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Econometric analysis of the relationship between tourism revenues and economic growth in Türkiye

Türkiye'de turizm gelirleri ile ekonomik büyüme arasındaki ilişkilerin ekonometrik analizi

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Abstract

The interaction between tourism revenues and economic growth has gained considerable attention in academic research. The purpose of this research is to identify the relationship between tourism revenues and economic growth. Inflation (INF), gross domestic product per capita (GDP), unemployment rate (UNE) and exchange rate (ER) variables are used in the analysis. The study employs Generalized Linear Model (GLM-logit) for identifying the relationship between tourism revenues and economic growth in Türkiye by using quarterly data including the period from 2012-Q1 to 2024-Q2. Kolmogorov Smirnov test is used for normality of parameters. Spearman's rho and year controlled partial correlation analysis are applied for correlations. Research findings reveal that there is no causality relationship between tourism revenues and economic growth. Inflation variable is the only most effective factor for economy and tourism revenues.

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Öz

Turizm gelirleri ile ekonomik büyüme arasındaki etkileşim akademik araştırmalarda önemli ölçüde ilgi görmüştür. Bu araştırmanın amacı turizm gelirleri ile ekonomik büyüme arasındaki ilişkiyi belirlemektir. Analizde enflasyon (INF), kişi başına gayri safi yurtiçi hasıla (GSYİH), işsizlik oranı (UNE) ve döviz kuru (ER) değişkenleri kullanılmıştır. Çalışmada, Türkiye'de turizm gelirleri ile ekonomik büyüme arasındaki ilişkiyi belirlemek için 2012-Q1 ile 2024-Q2 dönemi içeren üç aylık veriler ile Genelleştirilmiş Doğrusal Model (GLM-logit) kullanılmıştır. Parametrelerin normalliği için Kolmogorov Smirnov testi kullanılmıştır. Korelasyonlar için Spearman'ın rho ve yıl kontrollü kısmi korelasyon analizi uygulanmıştır. Araştırma bulguları turizm gelirleri ile ekonomik büyüme arasında nedensellik ilişkisi olmadığını ortaya koymaktadır. Enflasyon değişkeni ekonomi ve turizm gelirleri açısından en etkili tek faktördür.

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Introduction

Tourism is widely regarded as a significant source of economic growth particularly in emerging economies. Tourism presents a unique opportunity to profit the economic potential of these regions while preserving their natural and cultural heritage. Tourism provides significant economic benefits for both host countries and tourists' home countries. It should be noted that the tourism sector has a synergistic effect. Tourism contributes the growth of other sectors through backward and forward linkages. The ongoing transformations in various aspects in the field of tourism services also triggers the economic activities of other sectors such as agriculture, fishing, construction, handicrafts, insurance, logistics, banks, manufacturing and other services sectors.

The success of the economic policies generally have a positive effect on tourist arrivals, while geopolitical risk and currency fluctuation is expected to have a negative impact. There is a consensus on the changes in financial risks and developments in the economy directly affect tourism sector. That is, tourism revenues are sensitive not only to firm-specific and industry-specific factors but also liable to macroeconomic conditions. The role of tourism in regional development and growth has long been of interest in the academic literature. The economic relevance of tourism has been proven by a wide range of studies using different methodological models. This study attempts to identify the relationship between tourism revenues and Gross Domestic Product (GDP) in Türkiye for the period of 2012-Q1 and 2023-Q2.

The paper is organized as follows: after the introduction provided above, developments in the tourism sector in Türkiye are discussed in the first section. Literature review is explained in section two. Data and methodological framework is situated in section three. Empirical findings are shown in section four. The fifth and the final section of the study includes conclusion and recommendations information.

1. Developments in Türkiye Tourism Sector

Advances in communication and transportation technologies have played an important role in the growth of both the international and national Türkiye tourism sector. Tourism revenue increased by 16.9% in 2023 compared to the previous year and reached 54 billion 315 million 542 thousand dollars (TUIK, 2024a). While the number of employees in the tourism sector reached 1.53 million people, its share in employment increased to 9.7% in July 2024 (TUIK, 2024b).

Figure 1 shows the tourism sector GDP share and the number of tourist arrivals in Türkiye over the period of 2012 to 2023. As it is seen in Figure 2, the number of tourists and tourism revenues are developing in the same direction. In other words, it can be said that as the number of tourists entering the country increases, revenues also increase. Tourism expenditures are one of the most important items in foreign currency inflows to the country. When historical data is examined, it is revealed that tourism revenue and demand are influenced by multiple factors and there is a linear relationship between these factors with tourism revenue and demand.

Figure 1. Share of the GDP and number of tourist arrivals of the tourism sector in Türkiye from 2012 to 2023

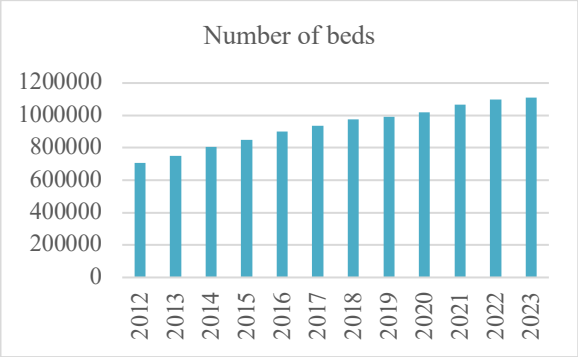
Source: Share of GDP is computed by using TUIK (Türkiye Statistical Instıtute) data source by Author

According to Euromonitor (2023) data source, Istanbul is the top of the list for the number of international arrivals in 2023 with 26% growth year-on year followed by London in second place (up 17%) and Dubai in third (up 18%). Then, Antalya became the 4th most visited city in the world, following London and Dubai, with 16.5

million international visitors. This presents a 29% growth in visitor numbers compared to the previous year. Tourism demand and revenues have a fragile structure, where competition is very high and can change rapidly depending on many factors such as political, social and financial conditions.

Tourism is one of the most affected sectors by the COVID-19 pandemic in 2020. The COVID-19 outbreak has been one of the biggest challenges facing tourism industry. The share of tourism in GDP was seen at its lowest level in the last 12 years. Number of foreign visitors has decreased dramatically by 72% in 2020 with travel restrictions, closed borders and travel bans. While the share of Türkiye tourism sector in GDP in the fell seriously in 2020 period due to the pandemic, it is seen that it recovered by continuously increasing in the following years. However, the tourism sector GDP share in Türkiye was amount to 5.497 percent in 2022, it was approximately 5 percent in 2023 with a quite small decline due to high inflationary conditions (Figure 1).

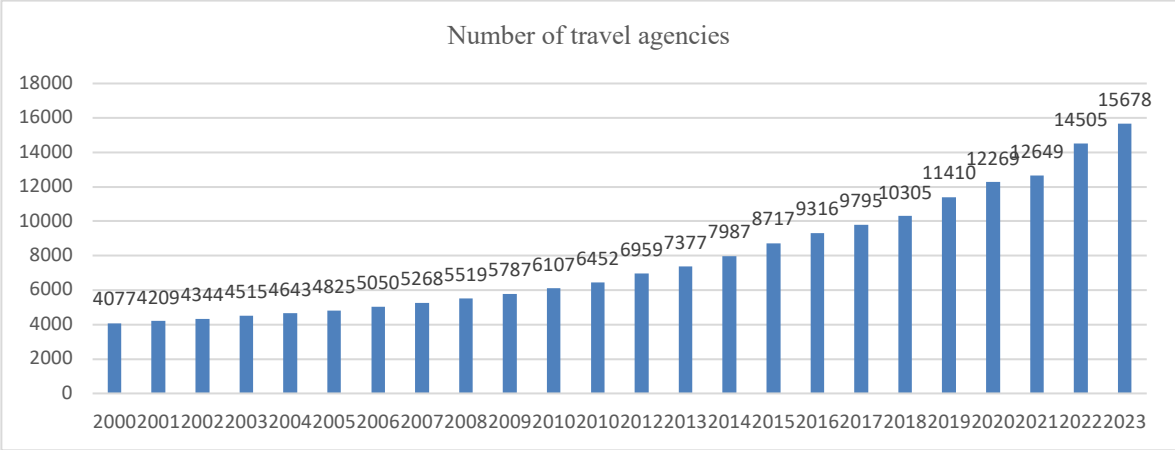
Figure 2. Number of beds of the tourism sector in Türkiye



Source: TUIK data (2024)

Türkiye has made significant investments in both infrastructure and superstructure so far. The number of beds and travel agencies in Türkiye tourism has been increasing steadily over the years (Figure 2 and Figure 3). It is understood that businesses increase their bed capacities including during the COVID period, regardless of the developments in the economic indicators. Likewise, the number or travel agencies also increases. Figure 2 and 3 demonstrate that the tourism investments in Türkiye continue to improve even in the 2020 pandemic period.

Figure 3. Number of travel agencies of the tourism sector in Türkiye



Source: TUIK data (2024)

Tourism revenues and tourist destinations are sensitive to economic, political, socio-cultural, environmental, and psychological drivers. In summary, Türkiye has a great potential with its natural resources, historical treasures, cultural values and activities, dynamic tourism industry with a wide variety of products that can meet different tourist demands. The increase in its share of the gross domestic product and other investment items over the years is the most important indicator of its current and future potential of Türkiye tourism.

2. Literature Review

There have been an extensive study that seeks to identify the relationship between international tourism revenues and economic growth. Three main points stand out in the literature review. First, the studies conducted in the literature focused on financial development and economic growth relationship for the cross-country (Papagianni et al., 2024; Sharma & Khanna, 2021; Rasool et al., 2021; Balcilar et al., 2020; Gamage et al., 2020; Khalid et al., 2019; Zortuk & Yıldız, 2018; Govdeli & Direkci, 2017; Khandaker & Islam, 2017; Chiu & Yeh, 2016; Du et al., 2016; Çağlayan et al., 2012; Bahar & Bozkurt, 2010; Proença & Soukiazis, 2008; Brau et al., 2003) or individual countries' tourism industry.

Second, some studies are specifically focused on the financial, political or other crises period such as geopolitical risks, terrorist attacks, COVID-19 pandemic and earthquake (Papagianni et al., 2024; Irani et al., 2021; Škare et al., 2021; König & Winkler, 2020; Ulucak et al., 2020; Khalid et al., 2019; Khandaker & Islam, 2017; Eryiğit et al., 2010) Most studies on pandemic presents that the COVID-19 pandemic have dramatically significant and negative impact on tourism revenues. Papagianni et al empirically demonstrate that geopolitical tensions have a persistent negative impact on the tourism demand of such countries. Third, there are different findings regarding the level of significancy and direction of the relationship between tourism revenue and financial indicators. Conversely, it is determined that there is no causal relationship in some studies. The evidence may also vary depending on the countries analyzed, the various estimation models and the sub-samples that are used. A brief explanation of the findings of these studies is provided in the following section.

Chen et al. (2023) investigated the factors effecting tourism revenue of Shandong Province in China with uncertain linear regression analysis model for 2011-2020. Their findings denote that there is a significant impact on tourism revenue such factors as the number of travel agencies, railway length, domestic tourist numbers, and per capita disposable income of urban residents. This means that the improvements in these variables will increase tourism revenues. Huseynli (2022) try to identify the relationship between international tourism revenues, inflation rates and economic growth of Morocco and South Africa comparatively covering the 1996-2019 period by applying multiple linear regression model. Research findings indicate that there is a significant and positive relationship with tourism revenues and economic growth, but negative relationship with inflation for both countries. This means that the increase in international tourism revenues affects economic growth positively, while the increase in inflation affects economic growth negatively.

Rasool et al. (2021) attempts to examine the relationship between inbound tourism, financial development and economic growth by using the panel data over the period 1995–2015 for BRICS countries. Panel ARDL cointegration analysis shows that tourism, financial development and economic growth are cointegrated in the long run, while Granger causality analysis shows that the causality between inbound tourism and economic growth is bi-directional. Yenişehirlioğlu et al. (2020) were used annual data including the period from 1995 to 2007 in their paper for analyzing the relationship between tourism and financial development in the in Türkiye. Autoregressive distributed lag (ARDL) regression models and bootstrap rolling window causality parameter tests were applied for analyzing the tourism revenue and economic growth relation in Turkey. While there is a positive contribution to economic growth from the positive component of tourism income in symmetric regression, there is a negative contribution to economic growth from the negative component of tourism income in asymmetric regression. In addition, according to the sliding window regression from tourism income to economic growth, there is a positive effect between 2010-2015 and a negative effect for the period 2016 to 2017.

Quin et al. (2018) examined the relationship between tourism income and economic growth in major big cities of China by using meta-analysis method including 21 Chinese literatures, 23 studies and 409 samples in total. The findings reveal that the tourism income is positively and significantly related to economic growth. Besides, there is no significant influence on the relationship between tourism income and economic growth of the analysis method used to regional differences. Cannonier and Burke (2017) examined the relationship between tourism and financial development in the Caribbean by using for the period between 1980 and 2013. Their findings reveal that the tourist expenditure has a positive and significant effect on various measures of financial development.

Numerous studies have been conducted on the effect of macroeconomic factors on tourism performance in Türkiye as well as in other countries. Özkurt and Bilgir (2022) aims to examine relationship between tourism revenues and economic growth in Türkiye for the period between 1980 and 2020. Their results of the panel ARDL

cointegration test reveal that tourism revenue and economic growth are cointegrated in the long run. As a result of econometric analysis, the relationship between tourism revenues and economic growth, both in the short and long term, indicates the importance of tourism revenues in terms of economic growth.

Tütüncü (2022) examined the macroeconomic variables identifying tourism activities in Türkiye by applying VAR analysis and impact-response functions for the period 1996M1–2016M1. The macroeconomic variables used in the study are the number of international tourists, real national income per capita, consumer price index, real effective exchange rate, political stability, geopolitical risk index and per capita carbon dioxide emission. Analysis findings demonstrate that the national income, carbon dioxide emissions, political stability and geopolitical risk index has a significant impact on the tourism demand. Besides, there is no statistically significant relationship between inflation and exchange rate with the number of international tourists.

In their study of determining the relationships between tourism revenues and economic growth in Türkiye for the 1963-2018 period by applying cointegration and causality method Arıca and Gündoğdu (2021) found that tourism revenues are an important cause of economic growth in the long run. The causality analysis results reveals that there is bidirectional causality between the two variables. Özer (2021) try to estimate the relationships between tourism income and economic growth in Türkiye by applying Fourier ADF unit root test for the period 2003Q1 and 2019Q3. The findings indicate that there is a unidirectional long-term relationship running from economic growth to tourism revenues.

Maden et al. (2019) This study investigates both the long-run and short term relationship between the GDP per capita and international tourism revenues in Turkey by Autoregressive distributed lag (ARDL) model during the time period 1980-2016. Their findings suggest that there is a significant and positive relation between the factors was identified in the short and long term. Yenisu (2018) examines the causal relationship between international tourism revenues and economic growth in Türkiye by using quarterly time series data for the period 2003Q1-2018Q1. The study concluded that there is a one-way Granger causality from tourism revenues to economic growth in Türkiye. The causality relationship in question was also supported by the VAR model, impulse-response analysis and variance decomposition analysis.

Dincer et al. (2015) focused on the factors that determine the real effective exchange rate (REER) volatilities on tourism sector in Türkiye by using Augmented Dickey-Fuller (ADF) test during 2002 to 2014. The paper empirically analyzed the tourism expenditure, tourism revenue and the number of foreign tourists in the country based on the reel effective exchange rate. There is no long term and no Granger causality relationship is found between real effective exchange rate and tourism revenues. However, they conclude that the stability in the domestic currency also positively affected tourism sector.

Erdinç and Aydınbaş (2015) used a panel data regression model to explain tourism revenues. Their study reveal the principal explanatory variables of tourism revenue for the period 2007-2018. They find a statistically significant and positive relationship between international tourism revenues and gross domestic product (GDP), gross capital formation (GCF), the rule of law index and the number of international visitors. Samırkaş and Samırkaş (2014) attempted to identify the relationship between economic growth and tourism revenue in Turkey by using Granger causality test over the period 2003-Q1 and 2013-Q3. Their results indicate that there is a bidirectional relationship running from economic growth towards tourism revenues and tourism revenues towards economic growth.

Çağlayan et al. (2012) tried to identify the causal relationship between tourism revenue and gross domestic product (GDP) applying panel data analysis for 135 countries over the period 1995-2008. The results of causality analysis vary from country to country. While bilateral causality is found between tourism revenue and gross domestic product in Europe, it reveals that there is a unilateral causality from GDP to tourism revenue in America, Latin America and the Caribbean and the world. There is a reverse direction of causality from tourism revenue to GDP in case of East Asia, South Asia and Oceania. However, there is no causal relationship is found in countries as Asia, Middle East and North Africa, Central Asia and Sub-Saharan Africa.

Bahar & Bozkurt (2010) used two-stage GMM-System analysis covering the period 1998-2005 for identifying the relationship between tourism revenue and economic growth for cross-country analysis of 21 developing countries. As a result of the research, there is a significant and positive relationship between tourism and economic

growth for developing countries. In addition, it was determined that a 1% increase in tourism revenues contributed 2.825% to economic growth. Gokovalı (2010) empirically investigate the contribution of tourism to GNP in Turkey by using OLS regressions over the period between 1985 and 2005. The estimation result suggests that there is a significant and positive relationship between tourism revenues and GNP.

Some of the studies mentioned above suggest that the tourism industry is one of the most important determinants of economic growth in Türkiye economy. However, there are also some other studies prove that the tourism income is not a determinant of economic growth. That is, there is no causal relationship between tourism revenues and economic growth (Akkemik, 2012; Cil, 2012; Hepaktan & Çınar, 2010; Katırcıoğlu, 2009; Yavuz, 2006; Oztürk & Acaravci, 2004).

To sum up, the importance of growth and development and its determinants have been studied extensively in academic research. The existing literature has predominantly considered tourism revenues as an important determinant of economic growth. Although most academic studies agree that there is a relationship between tourism revenue and economic growth, there are disagreements about the direction of the relationship. There are three different findings in the literature about the direction of the relationship. First, there is a bidirectional causality relationship between the variables. In other words, both the income obtained from the tourism sector increases economic growth and economic growth increases tourism income. Second, there is unidirectional causality relationship between the variables. Finally, there is no causality relationship between the incomes obtained from the tourism sector and economic growth.

3. Data and Methodology

This section explains the methodology adopted in this research, including data source, variables used and the types of analysis adopted. The study aims to identify the contribution of Türkiye tourism revenues to economic growth by applying Generalized Linear Model (Logit) and covering the period of 2012-1 and 2024-2. Key macroeconomic indicators data are employed from the website of Central Bank of Türkiye (TCMB) and the Türkiye Statistical Institute (TUIK). The name of research variables used in the analysis is given in Table 1. There are four macroeconomic research variables are included in the model. In our model, tourism revenue is a function of following variables:

Economic growth = f (Tourism revenues, exchange rate)
Inflation = f (Tourism revenues, exchange rate)
Unemployment = f (Tourism revenues, exchange rate)

Table 1. Definition of the variables

Name of Variables	Notation	Measurement
Dependent variables		
Inflation	INF	Inflation rate (CPI growth rate)
Economic growth	GDP	Growth rate of GDP per capita
Unemployment rate	UNE	Unemployment rate
Explanatory variable		
Tourism revenues	TR	Tourism revenues in US dollars
Controlling variables		
Exchange Rate	ER	UFE (Producer Price Index) based real effective exchange rate

Research series were described with skewness, kurtosis, mean, standard deviation and range. Kolmogorov-Smirnov test was used for normality of parameters (Table 2). Spearman's rho and year controlled partial correlation analysis were used for correlations. Since linearization deviations (Yılmaz & Turanlı, 2023; Yılmaz & Turanlı, 2022), Generalized Linear Model (GLM-Logit) was used in the analysis. GLM analysis is a type of regression analysis that is derived from the link function performed on the logarithmic transformation. Because the dependent variables do not conform to a normal distribution. Therefore deviations occur when linearization is performed (Yılmaz & Turanlı, 2023; Yılmaz & Turanlı, 2022). GLM analysis was used in the study because the data showed a nonparametric distribution. All analysis were performed at SPSS 25.0 for windows with 0.05 significance level and 95% confidence interval.

4. Empirical Findings

Table 2 provides a summary of all research parameters used in the analysis. Tourism revenues (TR) were ranged from 18.01 to 23.71 billion dollars with 22.46±1.05 mean value. Inflation (INF) mean was 1.78±1.87, and gross domestic product per capita (GDP) mean was 7.13±7.58. Unemployment rate mean was 19.69±3.16 with 15.10-26.00 range. Exchange rate range was 1.18 to 1.41 with 1.29±0.07 mean (Table 2).

Table 2. Descriptive statistics

	Skewness	Kurtosis	Kolmogorov Smirnov Z	p	Mean	Std. Deviation	Minimum	Maximum
TR	-2.003	5.747	0.169	0.001	22.46	1.05	18.01	23.71
INF	1.991	3.649	0.259	0.000	1.78	1.87	0.14	8.48
GDP	1.237	1.650	0.199	0.000	7.13	7.58	-8.95	27.36
UNE	0.568	-0.769	0.142	0.014	19.69	3.16	15.10	26.00
ER	-0.300	-0.861	0.113	0.113	89.23	9.92	66.86	103.90

Table 3 displays a Spearman's rho and year controlled partial correlation analysis results for tourism revenues and research series. Both Spearman's rho and year controlled partial correlation analysis results showed that tourism revenues of Türkiye for 2012-Q1 and 2024-Q2 period was not significantly correlated with inflation, GDP, unemployment and exchange rate ($p>0.05$) (Table 3).

Table 3. Spearman's rho and year controlled partial correlation analysis results

	Spearman's rho		Year controlled partial correlation	
	r	p	r	p
INF	-0.148	0.305	0.068	0.644
GDP	-0.013	0.929	-0.014	0.925
UNE	-0.203	0.157	-0.151	0.301
ER	0.177	0.219	0.194	0.183

Table 4 presents the Generalized Linear Model (Logit) for the effect of tourism revenues and controlling variables on GDP for Türkiye. Generalized linear model results showed that effect of tourism revenues on GDP, inflation and unemployment were insignificant ($p>0.05$). In all three models, inflation was the most effective indicator for economy and unemployment ($p<0.05$) (Table 4). The analysis results indicate that there is no significant correlation between tourism income and economic growth.

Table 4. Generalized Linear Model (Logit) for the effect of tourism revenues and controlling variables on GDP for Türkiye

Parameter	B	Std. Error	95% Wald Confidence Interval Lower	Upper	Hypothesis Test Wald X^2	df	p
GDP							
(Intercept)	16.649	21.7619	-26.004	59.301	0.585	1	0.444
TR	-0.306	0.643	-1.566	0.954	0.226	1	0.634
INF	2.999	0.465	2.087	3.911	41.529	1	0.000
UNE	-0.074	0.352	-0.764	0.615	0.045	1	0.833
ER	-0.073	0.124	-0.316	0.169	0.350	1	0.554
(Scale)	21.431	4.286	14.481	31.717			
Inflation							
(Intercept)	10.086	4.706	0.863	19.308	4.594	1	0.032
TR	0.102	0.144	-0.180	0.384	0.501	1	0.479
GDP	0.151	0.023	0.105	0.197	41.529	1	0.000
UNE	-0.215	0.073	-0.358	-0.072	8.705	1	0.003
ER	-0.083	0.025	-0.133	-0.034	10.847	1	0.001
(Scale)	1.081	0.216	0.731	1.600			
Unemployment							
(Intercept)	45.923	5.927	34.306	57.541	60.024	1	0.000
TR	0.005	0.259	-0.503	0.512	0.000	1	0.986
GDP	-0.012	0.057	-0.123	0.099	0.045	1	0.833
ER	-0.280	0.030	-0.340	-0.221	85.767	1	0.000
INF	-0.689	0.233	-1.146	-0.231	8.705	1	0.003
(Scale)	3.458	0.692	2.337	5.118			

Generalized Linear Model (Logit) results for effect of tourism revenues and controlling variables on GDP for Türkiye in COVID-19 period are given in Table 5. COVID-19 pandemic is an important time break point in the world and Türkiye for both economy and tourism. Thus, a model including COVID-19 pandemic as a dummy variable was also runned for the GDP. The results showed that inflation was still the most effective factor on economy ($p<0.05$), and tourism revenues were also used for inflation (Table 5).

Table 5. Generalized Linear Model (Logit) for effect of tourism revenues and controlling variables on GDP for Türkiye in COVID-19 period

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald X^2	df	p
GDP with COVID							
(Intercept)	13.838	21.215	-27.743	55.419	0.425	1	0.514
[COVID=No]	-3.224	1.884	-6.917	0.470	2.927	1	0.087
[COVID=Yes]	0	.	.	.	.	.	.
TR	-0.145	0.632	-1.384	1.093	0.053	1	0.818
ER	-0.041	0.122	-0.279	0.198	0.111	1	0.739
INF	2.529	0.529	1.493	3.566	22.870	1	0.000
UNE	-0.115	0.343	-0.787	0.557	0.113	1	0.736
(Scale)	20.246	4.049	13.681	29.963			

5. Conclusion

There have been a numerous study demonstrating the effect of financial factors on tourism performance. Overall, developments in financial factors play a crucial role in shaping the tourism industry as well as its impact on the economy. The economic relevance of tourism has been proven by numerous studies using various theoretical constructs and methodological approaches. The financial barriers to the development of tourism activities include the level of income, economic changes, and the structure of the general economy. The purpose of this study is to estimate the impacts of tourism revenues on economic growth in Türkiye. This analysis is used quarterly data including the period from 2012-1 to 2024-2 for analyzing the relationship between tourism revenue and economic growth of Türkiye.

Tourism income is one of the important financial indicators for measuring economic activity. The more tourism income, the more obvious the economic growth is. On the other hand, it should be taken into consideration that economic growth depends on a wide variety of financial and macroeconomic variables. The contribution of tourism revenues to GDP in an economy is a controversial issue in academic literature. Most individual country analysis results reveal that the same variables affect tourism at different levels due to differences in country dynamics in terms of economic, social, political and cultural practices.

The main research objective of this paper is to measure the impact of tourism revenues development on economic growth (GDP). Econometric estimation results indicate that the effect of tourism revenues on GDP, inflation and unemployment are insignificant. The research findings reveal that there is no causality relationship between the incomes obtained from the Türkiye tourism sector and economic growth for the analyzed period. These findings are consistent with previous studies such as Akkemik (2012), Cil (2012), Hepaktan & Çınar (2010), Katırcıoğlu (2009), Yavuz, (2006), and Oztürk & Acaravci (2004). Besides, the analysis results demonstrated that inflation is still the most effective factor on economy and tourism revenues in Türkiye for the analyzed period from 2012-1 to 2024-2.

This study suggests that the right tourism policies should be encouraged to increase economic growth and in turn economic growth will positively contribute to international tourism. In addition, Türkiye should diversify the sector by making more use of its tourism potential and encouraging alternative tourism. Thus, the impact of negative external shocks and high inflationary conditions should be reduced.

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