, and $n_{i,t} + g + \delta$ is the population growth rate, $h_{i,t}$ is human capital, and $P_{i,t}$ is tourism.

The convergence coefficients, b , at absolute convergence and conditional convergence represent the speed of convergence, which indicates the speed of an area reaching its steady state point. This is expressed using the formula

$$\beta = \frac{[\ln(b + 1)]}{T},$$

where T is the time period.

Using the value of β , we can calculate the half-life of convergence or the time taken to cover half of the initial economic inequality that occurs. The formula is given by

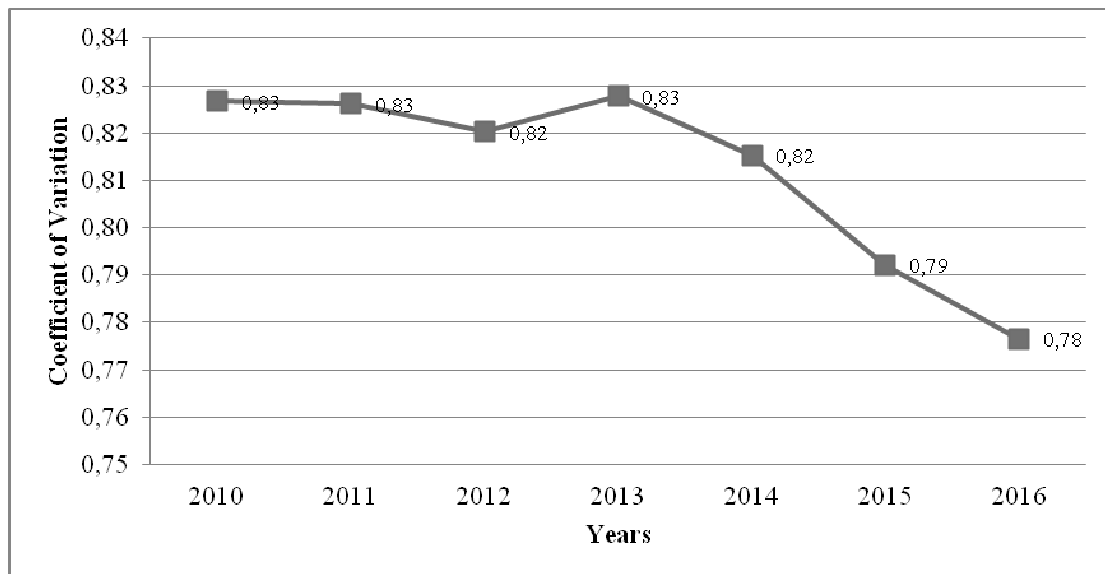
$$t = \frac{-\ln(0,5)}{\beta} \quad \text{or} \quad t = \frac{\ln(2)}{\beta}.$$

The half-life of convergence has an annual unit. The first procedure to be performed to test the beta convergence (β -convergence) is to find out whether there exists absolute convergence, and then test conditional convergence. If absolute convergence does not occur, and other variables of convergence are included, then the convergence becomes conditional convergence.

4. Results and Discussion

4.1. Convergence Analysis

Here, σ -convergence is analyzed by measuring the dispersion rate of the RGDP per capita. Figure 1 illustrates the development of differences in per capita income among the provinces in Indonesia during the period 2010–2016, using the coefficient of variation (σ -convergence). This coefficient measures the per capita income revenues over time. Declining values indicate a decrease in gap between regions, whereas an increasing value indicates a widening gap between regions in terms of per capita income.

Figure 1. Dispersion of Per capita Income among Provinces in Indonesia, 2010–2016

The main purpose of this study is to examine the impact of tourism activities on regional economic growth and understand how tourism affects the process of convergence among the provinces in Indonesia. Following Soukiazis and Proença (2008), the tourism indicator used in the current study is the tourism accommodation capacity, expressed by the number of beds available to travelers. According to Soukiazis and Proença (2008), there are two reasons why the capacity of accommodation can be used as a proxy for measuring the impact of tourism on economic growth: (1) accommodation capacity is the most significant variable explaining tourism flows (Proença and Soukiazis, 2008), and (2) accommodation capacity can be assumed to be exogenous, thus avoiding the problem of endogeneity biases that may arise in the process of estimating the convergence equation.

The present study uses panel data estimation technique by combining data for 33 provinces for the period 2010–2016, resulting in 231 observations. Table 1 shows the estimation results. The first part of the table presents the results of absolute convergence, whereas the second part presents the results of conditional convergence to test the significance of tourism accommodation capacity as a conditioning factor for higher regional growth. The following panel data estimation methods are used: the fixed effects method (LSDV), the random effects method (GLS), and the GMM estimator. The fixed effects method assumes certain individual effects captured by the dummy of each region. The random effects method assumes that regional special effects are random, and the GMM estimator method uses an Arrelano–Bond estimator.

The first part of Table 1 presents the estimates of economic growth without any other structural factors affecting economic growth. This is useful in determining whether there is absolute or no convergence. As can be seen, the convergence coefficient is positive and statistically significant for all estimation methods. This means that there is no absolute convergence in Indonesia during the observation period.

The objective focus of this research is to analyze the importance of tourism as one of the factors of regional economic growth in Indonesia. The second part of Table 1 above presents the estimation results for this analysis. According to Arellano and Bond (1991), two criteria can be used for finding the best dynamic panel model estimator: first, the instrument used must be valid and, second, the estimator must be consistent. The Sargan test is used to determine the validity of the use of instrument variables, whose numbers exceed the number of parameters suspected (overidentifying the restriction conditions). Table 1 shows the results of the Sargan test with a chi-square value of 17.05838 and p-value of 0.2531, which is greater than the real level of 5%; thus, the null hypothesis is not rejected. This means that the condition is overidentifying the restriction in a valid model estimator.

Table 1. Estimated Results of Convergence of Economic Growth in Indonesia, 2010–2016

Variables	LSDV fixed effects	GLS random effects	GMM estimator
Absolute Convergence: $\ln y_{i,t} = \gamma_i + b \ln(y_{i,t-1}) + u_{i,t}$			
Constant	0.5689428 (2.90)*	0.1673936 (3.58)*	0.591502 (12.59)*
$\ln(y_{i,t-1})$	0.9483119 (49,42)*	0.9875397 (216.23)*	0.9461395 (206.37)*
R^2	0.9371	0.9371	
Number of observations	198	198	165
Degrees of freedom			
F test–Wald test	F(1,164) = 2442.72 Prob [0.0000]	Wald chi ² (1) = 46757.51 Prob [0.0000]	Wald chi ² (1) = 42589.90 Prob [0.0000]
Sargan test			Chi2(14) = 18.53244 Prob [0.1836]
Test for second order serial correlation AR(2)			z = 0.8662 Prob [0.3864]
Conditional Convergence: $\ln y_{i,t} = \gamma_i + b \ln(y_{i,t-1}) + a_1 \ln(s_{i,t}) + a_2 \ln(n_{i,t} + g + \delta) + a_3 \ln(h_{i,t}) + a_4 \ln(P_{i,t}) + u_{i,t}$			
Constant	0.8809244 (2.62)*	0.1404715 (2.70)*	0.6469588 (4.31)*
$\ln(y_{i,t-1})$	0.8523631 (24.43)*	0.9882348 (212.01)*	0.9186825 (50.66)*
$s_{i,t}$	-0.142812 (-2.16)*	0.0317459 (1.01)	-0.57964 (-1.48)
$n_{i,t} + g + \delta$	0.1355786 (0.56)	-0.1123388 (-0.48)	0.0720315 (0.98)
$h_{i,t}$	0.000648 (1.22)	-0.000258 (-1.04)	0.0004079 (2.81)*
$P_{i,t}$	0.0702238 (3.73)*	0.003308 (1.05)	0.0214514 (2.27)*
R^2	0.9445	0.9362	
Number of observations	198	198	165
Degrees of freedom			
F test–Wald test	F(5, 160)=544.32 Prob [0.0000]	Wald chi ² (4) = Prob [0.0000]	Wald chi ² (5)=20195.07 Prob [0.0000]
Sargan test			Chi ² (14) = 17.05838 Prob [0.2531]
Test for second order serial correlation AR(2)			z(1)= -1.5698 Prob [0.1165] z(2) = 0.93498 Prob [0.3498]

Next, the estimator consistency is tested with the Arellano–Bond test. Consistent estimators have residual components that do not experience second order serial correlation in the equation of the first difference. Table 1 shows the first order z value of -1.56 with a p-value of 0.1165; thus, the null hypothesis is rejected. This means that there is an autocorrelation in the first-order first difference residuals. In the second order the z value is 0.93 with a p-value of 0.3498 so that the null hypothesis is accepted. This means that there is no autocorrelation in the second-order first difference residuals. Testing with the Arellano–Bond test showed consistent results so that the residuals in the model did not experience autocorrelation.

Based on Table 1 above, the equation for tourism models and economic growth is obtained as follows:

$$\ln y_{i,t} = 0.6469588 + 0.9186825 \ln(y_{i,t-1}) - 0.57964 \ln(s_{i,t}) + 0.0720315 \ln(n_{i,t} + g + \delta) + 0.0004079 \ln(h_{i,t}) + 0.0214514 \ln(P_{i,t}) + u_{i,t}.$$

In accordance with the above equation, the coefficient of economic growth variable lag has a positive sign of 0.9186825. The investment coefficient of -0.57964 means that if there is an investment increase of 1%, this can lead to a corresponding decline in economic growth of 0.57%. For the population growth rate variable having coefficient of 0.0720315, it means that the increase of population growth by 1% will be responded by the increase of economic growth equal to 0.07%. Human capital variable has a coefficient of 0.0004079, meaning that the increase in human capital by 1% can lead to a corresponding 0.00041% increase in economic growth. Finally, the variable of tourism accommodation has a coefficient of 0.0214514, meaning that an increase of tourism accommodation by 1% can lead to a corresponding 0.021% increase in economic growth.

The estimation result of tourism and economic growth is in accordance with the initial hypothesis that tourism can encourage economic growth (tourism-led growth hypothesis). Using a dynamic model approach allows us to estimate the lag coefficient of the GDP per capita, a value that indicates the extent to which the current per capita GDP is determined by the value of the previous per capita GDP. Based on Table 1 above, the coefficient of GDP per capita lag is 0.85. The value of the coefficient explains that if there is an increase in GDP per capita in the previous period or year by 1%, can lead to a corresponding of 0.85% increase in the GDP per capita in the next period. However, a positive sign on the variable lag of GDP per capita shows that there is no indication of convergence among provinces in Indonesia.

5. Conclusions

The purpose of this study was to test the impact of tourism on economic growth, using a dynamic panel data estimation approach and convergence analysis, in order to provide evidence indicating the impact of tourism on economic growth among Indonesian provinces. Using annual data from the period 2010–2016 for 33 provinces, this study uses convergence analysis as a means of analyzing tourism as a driver of economic growth in Indonesia. The selection of this period is due to the fact that, before 2010, there are still some regional expansions that happened, making it difficult to determine the number of provinces to be studied. This study also uses the RGDP per capita as a proxy of economic growth, investment ratio to RGDP, population growth rate, population ratio of those who completed secondary and higher education to the total population, and tourism accommodation as proxy variables for tourism.

The main purpose of this study is to examine the impact of tourism activities on regional economic growth and understand how tourism affects the process of convergence among provinces in Indonesia. Following Soukiazis and Proenca (2008), the tourism indicator used in this study is the tourism accommodation capacity, which is expressed by the number of beds available to travelers. According to Soukiazis and Proenca (2008), there are two reasons for using this as a proxy for measuring the impact of tourism on economic growth: first, accommodation capacity is the most significant variable explaining tourism flows (Proença and Soukiazis, 2005) and, second, accommodation capacity can be assumed to be exogenous, thus avoiding the problem of endogeneity biases that may arise in the process of estimating the convergence equation.

The results show that tourism and economic growth are linked, in accordance with the initial hypothesis that tourism can encourage economic growth; however, there is no indication of convergence among provinces in Indonesia. Therefore, tourism can be considered as an alternative source for stimulating economic growth in the country, but only if the supply characteristics of this sector are improved.

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