



Tourism Development and Economic Growth: An Empirical Investigation for Indonesia

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Article Information Abstract

History of Article

Received August 2021

Accepted December 2021

Published February 2022

Keywords:

Economic Growth, Fixed Effect Model, Solow Growth Model, Tourism Development

This paper applies the panel technique to investigate relationships between tourism development and economic growth in Indonesia (including 33 provinces) for the 2011-2021 period. Indonesia, as one biggest archipelago in the world, should have more benefits in the tourism sector to promote economic growth. On the other hand, there are still have limitations in infrastructure and regulation to interest more foreigners for taking vacation longer in Indonesia. The research method used the Solow growth model with Harrod Neutral approach and derived into the econometrics model by Fixed Effect Model (FEM) with the gross regional domestic product as a dependent variable and proxied of economic growth. Independent variables include gross fixed capital formation as proxied of capital, labor, and tourism indicator. The tourism indicator is measured the average length of total guests, domestic guests, and foreign guests in the classified hotel. Using FEM, the result showed that gross fixed capital formation, labor, and the average length of domestic guests significantly positively affect economic growth. The other, the foreign guest has no significant effect on economic growth. Additionally, tourism development has a more significant impact on economic growth from domestic guests than from foreign guests. Finally, the panel analysis shows a significant effect of the modeling, especially tourism indicator, to promote economic growth in 16 provinces in Indonesia. Thus, our empirical findings have significant policy implications for supporting tourism development in all provinces for growing economic highly.

INTRODUCTION

Tourism is an important sector in Indonesia, as well-known as one of the biggest archipelago countries in the world. Indonesia has great potential to attract foreign tourists with much cultural uniqueness and magnificent tourist spot. The relationship between tourism and economic growth has been shown in much research over several decades, both in developing and developed countries. The causal relationship between tourism and economic growth is based on the government making an essential policy for the tourism sector. In 2019, travel and tourism contributed 10,60 percent to gross domestic product (GDP) worldwide, a value of over USD 9,26 trillion (Statista, 2021). The massive contribution of tourism has been concerned the government all country to promote and making policies to interest many tourist arrivals.

Figure 1 shows that the number of arrivals from international tourism in some ASEAN countries has increased rapidly over 24 years ago. First, the highest number of international tourists in Thailand, with an average growth of 7,55% per year (YoY), overvalued 39,92 million arrivals in 2019. Second, Malaysia with 26,10 million arrivals and average growth of 5,35% (YoY). Third, Singapore with 19,12 million arrivals (4,19%, YoY), then Vietnam with 18,01 million arrivals (11,40%, YoY). The last is Indonesia, with 16,11 million arrivals (5,63%, YoY). It is contrary to the condition of geography and culture that Indonesia has should more advantages than the others. Hence, the data showed that Indonesia still has fewer numbers of arrivals than other ASEAN countries.

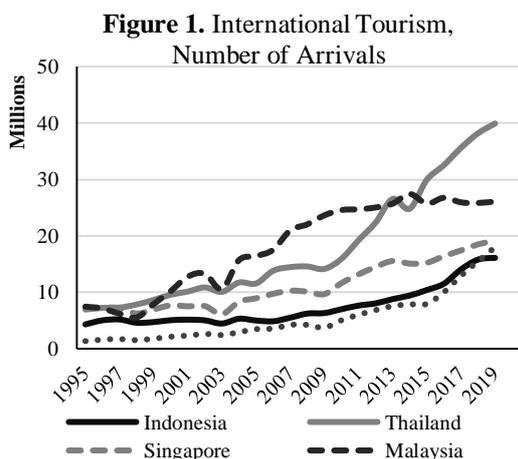
The number of arrivals from international tourism also related to the receipt in every country (Figure 2). In 2019, Thailand was the highest receipts over to USD 6,14 billion, then Malaysia over to USD 2,22 billion, Singapore over to USD 2,04 billion (in 2018), Indonesia over to USD 1,84 billion, and Vietnam over to USD 1,18 billion. The achievement of the national tourism sector in the 2015-2019 period experienced consistent and significant growth, although there was a decline in 2016. The contribution of the tourism sector to

national GDP continued to increase and reached the target, so that tourism as the leading sector recorded as a foreign exchange contributor after the palm oil industry (Ministry of Tourism and Creative Economy of the Republic of Indonesia, 2020).

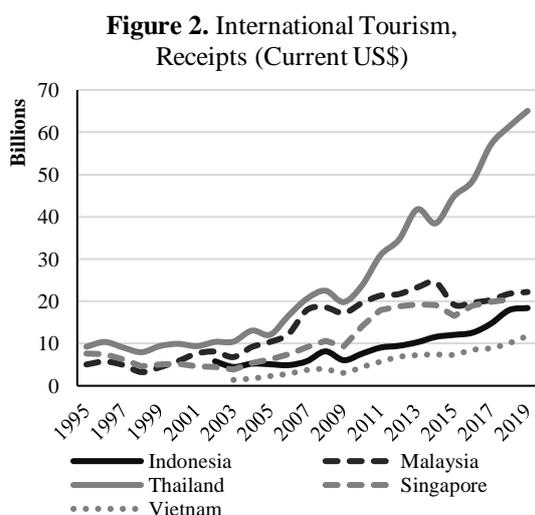
Indonesia reported on the Travel and Tourism Competitiveness Index (TTCI), ranked at the 40th level from 140 countries globally, with a total score of 4,3 points (World Economic Forum, 2019). The highest rank of TTCI for ASEAN in 2019 in Singapore at 17th level rank, with 4,8 points. Second, Malaysia ranked at 29th, then Thailand ranked at 31st, Indonesia ranked 40th, Vietnam and Brunei Darussalam ranked at 72nd, and Philippines ranked at 75th. Indonesia repaired to up-ranking than before in 2017 (at 42nd level rank) and 2015 (at 50th level rank). The total score of TTCI in Indonesia with 4,3 points, the low contributed value is tourist services infrastructure (3,1 point), cultural resources and business travel (3,2 point), ground and port infrastructure (3,3 point), environment sustainability (3,5 point), airport infrastructure (3,9 point), natural resources (4,5 point), and price competitiveness (6,2 point). Hence overall has been repaired, but some indicators of TTCI have shown the value for stagnant to decreased. It should be more concerned that the government for upgrading value in all indicators of TTCI. Some indicators that reported a decrease in the TTCI year of 2019 for Indonesia were the subindex of natural resources and subindex of cultural resources and business travel.

Tourism industries may have a beneficial influence on economic growth, and there may be causal links between tourism and economic growth, particularly in low- and middle-income nations (Alhowaish, 2016; Chou, 2013; Chulaphan & Barahona, 2018; Ekanayake & Long, 2012; Šimundić *et al.*, 2016; Tabash, 2017). Because of the study's findings, governments in developing nations should prioritize economic measures that encourage tourism as a possible source of economic growth. The tourist industry contributes to job creation, poverty reduction, and economic prosperity. According to Paramati *et al.* (2017), tourism has a substantial beneficial

influence on economic growth in developed and developing nations, confirming the commonly held concept of tourism-led economic expansion. The resultant research by Alhowaish (2016) indicates a one-way Granger causation, from economic growth to tourist growth, in Gulf Cooperation Council (GCC) countries as a whole.



Source: Worldbank, 2021



Source: Worldbank, 2021

Chou (2013) investigates the links between tourism spending and economic growth in ten transition nations from 1988 to 2011. Panel causality analysis, which considers dependence and heterogeneity between nations, is utilized in this study. The findings of Tabash (2017) revealed a significant long-term connection between GDP and foreign tourist receipts. Furthermore, the granger causality test confirms a causal link between ITR and Palestinian economic growth.

Finally, Antonakakis *et al.* (2015) use a newly developed spillover index technique to investigate the dynamic link between tourist growth and economic growth. First, the tourist-economic growth link is not constant over time in terms of magnitude or direction, showing that the tourism-led economic growth (TLEG) and economic-driven tourism growth (EDTG) hypotheses are time-dependent. Second, the connection is strongly affected by economic events, such as the Great Recession of 2007 and the current Eurozone debt crisis in 2010.

Tourism investments appear to be insufficient for economic growth on their own (Du *et al.*, 2016). Instead, tourism is most successful in contributing to an economy's long-term growth when integrated into a comprehensive development plan that focuses on strengthening standard income drivers. Liu & Wu (2019) investigated the influence of tourist productivity on economic growth and depicted the spillover effects between tourism and other sectors produced by externalities of physical and human capital, as well as public services. The simulation findings also show that inbound tourist demand expands faster than domestic tourism demand when the overall economy's productivity increases. In addition, domestic tourism consumption grows faster than inbound tourist consumption as the tourism sector's productivity improves.

Tourism's impact on economic growth proves that it has an effect and a relationship in both the short and long term. The tourist sector has a short-term impact on economic growth, and this effect is bidirectional; economic growth has an impact on tourism (Badulescu *et al.*, 2020; Ribeiro & Wang, 2020; Songling *et al.*, 2019). Other studies by Šimundić *et al.* (2016) demonstrate that tourist expansion has a favorable influence on the economic growth of LAC. Explicitly, this study claims that the tourist variable cannot be separated from other factors influencing economic growth. Gross investment, government consumption, trade openness, human capital, and political stability are examples of these. Badulescu *et al.* (2020) and Manzoor *et al.* (2019) proposed a long-run connection

between a tourist variable and economic growth. As a result, Udom Etokakpan *et al.* (2019) were unable to show that tourism has a long-term impact on economic growth.

This paper used hotel occupancy like a previous study by Laut *et al.* (2021). The findings revealed that the number of hotel occupants and restaurants has a significant influence on the tourist business, resulting in a rise in local income. Furthermore, in order to improve local income, the control impact of regional GDP on regional economic performance must be considered. As a result, the government must play its part in tourist management, with the assistance of the business sector and society, in order to enhance public and private income.

Much has been written on growth theories and the effects of tourism development. Some academics, however, have investigated the impact of tourism on economic growth. Countries are now attempting to recover from the negative impacts of the crisis but have been unable to do so due to severe recession and worsening economic conditions. Therefore, tourism might be one of the foundations that governments worldwide should promote to stimulate economic growth (Jucan & Jucan, 2013). Indonesia, as one biggest archipelago in the world, should have more benefits in the tourism sector to promote economic growth. On the other hand, there are still have limitations in infrastructure and regulation to interest more foreigners for taking vacation longer in Indonesia. Therefore, this paper aims to emphasize the important tourism development to promote economic growth in Indonesia. This paper takes panel data analysis with the Fixed Effect Model (FEM) method to estimate the tourism indicators on economic growth in Indonesia across 33 provinces from 2010 to 2021.

RESEARCH METHODS

This paper used the secondary database from Indonesia Statistics Central Bureau and Bank Indonesia. This paper was used Gross Regional Domestic Product (GRDP) as a dependent variable that proxied by GRDP at

2010 constant prices (in billions of IDR). The independent variables were used Gross Fixed Capital Formation at 2010 constant prices (in billions of IDR), labor (in person per year), the average length of stay of domestic guests in classified hotels (IG, per night), and the average length of stay of foreign guest in classified hotel (FG, per nights). The data set relative to 33 provinces in Indonesia and the period from 2010 until 2021. The method of this paper is estimated with Fixed Effect Model (FEM) to show the contribution of the tourism sector to promote economic growth in Indonesia.

The Solow (1957) growth model with the "Harrod Neutral" approach is used in this paper. This model is known as "labor augmenting" technological progress because it increases output in proportion to the increase in labor stock (labor). Then, derived the first equation into the Solow growth model equation with the "Harrod Neutral" approach as:

$$Y = f(K, AH) \dots\dots\dots (1)$$

where: Y is output, K is capital, H is human capital, and A is technological progress index. Equation 1 then the author modifies the technological progress with a tourism indicator that embodied into human capital so that it becomes:

$$Y = f(K, L, T) \dots\dots\dots (2)$$

Tourism indicator (T) proxied both domestic tourist (IG) and foreign tourist (FT) to represent the impact on economic growth specifically. This paper used tourism indicators, both domestic and foreign tourists, to stay in a classified hotel in Indonesia. The panel regression method is then used to convert equation 2 into an econometric equation:

$$\ln Y_{i,t} = \alpha_0 + \beta_1 \ln K_{i,t} + \beta_2 \ln L_{i,t} + \beta_3 \ln IG_{i,t} + \beta_4 \ln FG_{i,t} + \alpha_1 D1_i + \alpha_2 D2_i + \alpha_3 D3_i + \dots + \alpha_{34} Dn_{33} + \omega_{i,t} \dots\dots\dots (3)$$

This paper used log natural in some variables to standardize in the unit. $\ln Y$ is economic growth; $\ln K$ is stock capital growth; $\ln L$ is labor growth, and $\ln IG$ is growth of domestic tourist, $\ln FG$ is growth of foreign, i is

provincial; t is yearly; $D1, D1, \dots, Dn$ is dummy cross-section, $\beta_1, \beta_2, \beta_3, \alpha_1, \alpha_2, \alpha_3 \dots \alpha_n$ is the parameter coefficient of each independent variable and dummy cross-section, α_0 is intercept; ε_i is error of the interspace unit, $u_{i,t}$ is error of inter-section and inter-time units, dan $\omega_{i,t}$ is combined error ($\varepsilon_i + u_{i,t}$).

The variables that used in this paper proxied as: (i) Economic Growth (Y) was proxied by Gross Regional Domestic Product (GRDP) at 2010 constant prices per province (in billions of IDR); (ii) Capital (K) was proxied by Gross Fixed Capital Formation (GFCF) at 2010 constant prices per province (in billions of IDR); (iii) Labor (L) was proxied by total labor per province (in person); (iv) Domestic Tourist (IG) was proxied by the average length of stay of domestic guests in classified hotel per province (per night); (v) Foreign tourists (FG) was proxied by the average length of stay of foreign guests in classified hotels per province (per night). This paper used proxy the average length of stay of both domestic and foreign guests in classified hotel per province as tourism variable. This proxy like the previous study of Laut *et al.* (2021) used hotel occupants as variable that plays an important role in the tourism industry thereby leading to the increase of local income. Then, the last result identified as the robustness estimates referred to as the Best Linear Unbiased Estimator (BLUE) by the *Gauss-Markov Theorem*.

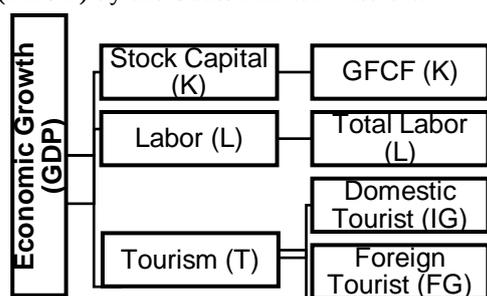


Figure 3. Flow Chart of Variable Calculated
Source: Data Processed, 2021

RESULTS AND DISCUSSION

The role of the tourism sector in economic growth, one of which is due to the existence of a strategic endowment factor owned by a region. These endowment factors include cultural

diversity, natural and environmental factors or social and historical aspects (Chou, 2013). In addition, the availability of tourism supporting infrastructure such as accommodation, transportation, entertainment, and related services. Another aspect that supports the tourism sector in encouraging the economy is the availability of tourism supporting factors, including access and convenience for tourists to travel, so that they can attract tourists to tourist destinations and in the end will encourage the economic growth of the area.

Tourism can be one of the pillars that governments worldwide should support as part of the solution to stimulating economic growth. Tourism has a potential sector to promote economic growth in Indonesia. Indonesia has many potentials to interest both domestic and foreign tourists to visit the beautiful and famous place. The government has committed to encouraging and promoting some super-priority tourism spots in 2021, like Labuan Bajo, Mandalika island, Toba lake, Likupang, Borobudur Temple, and others. Some policy essential has released to promote tourism, like open new international gate both airport and harbor, giving easy access visa for foreigner tourism, repairing, and developing new tourism infrastructure.

Table 1. Summary Statistic Descriptive

| Variable | Mean | Std. Dev. | Min | Max | Observations | |
|----------|---------|-----------|-----------|-----------|--------------|-----------------|
| GDP | overall | 274014 | 384368.2 | 14983.91 | 1836199 | N = 362 |
| | between | | 382057.9 | 20921.42 | 1464490 | n = 33 |
| | within | | 74692.81 | -115293.3 | 645721.7 | T-bar = 10.9697 |
| K | overall | 86829.3 | 130870 | 3431.17 | 747263.5 | N = 362 |
| | between | | 130765.9 | 7009.487 | 642890.2 | n = 33 |
| | within | | 21700.64 | -64511.74 | 191202.6 | T-bar = 10.9697 |
| L | overall | 3566106 | 5002610 | 316547 | 22100000 | N = 362 |
| | between | | 5054382 | 384937.9 | 19700000 | n = 33 |
| | within | | 374790.2 | 1040431 | 6161820 | T-bar = 10.9697 |
| IG | overall | 1.83856 | 0.3606368 | 1.21 | 3.63 | N = 362 |
| | between | | 0.2905218 | 1.428182 | 2.762727 | n = 33 |
| | within | | 0.2186344 | 1.085836 | 3.1222 | T-bar = 10.9697 |
| FG | overall | 2.84102 | 0.9645152 | 1 | 7.26 | N = 362 |
| | between | | 0.588232 | 1.667273 | 3.984545 | n = 33 |
| | within | | 0.7702936 | 0.9455676 | 7.26284 | T-bar = 10.9697 |

Source: Data Processed, 2021

Table 1 shows a summary descriptive statistic of some economic indicators for 33 provinces in Indonesia from 2010 until 2021. First, economic growth proxied by gross domestic, regional product (GDP) period 2010-

2021 has an average of IDR 274,014 trillion, with a minimum level at IDR 14,98 trillion and a maximum level at IDR 1.836,20 trillion. Second, stock capital that proxied by the gross fixed capital formation in the same period has an average of IDR 86,83 trillion, with the minimum level at IDR 3,43 trillion and maximum level at IDR 747,26 trillion. Third, labor has an average of around 3,57 million workers in 33 provinces in Indonesia, with a minimum of 316,55 thousand workers and a maximum of 22,06 million workers.

Finally, this paper used tourism indicators, both domestic and foreign tourists, to stay in a classified hotel in Indonesia. Domestic tourists at the same period have an average length of stay of domestic guests in the classified hotel, around 1,84 nights, with a minimum of 1,21 nights and a maximum of 3,63 nights. Then, foreign tourists have an average length of stay of foreign guests in the classified hotel, around 2,84 nights, more length than a domestic tourist, with a minimum of 1 night and a maximum of 7,26 nights. However, Table 1 showed that foreign tourists stay longer than domestic tourists, but it had no significance result to promote economic growth in the last.

Table 2. Correlation

| | GDP | K | L | IG | FG |
|-----|---------|---------|---------|--------|--------|
| GDP | 1.0000 | | | | |
| K | 0.9583 | 1.0000 | | | |
| L | 0.8046 | 0.6409 | 1.0000 | | |
| IG | -0.2030 | -0.1601 | -0.2780 | 1.0000 | |
| FG | -0.0369 | -0.0437 | -0.0982 | 0.3426 | 1.0000 |

Source: Data Processed, 2021

The result of correlation shows the relationship between the variable of economic indicators. Table 2 shows that stock capital and labor have a strong positive correlation to economic growth (GDP). Stock capital has a correlation of 0,95 to GDP, and labor has a correlation of 0,80 to GDP. It means that an increase in both stock capital and labor levels will follow increasing GDP level trends. On another side, tourist indicators that proxied with domestic and foreign tourists that spending to stay in a classified hotel in Indonesia have no

strong and negative correlation but economic growth. It conducts that an increase both domestic and foreign tourists that spending to stay in a classified hotel in Indonesia level will no follow with an increasing trend of GDP level and vice versa.

Table 3. Economic Growth Estimated with Pooled Least Squared (PLS) Model

| Variable | Coefficient | Std. Error | t | P> t |
|----------|--------------|------------|------------|---------|
| ln K | 0.8802681*** | 0.0194287 | 45.31 | 0,000 |
| ln L | 0.1232586*** | 0.0233847 | 5.27 | 0,000 |
| ln IG | 0.0902179 | 0.0755435 | 1.19 | 0.233 |
| ln FG | -0.0005745 | 0.0399938 | -0.01 | 0.989 |
| Constant | 0.6009487*** | 0.211782 | 2.84 | 0.005 |
| R2 | 0.9662 | | F (4, 457) | 2547.47 |
| R2-Adj | 0.9658 | | Prop > F | 0,0000 |
| N | 362 | | df | 361 |

Note: *means significance at a 90% level of confidence, **means significance at a 95% level of confidence, ***means significance at a 99% level of confidence.

Source: Data Processed 2021

This paper has aimed to explore and analyze panel datasets, so the authors must choose the best model among pooled least squared, fixed effect, and random effect, followed by a test of Chow and Hausman. First, table 3 shows the result for pooled least squared (PLS) model that according to the F (2547,47) statistic and the probability of rejection of the null hypothesis (Prob > F = 0.000) and adjusted R-squared at 0,9658. It means that independent variables for the PLS model have a highly significant effect on the dependent variable simultaneously of 96,58 percent. Partially, the result shows that stock capital and labor have a significant positive effect on economic growth. On the other, both domestic and foreign tourists have no significant effect on economic growth.

Then, table 4 shows for fixed effect model (FEM) model that, according to the F (696,50) statistic and the probability of rejection of the null hypothesis (Prob > F = 0.000) and R-squared overall at 0,9357. It means that independent variables for the FEM model significantly affect the dependent variable simultaneously of 93,57 percent. Partially, the result shows that stock

capital, labor, and domestic tourist have a significant positive effect on economic growth. On the other hand, an only foreign tourist has no significant effect on economic growth. Next, the first step to choose between PLS and FEM is needed a Chow-test with reviewing the output of FEM. Table 4 in the last row shows the p-value (Prob > F) < alpha 0,05, so reject the null hypothesis and accept the alternative hypothesis. It also means that the best model is FEM than PLS.

Table 4. Economic Growth Estimated with Fixed Effect Model (FEM)

| Variable | Coefficient | Std. Error | t | P> t |
|--|--------------|------------------|-------|------------------|
| ln K | 0.6095128*** | 0.0299153 | 20.37 | 0.000 |
| ln L | 0.5862116*** | 0.0734464 | 7.98 | 0.000 |
| ln IG | 0.0890101*** | 0.0316770 | 2.81 | 0.005 |
| ln FG | 0.0139369 | 0.0134455 | 1.04 | 0.301 |
| Constant | -3.249385*** | 0.8197123 | -3.96 | 0.000 |
| R2-within | 0.8955 | Prop > F | | 0,0000 |
| R2-between | 0.9371 | Number of obs | | 362 |
| R2-overall | 0.9357 | Number of groups | | 33 |
| F (4, 325) | 696.5 | | | |
| F test that u _i =0: (F32, 325) = 147,53 | | | | Prob > F = 0,000 |

Table 5. Economic Growth Estimated with Random Effect Model (REM)

| Variable | Coefficient | Std. Error | z | P> z |
|---------------------------|--------------|-------------------------|-------|-------|
| ln K | 0.6825074*** | 0.0248420 | 27.47 | 0.000 |
| ln L | 0.3807173*** | 0.0476663 | 7.99 | 0.000 |
| ln IG | 0.0874886*** | 0.0319578 | 2.74 | 0.006 |
| ln FG | 0.0105515 | 0.0136811 | 0.77 | 0.441 |
| Constant | -1.040209** | 0.5099038 | -2.04 | 0.041 |
| R2-within | 0.8930 | Number of obs. | | 362 |
| R2-between | 0.9559 | Number of groups | | 33 |
| R2-overall | 0.9543 | Prob > chi ² | | 0.000 |
| Wald chi ² (4) | 3480.32 | | | |

Note: *means significance at a 90% level of confidence, **means significance at a 95% level of confidence, ***means significance at a 99% level of confidence

Source: Data Processed, 2021

Table 6 shows a summary of the robustness estimate of pooled least squared (PLS), fixed effect model (FEM), and random effect model (REM). R2 adjusted of PLS shows regressor can explain GDP in 96,6 percent, whereas FEM also shows regressor can explain GDP in 89,4 percent. The three models show that stock capital and labor consistency have positive significance in promoting economic growth. Then both FEM and REM, tourist indicator has a significant positive effect on economic growth only for domestic tourist, but foreign tourist has no significant effect on economic growth. This table is only to show the comparison of three models of panel data set analysis. However, the fittest model based on Chow-test and Hausman-test is the fixed effect model (FEM).

Table 6. Robustness Estimated of Economic Growth with PLS, FEM and REM

| Variable | PLS b/se | FEM b/se | RE b/se |
|----------|--------------------|--------------------|--------------------|
| ln K | 0.880*** (0.02) | 0.610*** (0.13) | 0.683*** (0.11) |
| ln L | 0.123*** (0.02) | 0.586** (0.23) | 0.381*** (0.14) |
| ln IG | 0.09 (0.07) | 0.089** (0.04) | 0.087** (0.04) |
| ln FG | -0.001 (0.04) | 0.014 (0.01) | 0.011 (0.01) |
| constant | 0.601*** (0.21) | -3.249 (2.09) | -1.04 (1.08) |
| N | 362 | 362 | 362 |
| R2 | 0.966 | 0.896 | |
| R2- Adj. | 0.966 | 0.894 | |

Note: *means significance at a 90% level of confidence, **means significance at a 95% level of confidence, ***means significance at a 99% level of confidence

Source: Data Processed, 2021

This paper also wants to show all the input to promote economic growth among 33 provinces in Indonesia. Table 7 shows many differences that affect every region province in Indonesia to contribute to the nation's economic growth. The result shows that this research model

has a significant effect on promoting economic growth for 16 provinces. The 18 other provinces have no significant effect on promoting economic growth. The 16 provinces that has significant contributed on economic growth are Bali, Bangka Belitung, Jambi, West Kalimantan, East Kalimantan, Riau Islands, West Nusa Tenggara, East Nusa Tenggara, Papua, West Papua, Riau, West Sulawesi, South Sulawesi, West Sumatera, South Sumatera, and South Kalimantan. Almost all the provinces having significant effect has many spots traveling destination, both spot of cultural and natural destination. Finally, our empirical findings have significant policy implications for supporting tourism development in all provinces for growing economic highly.

Table 7. Robustness Estimated of Economic Growth with Ordinary Least Squared (OLS) and Dummy Modelling

| Variable | Coefficient | Std. Error | t | P> t |
|-----------------------|--------------------|------------|-----------|-------|
| ln K | 0.6095128 ** * | 0.1358108 | 4.49 | 0.000 |
| ln L | 0.5862116 ** | 0.2426607 | 2.42 | 0.022 |
| ln IG | 0.0890101 ** | 0.0415238 | 2.14 | 0.040 |
| ln FG | 0.0139369 | 0.0151374 | 0.92 | 0.364 |
| Constant | -3.3378940 | 2.2073220 | -1.51 | 0.140 |
| Bali | -0.0904521 ** * | 0.0304846 | -2.97 | 0.006 |
| Bangka Belitung | 0.5497301 ** * | 0.1198111 | 4.59 | 0.000 |
| Banten | -0.0156420 | 0.0890767 | -0.18 | 0.862 |
| Bengkulu | -0.1462615 | 0.0907451 | -1.61 | 0.117 |
| DIY | 0.0058157 | 0.0653032 | 0.09 | 0.930 |
| DKI Jakarta | 0.2950887 | 0.1982150 | 1.49 | 0.146 |
| Gorontalo | 0.1837932 | 0.1369370 | 1.34 | 0.189 |
| Jambi | 0.3919665 ** * | 0.0265934 | 14.7 4 | 0.000 |
| West Java | -0.2403504 | 0.2948964 | -0.82 | 0.421 |
| Central Java | -0.3953114 | 0.2859514 | -1.38 | 0.176 |
| East Java | -0.2789889 | 0.2763240 | -1.01 | 0.320 |
| West Kalimantan | -0.0757273 ** | 0.0365768 | -2.07 | 0.047 |
| Central Kalimantan | 0.0032864 | 0.1120191 | 0.03 | 0.977 |
| East Kalimantan | 0.8236319 ** * | 0.2045752 | 4.03 | 0.000 |
| Riau Islands | 0.4789042 * | 0.2668163 | 1.79 | 0.082 |
| Lampung | -0.1378578 | 0.0894800 | -1.54 | 0.133 |
| Maluku | 0.0742677 | 0.0892276 | 0.83 | 0.411 |
| North Maluku | 0.1803111 | 0.1384474 | 1.30 | 0.202 |
| West Nusa Tenggara | -0.1792471 ** | 0.0783388 | -2.29 | 0.029 |

| Variable | Coefficient | Std. Error | t | P> t |
|-----------------------|--------------------|------------|-------|------------|
| East Nusa Tenggara | -0.4991530 ** * | 0.0975765 | -5.12 | 0.000 |
| Papua | 0.2436406 ** * | 0.0408613 | 5.96 | 0.000 |
| West Papua | 0.9955954 ** * | 0.2297670 | 4.33 | 0.000 |
| Riau | 0.4534060 ** * | 0.1107268 | 4.09 | 0.000 |
| West Sulawesi | 0.2199282 ** | 0.1061951 | 2.07 | 0.047 |
| South Sulawesi | -0.1336984 ** * | 0.0447053 | -2.99 | 0.005 |
| Central Sulawesi | 0.0016710 | 0.0816403 | 0.02 | 0.984 |
| Southeast Sulawesi | 0.0199942 | 0.1138679 | 0.18 | 0.862 |
| North Sulawesi | 0.0982729 | 0.1144896 | 0.86 | 0.397 |
| West Sumatera | 0.0775581 ** * | 0.0174475 | 4.45 | 0.000 |
| South Sumatera | -0.1504097 ** * | 0.0493620 | -3.05 | 0.005 |
| North Sumatera | -0.0747699 | 0.1238773 | -0.60 | 0.550 |
| South Kalimantan | 0.2537507 ** * | 0.0471176 | 5.39 | 0.000 |
| Number of obs | | | | 362 |
| R2 | | | | 0.997 8 |

Note: *means significance at a 90% level of confidence, **means significance at a 95% level of confidence, ***means significance at a 99% level of confidence

Source: Data Processed, 2021

Overall, the results of the study found that capital stock, labor and domestic tourists have an influence on economic growth in the observed area. Meanwhile, foreign tourists have no effect on economic growth. This finding supports the model proposed by Solow, but it is necessary to study further about the influence of foreign tourists on economic growth, because the results of this study show that foreign tourists have no effect. In addition to length of stay, tourist spending while in tourist areas is thought to affect economic growth. Based on this assumption, it is necessary to study further the influence of tourists on economic growth using other, more specific indicators.

Similar results were also shown by research conducted by Badulescu et al. (2020). Where in the test, it is found that GDP has a significant relationship with international tourist

arrivals and receipts from international tourists in the long and short-term. Tabash (2017) conducted research on the Palestinian economy and the results revealed that GDP and foreign revenues have a significant long-term relationship. Antonakakis et al. (2015) used the newly developed spillover index technique to investigate the dynamic relationship between tourist growth and economic growth. First, the tourism-economic growth relationship is not constant over time in terms of magnitude or direction, suggesting that the hypotheses of tourism-driven economic growth (TLEG) and tourism-driven economic growth (EDTG) are time-dependent. Second, connections are strongly influenced by economic events.

In this study, the role of tourism in promoting growth is not only because it encourages the growth of new investment but is also able to increase job creation. Absorption of labor caused by increased production activities due to increased investment, in the end, was able to boost income and economic growth. For the regional economy, tourism also has the potential to encourage an increase in regional income in the form of taxes. Due to these advantages, tourism development not only stimulates industrial growth, but also induces overall economic growth (Lee & Chang, 2008). In addition, tourism can reduce the gap or disparity in economic growth between regions (Li et al., 2016).

The importance of tourism for regional development will ultimately position the sector as a driver of regional economic growth and reduce development disparities between regions. Research conducted by Antonakakis et al. (2015); Chulaphan & Barahona (2018); Du et al. (2016); Williams & Shaw (1995) show that the tourism sector is able to distribute development from economic centers to less developed areas. From these findings, it also shows that the tourism sector can be used as an instrument to narrow regional disparities. This opinion is supported by the reason that tourism activities can encourage the reduction of disparities between regions through economic growth. Some of these studies even suggest that tourism

can be an important factor to look at the issue of growth convergence between regions.

CONCLUSION

This paper aimed to emphasize the important tourism development with arrivals tourists, domestic and foreign guests to promote economic growth in Indonesia. Using FEM, the robustness result showed that simultaneously the model had statistically significant. Individually, all regressors had a significant positive effect on economic growth, except foreign tourism. However, the average length of stay of foreign guests in the classified hotel has no significant effect on economic growth. On average, the increase of 1 percent of stock capital, labor, and the average length of stay of domestic guests in the classified hotel would increase to economic growth partly of 0,61 percent, 0,59 percent, and 0,09 percent. The value of the R-squared within (per year) for the robustness of FEM is 0,8955. It means that all independent variables in this model explain 89,55 percent of the dependent variable per year

This paper also showed many differences that affect every region province in Indonesia to contribute to the nation's economic growth. The result shows that this research model has a significant effect on promoting economic growth for 16 provinces. Almost all the provinces having significant effect has many spots traveling destination, both spot of cultural and natural destination. Thus, the result finding that foreign tourists have no significant effect on economic growth should be why the government makes more effective policies to interest foreign tourists to come to Indonesia. The government must support tourism development in all provinces to catch up with the economic growth highly.

The results of this study need to be continued by comparing with wider areas for a longer period. It is also important to research further on what factors cause foreign tourists to have no effect on economic growth. These results can be used as input for related parties to fix problems that occur in the tourism sector, especially to increase economic growth from the side of foreign tourists.

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APPENDIX

Following the Chow-test result, the authors continue to the random effect model (REM) in table 5 and then process for the Hausman test. Based on the Hausman test in table A.1, according to p-value ($\text{Prob} > \text{Chi}^2 < \alpha 0,05$), reject the null hypothesis and accept the alternative hypothesis. It also means that the best model is FEM than REM. The FEM result based on table A.1 is still needed to continue for the classical assumption test getting the robustness result. Table A.3 shows that the FEM result (based on table A.2) has been detected from heteroscedasticity, autocorrelation, and normality, with reject the null hypothesis. The model detects the presence of heteroscedasticity symptoms, suffers from autocorrelation, and no normally distributed residual. Multicollinearity was no strong detected interrelated regressors, according to the value of mean VIF (2,74) below at a level of 10.

Appendix 1. Result of Chow and Hausman Tests

| Test | P _{value} | Alpha | Conclusion |
|--------------|----------------------------------|--------|--|
| Chow-test | Prob > F = 0,0000 | < 0,05 | Reject H ₀ : Fixed Effect Model |
| Hausman-test | Prob > chi ² = 0,0001 | < 0,05 | Reject H ₀ : Fixed Effect Model |

Source: Data Processed, 2021

Appendix 2. Summary of Gauss Markov Detection Tests.

Model: $\ln \text{GDP} = f(\ln K, \ln L, \ln \text{IG}, \ln \text{FG})$

| Test | Value Indicato r | Threshold | Conclusion |
|---------------------------------|----------------------------------|------------|---|
| Skewness and Kurtosis test | Prob > chi ² = 0,0270 | < α (0,05) | Reject H ₀ : No Normal Distributed |
| Variance Inflation Factor (VIF) | Mean VIF = 2,74 | VIF < 10 | No Multicollinearity |
| Modified Wald test | Prob > chi ² = 0,0000 | < α (0,05) | Reject H ₀ : Heteroskedasticity |
| Wooldridge test | Prob > F = 0,0000 | < α (0,05) | Reject H ₀ : Autocorrelation |

Source: Data Processed, 2021

The result of FEM on table A.2 has detected the presence of heteroscedasticity symptoms, suffers from autocorrelation. According to Das (2019), to estimate the robustness result of FEM, using the vce (robust) option in Stata should be needed if heteroscedasticity or within-panel serial correlation is suspected. Table 8 is the result of the classical assumption correction in the FEM model using robust. The result conducts that simultaneously the model has statistically significant. It shows that Prob > F is zero. Individually, all regressors have a significant positive effect on economic growth, except foreign tourism. However, the average length of stay of foreign guests in the classified hotel has no significant effect on economic growth. On average, the increase of 1 percent of stock capital, labor, and the average length of stay of domestic guests in the classified hotel would increase to economic growth partly by 0,61 percent, 0,59 percent, and 0,09 percent. The value of the R-squared within (per year) for the robustness of FEM is 0,8955. It means that all independent variables in this model explain 89,55 percent of the dependent variable per year.

Appendix 3. Robustness Estimated of Economic Growth with Fixed Effect Model (FEM).

| Variable | Coefficient | Std. Error | t | P> t |
|------------|--------------|------------------|-------|--------|
| ln K | 0.6095128*** | 0.1295812 | 4.70 | 0.000 |
| ln L | 0.5862116** | 0.2315299 | 2.53 | 0.016 |
| ln IG | 0.0890101** | 0.0396191 | 2.25 | 0.032 |
| ln FG | 0.0139369 | 0.0144431 | 0.96 | 0.342 |
| Constant | -3.249385 | 2.093032 | -1.55 | 0.130 |
| R2-within | 0.8955 | Prop > F | | 0,0000 |
| R2-between | 0.9371 | Number of obs | | 362 |
| R2-overall | 0.9357 | Number of groups | | 33 |
| F (4, 32) | 143.82 | | | |

Note: *means significance at a 90% level of confidence, **means significance at a 95% level of confidence, ***means significance at a 99% level of confidence.

Source: Data Processed, 2021