JOURNAL OF MULTIDISCIPLINARY SCIENCES AND INNOVATIONS
GERMAN INTERNATIONAL JOURNALS COMPANY
ISSN: 2751-4390
IMPACT FACTOR (RESEARCH BIB) : 9,08. Academic research index

THE ROLE OF THE TOURISM INDUSTRY IN UNEMPLOYMENT

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Abstract: This study examines the impact of the tourism industry on unemployment for 6 countries, namely Turkey, Greece, Italy, Spain, Egypt and Cyprus, over the period 2003-2022. Over the past 40 years, the number of tourists visiting other countries has increased 20 times, tourism revenues have increased 60 times, and international tourism revenues have reached $400 billion.

Keywords: Unemployment, tourism, tourism revenue, ECCU method, Bruce-Godfrey test, scattergram

Introduction

In the developing world, people's worldview, thoughts, and ways of enjoying the world are changing. Individuals increasingly seek to travel, explore historical monuments, and discover the traditions and values of other nations as a way to spend their leisure time meaningfully [1]. Today, tourism stands out as one of the fastest-growing and most significant industries in terms of income generation [2]. In recent years, tourism has made a substantial contribution to world exports, accounting for approximately 11% of global gross domestic product (GDP) [3]. Over the past 40 years, the number of tourists visiting foreign countries has increased twentyfold, while tourism revenues have grown sixtyfold, with international tourism receipts reaching around USD 400 billion [4].

Methodology

To achieve the research objectives stated above, the primary task is to develop an appropriate econometric model and collect relevant statistical data. In constructing the econometric model, it is essential to use economic and social indicators identified in the reviewed literature [5]. The model considers these factors, and the sources, content, and references related to the variables included in the model are presented below.

$$\boldsymbol{unemployment_{it}=\beta_0+\beta_1 \times turizm_{it}+u_{it}}$$

First, let us examine the indicators included in this model and their definitions. The variable “unemployment” refers to the number of unemployed individuals in a given year in a given country, representing the level of unemployment in that country. This indicator is obtained from the World Bank database [6]. It is reported in census data, and descriptive statistics are presented following the introduction of the variables. In the STATA software, the variable is coded as “unemployment” (or “unemployment ILO”) for convenience in executing commands and presenting STATA results.

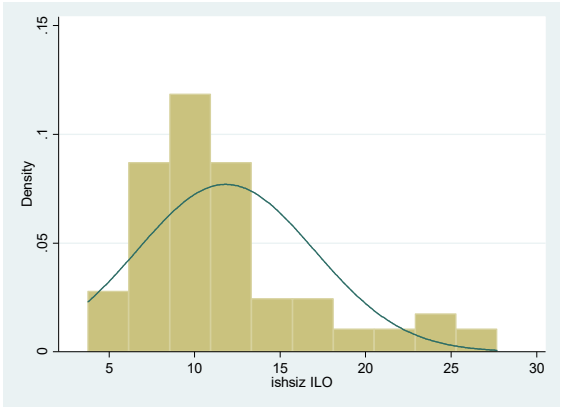
Descriptive statistics for the variables are shown in Table 1. According to these data, the average tourism receipts in the selected countries during the analyzed period amount to USD 19,199.

Table 1. Descriptive statistics of variables

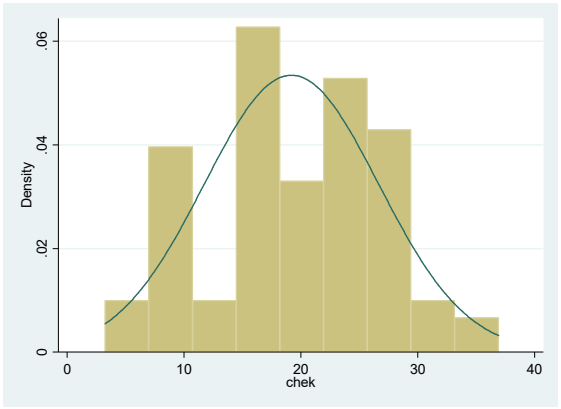
Variable	Obs	Mean	Std. Dev.	Min	Max

unemployment ILO	120	11.824	5.181	3.76	27.69
receipts	81	19.199	7.467	3.253	36.923

If we focus more on descriptive statistics of our main indicators, it is important to check the distribution of data sets, their proximity to a normal distribution. To do this, it is advisable to create histograms of variables using the STATA program and compare the graph with a normal



distribution line.



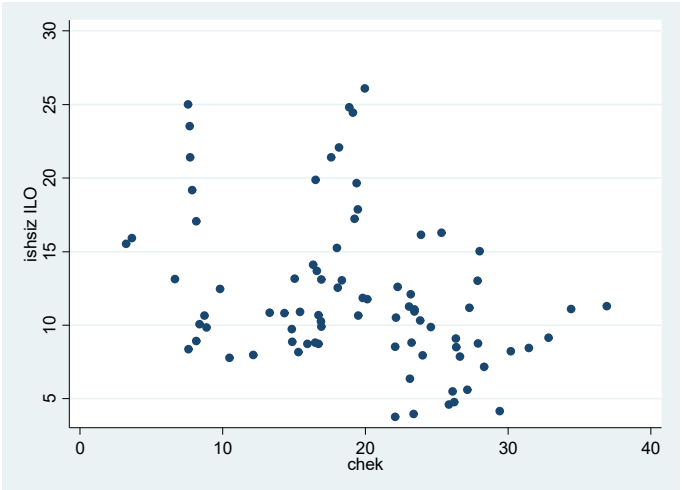


Diagram 1. Distribution of unemployment rate *Diagram 2. Distribution of tourism revenues*

Figure 1 shows the distribution of the unemployment rate alongside the normal distribution curve plotted using its arithmetic mean and standard deviation. It can be seen from the figure that the unemployment rate approximately follows a normal distribution, which is important for the validity of many statistical analyses [7].

Figure 2 displays the distribution of tourism revenue together with the corresponding normal distribution curve. From this figure, it can be observed that tourism revenue indicators also appear to follow a normal distribution, indicating the suitability of parametric statistical methods for further analysis [8], [9].

To gain an initial understanding of the direction and strength of the relationship between these two key economic indicators, Figure 3 was constructed as a scatterplot. This scatterplot demonstrates a negative relationship between unemployment and tourism receipts, as evidenced by the overall downward trend in the distribution of the data points. The negative relationship suggests that higher tourism revenues are generally associated with lower unemployment levels, consistent with findings in prior economic studies linking tourism activity to labor market improvements [10], [11].

Diagramma 3. Ishsizlik va turizm tushumlari o`rtasidagi munosabat

However, since other factors may also be responsible for the emergence of such a negative relationship, it is appropriate to analyze the relationship between these two indicators in greater depth. To achieve this, it is advisable to calculate the correlation coefficients between the variables, which provides an initial measure of the strength and direction of their linear association [12]. Table 2 presents the matrix of correlation coefficients.

If we examine the results in Table 2, it becomes clear that there is only a weak economic relationship between the two indicators, as reflected in the correlation coefficient of -0.349. This negative coefficient confirms the visual pattern observed in the scatterplot. According to these correlation results, there appears to be a modest inverse relationship between tourism revenues and unemployment [13].

Table 2. Matrix of correlation coefficients

Variables	(1)	(2)
(1)unemploymentILO	1.000	
(2) chek	-0.349	1.000

The main goal of this research is to determine the relationship between these economic indicators through a regression model that accounts for their specific characteristics. To achieve this goal, calculations were performed in the STATA 14 software using the Ordinary Least Squares (OLS) method, a widely used approach for estimating linear relationships between variables [14]. The results and their interpretation are presented in the next section.

Results analysis

When discussing the results of the regression analysis, it is appropriate to first examine the initial regression estimates. These results are shown in Table 3. According to the table, the coefficients are statistically significant at the 1% level (p-value = 0.001), indicating that the relationship identified is unlikely to be due to random chance [15].

According to the regression results, tourism revenues have a statistically significant negative impact on unemployment. However, the magnitude of this impact is not particularly strong, as indicated by the relatively low R-squared value of 0.122, suggesting that tourism revenues explain only a modest portion of the variation in unemployment rates [16].

Diagram 3. Initial regression results

unemployILO	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]
chek	-.244	.074	-3.31	.001	-.39	-.097
Constant	16.767	1.514	11.07	0	13.753	19.781

Mean dependent var	12.087	SD dependent var	5.210
R-squared	0.122	Number of obs	81
F-test	10.980	Prob > F	0.001
Akaike crit. (AIC)	489.726	Bayesian crit. (BIC)	494.515

*** *p*<.01, ** *p*<.05, * *p*<.1

To check whether there is an autocorrelation problem in our model, a Bruce-Godfrey test was performed. The results are presented in Table 4.

Table 4. Bruce-Godfrey test

Ho:		Constant				variance
Variables:	fitted	values		of		unemploymentILO
chi2(1)			=			1.72
Prob > chi2 =	0.1899					

The results show that our model is free from autocorrelation problems.

Conclusion

This study examines the impact of the tourism industry on unemployment for 6 countries, namely Turkey, Greece, Italy, Spain, Egypt and Cyprus, over the period 2003-2022. To study the relationship, regression was conducted using the ECKU method in the STATA-14 program. According to the results, all regressors are significant, indicating that the development of the tourism industry leads to a decrease in unemployment rates.

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