Chapter 4

The Impact Of Tourism Revenues On Economic Growth: Panel Data Analysis For Mint Countries 🔓

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Abstract

The tourism sector, which holds a significant place in achieving sustainable economic growth and development globally, is crucial for countries to realize objectives such as job creation, generating tax revenues, and reducing trade deficits. Tourism revenues can positively influence a country's economic growth through various channels. Therefore, the tourism sector is receiving increasing attention worldwide, with diverse policies and strategies implemented in this regard. In the literature, the relationship between tourism and growth is referred to as tourism-led growth.

This study aims to analyze the impact of tourism revenues on economic growth in MINT (Mexico, Indonesia, Nigeria, Turkey) countries using panel regression analysis for the period 2005–2020. The findings indicate that the impact of tourism revenues on economic growth is statistically significant. In other words, a 1% increase in tourism revenues leads to a 0.2211% increase in economic growth.

1. Introduction

Countries around the world have macroeconomic goals that they set for themselves. Realizing as high an economic growth as possible, achieving full employment and maintaining price stability are at the top of these goals. Countries set policies to achieve these goals and to ensure stability after achieving these goals. If the policies implemented are successful, the targets set are also achieved (Ertürkmen, 2023).

Tourism revenues are of great importance to national economies worldwide, serving as a crucial instrument for growth and development.

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They contribute positively to increasing employment and tax revenues and reducing trade balance deficits. Hence, countries aim to enhance tourism revenues to ensure sustainable economic growth and development. Just as increasing production and reducing unemployment are necessary for the sustainability of economic growth, the development of the tourism sector should also be included among these goals. Tourism offers opportunities for nations to increase their income (Ağır & Özbek, 2021).

Tourism activities can be defined as individuals traveling from where they live to other places and performing various activities such as rest, entertainment, learning, cultural education, health and sports (Önder, 2022). Today, with the development of transportation facilities, tourism activities have increased (Kara, 2012).

The positive effect of tourism revenues on economic growth is often explained in the literature by the relationship between exports and economic growth, defined as the tourism-led growth hypothesis (Kızılkaya et al., 2016). Tourism is categorized under international services in the current account of the balance of payments, providing foreign exchange earnings for host countries through consumption and investment spending by foreign tourists. Thus, it can be argued that the tourism sector has a structure similar to merchandise exports (Ağır & Özbek, 2021).

In the light of economic, social and cultural developments, tourism revenues in MINT countries (Malaysia, Indonesia, Nigeria and Turkey) are fluctuating. Figure 1 below shows the international tourism and travel revenues of MINT countries between 2005 and 2020.
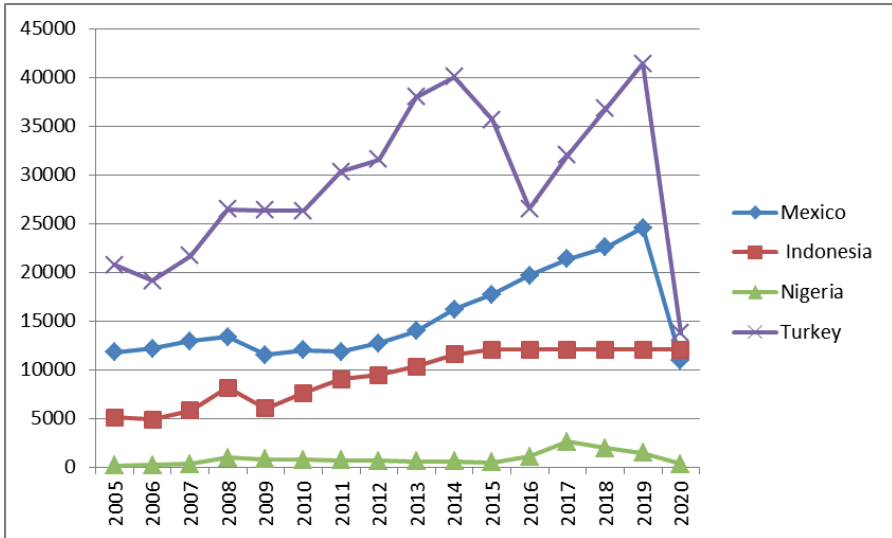
Figure 1: International Tourism and Travel Revenues in MINT Countries (2005-2020), (Million Dollars)

Source: Created by the author with data obtained from World Devolopment (World Bank).

As seen in Figure 1, Turkey has the highest tourism revenues in MINT countries, while Nigeria has the lowest. As can be seen in the figure, the impact of Covid 19, known as the 2019 health crisis, was seen with the bottoming out of the indicators in 2020. The symptoms of Covid 19 were especially felt on Turkey's tourism revenues.

As an economic indicator of the MINT countries formed by Mexico, Indonesia, Nigeria and Turkey, Figure 2: shows the values of gross domestic product per capita between 2005-2020.
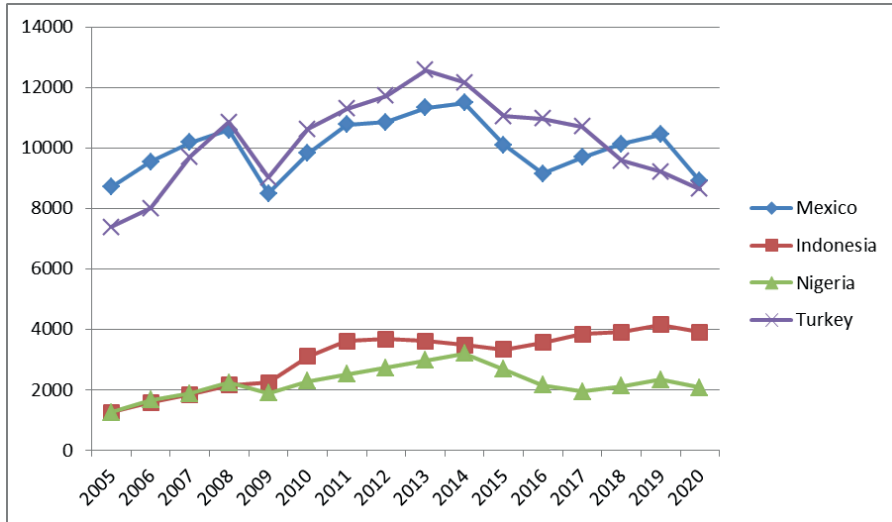
Figure 2: Gross Domestic Product per Capita in MINT Countries (2005-2020),
(Current USD)

Source: Created by the author with data obtained from World Devolopment (World
Bank)

As can be seen in Figure 2, it can be stated that the Gross Domestic Product per Capita values for the MINT country group followed a fluctuating course between 2005-2020. When the country group is analyzed, it is seen that Turkey and Mexico have a higher GDP per capita compared to Indonesia and Nigeria.

In this context, when the two graphs are evaluated together, it can be said that there are graphical similarities between Tourism Revenues and Gross Domestic Product per Capita. In other words, when tourism revenues are evaluated for the MINT country group between 2005 and 2020, it is seen that the two countries with the highest tourism revenues are Turkey and Mexico, while the two countries with the lowest tourism revenues are Indonesia and Nigeria. Only for 2020, although Turkey experienced a sharp decline due to the COVID-19 process, the decline in Malaysia, together with the decline in Malaysia, almost reached the level of Indonesia's tourism revenues.

The aim of this study is to investigate the impact of tourism revenues on economic growth for MINT countries. In this direction, Panel Regression Analysis has been conducted by considering the data between 2005-2020. In the study, after the introduction and theoretical framework, the studies

in the literature will be examined. Then, the impact of tourism revenues on economic growth for MINT countries will be analyzed by Panel Regression method and conclusions and evaluations will be made in line with the findings obtained.

2. Literature Review

Many studies in the literature examine the effect of tourism revenues on economic growth. Empirical studies generally agree that tourism revenues positively impact economic growth. However, differences in periods, countries, groups of countries, methods, and variables lead to varying results. Table 1 below presents some of the studies on this topic.

Table 1. Literature Review on the Impact of Tourism Revenues on Economic Growth

Authors	Countries	Period Method	Findings
Balaguer & Cantavella-Jorda (2002)	Spain 1975–1997	Cointegration Analysis & Causality Test	Long-term improvements in tourism significantly influence growth.
Eugenio-Martin et al. (2004)	Latin America 1985–1998	Panel Data Analysis	Strong tourism-growth relationship in developing countries; weaker in developed nations.
Dritsakis (2004)	Greece 1960–2000	Johansen Cointegration & Granger Causality Test	Strong causality between tourism and economic growth.
Oh (2005)	South Korea 1990–2005	Engle-Granger Causality Analysis	No long-term relationship between tourism and economic growth.
Yavuz Çil (2006)	Turkey 1992–2004	Granger Causality & Toda-Yamamoto Causality Analysis	No causality between tourism revenues and economic growth.
Brida et al. (2008)	Mexico 1980–2007	Granger Causality Analysis	Unidirectional causality from tourism spending to real GDP.
Kızılgöl & Erbaykal (2008)	Turkey 1992–2006	Toda-Yamamoto Causality Analysis	Causality from economic growth to tourism revenues.

Mishra et al. (2011)	India 1978-2009	Granger Causality Analysis	According to the findings of the study, it is concluded that there is a positive relationship between tourism and economic growth. In addition, it is concluded that there is a causality relationship from tourism to economic growth in the long run, while there is no causality relationship in the short run.
Kamacı & Oğan (2014)	Turkish Republics 1995-2011	Panel Cointegration Analysis Panel Causality Tests	According to the findings of the study, there is a positive relationship between tourism and economic growth in the long run. In addition, there is a bidirectional causality relationship between tourism and growth.
Balıkçıoğlu & Oktay (2015)	Turkey 2003-2014	Granger Causality Analysis	According to the findings of the study, it is concluded that there is unidirectional causality from tourism to economic growth.
Kızılkaya et al. (2017)	Turkey 1980–2014	ARDL Bound Test	Positive impact of tourism revenues on economic growth in both long and short terms.
Gövdeli & Direkçi (2017)	34 OECD Countries 1997–2012	Panel Cointegration	Analysis Long-term increase in tourism revenues positively affects economic growth.
Sahin (2017)	20 Mediterranean Countries 2000-2015	Panel Data Analysis	According to the findings of the study, there is a positive relationship between tourism revenues and economic growth.
Turgut et al. (2021)	Turkey 1998–2009	ARDL Bound Test & Granger Causality Test	Tourism revenues are found to be a Granger cause of economic growth.
Rossaol et al. (2021)	BRICS Countries 1995-2015	Panel ARDL Test	According to the results obtained from the study, there is a long-run relationship between the variables.
Ordu & Duran (2023)	Northern Cyprus 1990–2019	Johansen Cointegration & Granger Causality Test	Short-term bidirectional causality; no long-term relationship.
Baghirov (2023)	7 Western OECD Countries 1988–2015	Panel Cointegration Analysis	Tourism and economic growth are found to be related.

The reviewed literature generally shows that the effect of tourism revenues on economic growth is positive and significant. Particularly for developing countries, the importance of tourism revenues is highlighted.

3. Econometric Methodology and Findings

This study uses data from the World Bank's World Development Indicators for 2005–2020, focusing on MINT (Mexico, Indonesia, Nigeria, Turkey) countries. Panel regression analysis was conducted with logarithmic transformations of the dependent and independent variables. The data were obtained from the World Bank's World Development Indicators database.

The variables used in the analysis are shown in Table 2, and the countries included in the analysis are listed in Table 3:

Table 2: Variable Definitions

Variable	Description	Source and Period
LT	Logarithmic International Tourism Revenue	World Bank (WDI) 2005–2020
LGDP	Logarithmic Per Capita GDP	World Bank (WDI) 2005–2020

Table 3: MINT Countries in the Analysis

1	Mexico
2	Indonesia
3	Nigeria
4	Turkey

The logarithmically transformed equation is shown in equation 1 below:

$$LGDP_{it} = \beta_0 + \beta_1 LT_i + \upsilon_i \tag{1}$$

In the model used in the study, MINT countries are considered. In this model, "i" indicates the unit dimension and "t" indicates the time dimension.

$$i = (1...4) \text{ and } (t = 2005...2020)$$

LT: Logarithm of International Tourism and Travel revenues.

LGDP: Logarithm of GDP per capita.

In panel data models, whether the classical model is valid or not, in other words, whether there is a unit and/or time effect in the model can be revealed by analyzing through some tests. F Test, LR Likelihood Test, Breush Pagan LM Test are some of these tests. In this study, LM and F tests were used to analyze the results. These tests determine whether the series differ by units. If the series do not differ by units, the classical model is accepted to be valid. The main and alternative hypothesis of the F test is as follows (Yerdelen Tatoğlu, 2020).

H0: Unit and/or time effects are equal to zero.

H1: Unit and/or time effects are different from zero.

In panel data regression analyses, the Bresuch-Pagan LM test can be used to determine whether the classical model or the random effects model is valid.

H0: The variance of the unit and/or time effect is equal to zero.

H1: The variance of the unit and/or time effect is different from zero.

It is constructed as follows. In other words, the null hypothesis H0 can also be stated as "there is no unit and/or time effect". As a result of the rejection of the null hypothesis H0, it is decided that there are unit and/or time effects in the model. After determining that there are unit and/or time effects in the model as a result of LM and F tests, it should be determined whether these effects are fixed effects or random effects.

After the detection of unit and/or time effects, Hausman (1978) test is applied to determine the correlation of these effects with independent variables (Alpağut, 2024). In other words, if fixed effects and random effects are consistent in the model, the analysis showing which is more efficient in terms of efficiency is the Hausman Test and the hypothesis is established as follows:

H0: There is no correlation between explanatory variables and the error term.

H1: Explanatory variables and the error term are correlated (Yerdelen Tatoğlu, 2020).

Table 4 summarizes the results showing which of the classical model, fixed effects and random effects model is most appropriate for the model of the effect of tourism revenues on economic growth.

Table 4: Panel Data Regression Analysis Estimator Tests

	Statistic Values	Probability (Prob) Values
F Test	29.47*	0.000
LM Test	157.45*	0.000
Hausman Test	0.01*	0.9247

Note: Denotes 5% significance level.

Table 4 presents the results of F, LM. and Hausman tests. According to the results of the F test, since the probability (prob) value is less than 0.05, i.e. p=0.000<0.005, the null hypothesis H0 is rejected and the existence of unit and/or time effect is accepted. In other words, it is concluded that the existence of unit and/or time effect is significant in the model of the effect of tourism revenues on economic growth at 5% significance level. In short, as a result of this analysis, it can be stated that the classical model, the Pooled ECT model, is not valid for this model.

When the results of the Bresuch-Pagan LM (1980) test are analyzed in the model in which the effect of tourism revenues on economic growth is examined, it is seen that the x2 test statistic is 157.45. In addition, since the Prob(probability) value is less than 0.05, i.e. p=0.000<0.05, the null hypothesis H0 is rejected. In this case, the presence of unit and/or time effect is significant at 5% significance level. Thus, according to the result of the LM test analysis, it can be stated that the classical model is not valid.

According to the results of the F test and Breusch-Pagan LM test analysis, it is seen that the pooled ECM method is not valid in the model. As a result of the detection of unit and/or time effect as a result of F, LM test, Hausman Test was used to analyze whether the effect is fixed effect or random effect. As explained in Table 4, the probability value is greater than 5% significance level (p=0.92>0.05). According to this result, the null hypothesis is not rejected. It is seen that the appropriate analysis method for the Impact of Tourism Revenues on Economic Growth model is the random effects model.

Random effects regression analysis was found to be appropriate for the model of the impact of tourism revenues on economic growth and assumption tests were conducted to test whether there are heteroskedasticity, autocorrelation and inter-unit correlation problems. In the study, the random effects model was determined as the estimation method. Levene (1960), Brown and Forstyhe (1974) analyses were conducted to test the presence of heteroskedasticity in the random effects model. The results of these analyses are given in Table 5.

Table 5: Heteroskedasticity Test Results

	X^2	Prob. Value
W0	6.8906*	0.000
W50	6.1238*	0.001
W10	6.5301*	0,000

* Note: Indicates 5% significance level.

Table 5. shows the heteroskedasticity test results in the random effects model. According to the heteroskedasticity result, since the probability values are less than 0.05 (p=0.000< 0.05), the main hypothesis H0 "there is no heteroskedasticity" is rejected and it is determined that there is a heteroskedasticity problem according to the units.

The Durbin Watson Test and Baltagi-Wu (1999) Best Invariant LBI Test were used to determine whether there is an autocorrelation problem in the efficiency of the random effects model. Table 6 presents the results.

Table 6. Autocorrelation Test Results

ModifiedBhargavavd.Durbin Watson	0.3131
Baltagi –Wu LBI	0.7674

Table 6 presents the Autocorrelation test results in the random effects model. It is seen that the critical values obtained for both tests shown in Table 6 are below 2 and the null hypothesis H0 "There is no autocorrelation" is rejected. Therefore, it is seen that there is an autocorrelation problem in the random effects model.

Pesaran and Friedman tests are used to test for the presence of correlation between units. Table 7 shows the findings of inter-unit correlation in the random effects model.

Table 7: Inter-unit Correlation Test Results

	x^2	Prob. Value
PesaranTest	7.726*	0.0000
Friedman Test	48.066*	0.0000

Note: Indicates 5% significance level

Table 7 presents the inter-unit correlation test results of the model. According to the table, since p=0.000< 0.05 at 0.05 significance level, the main hypothesis H0 "there is no correlation between units" is rejected. Therefore, Pesaran and Friedman Tests show that there is correlation between units in the random effects model.

In our model, in which we investigate the effect of tourism revenues on growth, there are heteroskedasticity, inter-unit correlation and autocorrelation problems. Therefore, the estimators lose their consistency and efficiency. The impact of tourism revenues on economic growth should be estimated with the Driscoll-Kraay robust estimator. The results of the Diriscoll-Kraay estimator are presented in Table 8.

Table 8: .Driscoll- Kraay Robust Estimator Results

	Coefficient	DriscollKraaySt	t	P>|t|
LT	0.2211	0.6806	3.25	0,005
Fixed	9.6758	0.7800	12.40	0,000
Prob(Probability)	0,001			

Note: Indicates 5% significance level

According to the Driscoll- Kraay robust estimator results in Table 8, the LT variable is statistically significant for the model of the Impact of Tourism Revenues on Economic Growth for MINT (Mexico, Indonesia, Nigeria, Turkey) countries using data from 2005 to 2020 (P>|t| value 0.001).

The results of the Driscoll-Kraay robust estimator show that a 1% increase in tourism revenues increases economic growth by 0.2211%.

As a result of the robust estimator, the effect of tourism revenues on economic growth was found to be positive at 5% significance level. In other words, a 1% increase in tourism revenues increases economic growth by 0.2211%.

It is seen that the findings obtained from the study are consistent with Kızılkaya et al. (2017), Gövdeli and Direkçi (2017) and Turgut et al. (2021).

4. Conclusion

Tourism is one of the fastest growing sectors in the world. The development of the tourism sector is of great importance for developed and developing countries in terms of economic growth and capital development. Tourism revenues, which are seen as a tool for regional and national development, are

seen as an issue that attracts the attention of policy makers in order to ensure sustainable growth and development. The tourism sector is considered to be an important source for countries to increase their revenues. Tourism is seen to be important for economic growth and development due to its contribution to closing the current account deficit, reducing unemployment and many other contributions (Ağır and Özbek, 2021).

The theoretical basis of the view that tourism causes economic growth is based on export-led growth theory. Tourism, which is included in the national services item in the sub-item of the balance of payments, is one of the important service items. In other words, tourism activity can be defined as the consumption and investment expenditures made by foreign tourists in the host country and the foreign exchange earnings of the related country. Therefore, it can be stated that tourism activity is similar to exports of goods. In other words, it can be stated that tourism is an invisible item of exports (Kara et al. 2012).

In this study, the impact of tourism revenues on economic growth for MINT countries (Mexico, Indonesia, Nigeria, Turkey) for the years 2005-2020 has been investigated using Panel Regression Analysis. According to the results obtained from the analysis, the effect of tourism revenues on economic growth is positive and significant. In other words, a 1% increase in Tourism Revenues increases Economic Growth by 0.2211%.

In line with the results obtained, it is seen that Tourism Revenues have an important place for the economy of MINT countries as in all countries around the world. In this direction, in future studies, the effect of tourism revenues on economic growth can be analyzed with up-to-date empirical methods. Thus, it can be revealed how important the tourism sector is for sustainable growth and development.

In addition, the globalization and liberalization process, which affects the world, increases the importance of airline transportation day by day. Especially the fast transportation has made the aviation sector indispensable. It is observed that in countries with high tourism revenues, infrastructure investments are gradually increasing in order to develop airline transportation and this situation has positive effects on economic growth by significantly increasing the number of passengers carried (Uçar et al. 2024). Based on these findings, investments can be made in areas such as air transportation in order to increase economic growth through tourism revenues.

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