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# EVALUATING THE ROLE OF TOURISM IN THE ECONOMIC DEVELOPMENT OF THE REPUBLIC OF ARMENIA AND OTHER MEMBER STATES OF THE EURASIAN ECONOMIC UNION

Gayane Tovmasyan<sup>1\*</sup>

<sup>1</sup>AMBERD ASUE Research Center; Public Administration Academy of the Republic of Armenia - Yerevan, Armenia

 <https://orcid.org/0000-0002-4131-6322>  [tovmasyangayane@yahoo.com](mailto:tovmasyangayane@yahoo.com)

**Abstract:** *Tourism has a significant role in the economies of many countries. It creates jobs, brings money, promotes investments, decreases poverty, develops infrastructures, etc. Many research works try to evaluate the role of tourism development on the economy. The article evaluates the role of tourism development in the economy of Armenia and checks the Tourism-Led Growth Hypothesis (TLGH). With the help of statistical methods, the article evaluates the connections between tourism total expenses (visitor exports, domestic spending, government spending, and capital investment), the number of tourists and tourism total contribution to GDP, employment and other indicators. Besides, the correlation analysis between these indicators was done for the Member States of the Eurasian Economic Union. The results show that the increase in tourism expenses and the number of tourists will increase GDP and employment. However, the change in tourism contribution to employment is not so high, which was explained by different reasons. The same is the case for other countries of the Eurasian Economic Union. The article results may be helpful for future studies, as well as for government agencies for evaluating tourism contribution to economic development and for elaborating tourism development policies.*

**Keywords:** *Tourism-Led Growth; Tourism Expenses; GDP; Armenia; Eurasian Economic Union*

## INTRODUCTION

Tourism plays a significant role in the economies of the world. This was more obvious after the Covid-19 pandemic. The decrease in tourism arrivals led to a decrease in many indicators such as tourism export services, employment level, GDP level, etc.

Tourism is considered one of the main branches of the economy in the Republic of Armenia (RA). It has shown growth tendencies in recent years (Tovmasyan 2021). Both in the world and in Armenia, the growth of the sphere was disrupted because of the Covid-19 pandemic. According to the Statistical Committee of the RA, in 2019, 1894377 tourists arrived in Armenia (increasing by 14.7% compared to 2018) (The socio-economic situation in the RA, 2019 January-December). In 2020, the number of incoming tourist visits to Armenia was only 360338, decreasing by 81% compared to the previous year.

In 2021 tourism sphere began recovering, and 870308 incoming tourists visited Armenia (The socio-economic situation in the RA, 2022 January).

The research aims to evaluate the role of tourism development in Armenia's economy and check the Tourism-Led Growth Hypothesis (TLGH) for Armenia. For this purpose, some research works were analyzed in the literature review, then, based on the methodology selected, an analysis of tourism development opportunities was carried out with the help of various indicators, assessing the impact of some tourism indicators on the country's economic development with the help of regression equations. Also, a comparative correlation analysis was done between the Member States of the Eurasian Economic Union.

The findings prove that tourism has a positive impact on the growth of GDP. The impact of tourism on employment is not as high as on GDP in the Member States of the Eurasian Economic Union.

## LITERATURE REVIEW

Many studies confirm a direct relationship between economic growth, employment and tourism (Peña-Sánchez *et al.* 2020; Brida *et al.* 2020).

The range of variables is essential when forecasting tourism development and assessing the sector's importance in the economy. The number of inbound and outbound tourist visits, the share of tourism in GDP, the number of tourist transfers, tourist expenditures, macroeconomic and demographic indicators, political factors, seasonality, tourism taxes, etc., can be used as independent and dependent variables. Quantitative research methods include extrapolation, correlation, regression, and other statistical and econometric methods, and qualitative methods include expert assessments, types of brainstorming, the Delphi method, scenario analysis, sociological surveys, etc. (Generalova 2014).

Recent research was done for Western Balkan countries using panel regression econometric techniques. The actual income *per capita* of the sample countries was modeled as dependent on the lagged income per capita, tourist arrivals, tourism receipts, FDI stock, exports and government expenditures. The estimation results indicate that tourism has a positive and significant impact on economic growth in the Western Balkan countries, i.e., for every 1% increase in tourist arrivals, the output will increase approximately by 0.08% (Selimi *et al.* 2017).

Another research offers a methodology for measuring the contribution of tourism to economic growth and applies the methodology to the cases of Cyprus, Greece and Spain. In the analysis, the GDP per capita growth in constant prices is perceived as a measure of economic growth. Disaggregating the economic growth into economic growth generated by tourism and generated by other industries derives the impact of tourism on it (Ivanov and Webster 2006).

Fayissa *et al.* (2008), using panel data from 42 African countries from 1995 to 2004, explored the potential contribution of tourism to economic growth and development. The results show that receipts from the tourism industry contribute significantly to the current GDP level and the economic growth of sub-Saharan African countries by making investments in physical and human capital.

Another research was conducted by Pratt (2015) to compare the economic impact of tourism on seven Small Island Developing States. The research employs input-output analysis,

linkage analysis and a CGE model to assess these islands' macroeconomic and sectoral impacts of increased tourism. The tourism income multipliers show that tourism generates a large amount of economic activity, but the income that remains in the destinations is often minimal.

Kozhokulov *et al.* (2019) examined the socio-economic impact of tourism in the Issyk-Kul region of Kyrgyzstan. Accordingly, economic and social efficiency was estimated by the integral indicators formed using the weight coefficients calculated on the statistical data and the forecast for tourism development in the region. The study showed that the impact of tourism on economic and social growth in the Issyk-Kul region is positive using regression analysis. Tourism in the region supports the economy's growth, and tourism's economic sphere strongly impacts society.

Another research (Ren *et al.* 2019) was done to measure the income level of a country's tourist arrival and empirically examine its impact on economic growth and environmental pollution in a sample of eight Mediterranean countries. The research used quantile regression models, autoregressive distributed lag (ARDL) estimations, and a heterogeneity causality test. The empirical results showed that the income level of a country's tourist arrival, across all quantiles, is essential in promoting economic development.

Sequeira and Nunes (2011) used panel data methods to study the relationship between tourism and economic growth. According to their research, tourism is a positive determinant of economic growth both in a broad sample of countries and in a sample of poor countries.

Bulin *et al.* (2014) evaluated the impact of tourism on the economy of the Black Sea region. According to them, the importance of tourism in the economy is given by the share of tourism in GDP and employment and the multiplier effect of tourism and industry efficiency. Calculating the Tourism Multiplier Coefficient for the 12 countries in the region, and making the ratio of the share of industry in GDP and the share of industry in employment has been determined in comparison, the degree that the tourism industry is a critical sector in the economy.

Pavlić *et al.* (2013) investigated the relationship between tourism and employment in Croatia based on quarterly data for 2000-2012. The relationships were examined using the Granger causality test and the Johansen cointegration approach. The empirical research indicates that tourism positively affects employment, while the cointegration test indicates a long-term correlation between the two variables.

Another recent paper empirically examines the relationship between tourism and Saudi Arabia's economic growth. Descriptive statistics, unit root test, VAR model and Granger Causality test were applied to examine the connection between tourism and economic growth in Saudi Arabia for the annual data from 1990 to 2018. The main empirical results of the study find out that tourism positively affects the economic growth in Saudi Arabia (Jamel 2020).

A recent study by Vicente *et al.* (2021) analyzed the impact of wine tourism on economic growth and employment in Spain. By applying panel data techniques, they studied the economic impact of tourism in nine Spanish wine routes from 2008 to 2018. The results suggest that tourism in these wine routes positively affected economic growth. However, evidence of a positive effect on employment generation was not found.

Papagianni (2020) investigated 35 countries with the most significant contribution of tourism to GDP and the countries with the fastest growth in terms of travel and tourism

contribution to GDP. Panel Data and two Fixed Effects (FE) models are used. According to the findings, tourism is indeed a source of employment, especially in the case of low-income countries. International tourism spending, as well as spending on leisure tourism, seems to contribute most to employment.

Kim *et al.* (2006) examined the causal relationship between tourism expansion and economic development in Taiwan. A Granger causality test was performed following the cointegration approach to reveal the direction of causality between economic growth and tourism expansion. Test results indicate a long-run equilibrium relationship and a bi-directional causality between the two factors.

Bento (2016) investigates the relationship between real income and national and international tourism volume in Portugal. The study results prove the long-run cointegration relationship between arrivals at tourist accommodation establishments and real income. The causality results show that foreign tourist arrivals cause real income and detect bilateral causality between domestic and foreign tourists.

Some studies were done to check the tourism-led growth hypothesis. For example, Tang and Tan (2017) tried to determine whether the tourism-led growth hypothesis is globally valid by accounting for countries' income levels and institutional qualities against a panel dataset of 167 countries. The institutional qualities referred to were political stability and corruption control. The dynamic panel generalized method of moments (GMM) approach was used to examine the relationship. The results show that tourism positively contributes to economic growth, but the effect varies across countries at different income levels and institutional qualities.

Nunkoo *et al.* (2020) present the results of a rigorous meta-regression analysis based on 545 estimates drawn from 113 studies that empirically tested the tourism-led growth hypothesis. The results suggest that the estimates are sensitive to several factors related to country data, specification, estimation characteristics, and time. Such sensitivities suggest that greater emphasis should be placed on reporting estimates of the relationship between tourism and economic growth across various methodological characteristics and specification and estimation choices.

Another study by Shahzad *et al.* (2017) examines the empirical validity of the tourism-led growth hypothesis in the top ten tourist destinations in the world (China, France, Germany, Italy, Mexico, Russia, Spain, Turkey, the United Kingdom, and the United States) using the Quantile-on-Quantile (QQ) approach and a new index of tourism activity that combines the most commonly used tourism indicators. The empirical results primarily show a positive relationship between tourism and economic growth for the ten countries considered, with substantial variations across countries and across quantiles within each country. The weakest links are noted for China and Germany, possibly because of the limited importance of the tourism sector relative to other major economic activities in those countries.

## METHODOLOGY

The article aims at checking the tourism led-growth hypothesis for Armenia. For that purpose, the article uses the regression method for evaluating the impact of tourism indicators on the change of different economic indicators, i.e., for predicting a continuous dependent variable from several independent variables.

The main equations were calculated using the ordinary least squares method. For the analysis, the data were taken from the World Bank publications and the reports of the Statistical Committee of the Republic of Armenia.

Before conducting regression analysis, the time series of indicators were logarithmed on a natural basis. The first-order differences were calculated, and the trend component was excluded from the time series. Thus, the all-time series became stationary.

Among the variables included in the equations of the article may be an endogenous problem. It should be noted that the issue of endogenesis was not discussed here, as, at the moment, only the correlation between the variables and the coefficient of elasticity calculated based on it is interesting. In this case, the coefficient of elasticity is equal to the coefficient of the explaining variable of the regression equation.

It is known from the first-order Taylor approximation of the function with natural logarithm that:  $\ln(x) - \ln(x_0) \approx \frac{x - x_0}{x_0}$ . On the other hand, it is known that the following formula

calculates the coefficient of elasticity:  $E = \frac{y - y_0}{y_0} / \frac{x - x_0}{x_0}$ . Or by placing the above equation, it

may be written that:  $E \approx \frac{\ln(y) - \ln(y_0)}{\ln(x) - \ln(x_0)}$ .

To show that the regression coefficient of rows with natural logarithm is equal to the coefficient of elasticity, the following two double regressions must be considered:  $\ln(y) = c + \hat{\beta} \ln(x)$  and  $\ln(y_0) = c + \hat{\beta} \ln(x_0)$ . Considering the difference of these regressions, it turns out that:  $\hat{\beta} = \frac{\ln(y) - \ln(y_0)}{\ln(x) - \ln(x_0)}$ .

On the other hand, it is known that the coefficient of the explanatory variable in double regression is estimated as follows:  $\hat{\beta} = \frac{\text{cov}(X, Y)}{\text{var}(X)}$ . This equation can be represented as follows:

$$\hat{\beta} = \frac{\text{cov}(X, Y)}{\text{var}(X)} = \frac{\text{cov}(X, Y)}{\sqrt{\text{var}(X)} \sqrt{\text{var}(Y)}} \frac{\sqrt{\text{var}(Y)}}{\sqrt{\text{var}(X)}} = r_{XY} \frac{\sqrt{\text{var}(Y)}}{\sqrt{\text{var}(X)}} \quad (\text{Johnston and DiNardo 1996, 82}).$$

Thus, the regression (or elasticity) coefficient is the correlation coefficient of the variables adjusted by the standard deviations of those variables. Double regressions were performed to

calculate this elasticity coefficient without discussing the problem of endogeneity known in econometrics. Also, a correlation analysis was done between some tourism indicators for the Member States of the Eurasian Economic Union.

## RESULTS

### *Analyzing the Change in Tourism Total Contribution to GDP and Employment by the Influence of Spending in the Tourism Sphere*

According to the publications of the World Travel and Tourism Council, the total contribution of tourism to the GDP in Armenia in 2018 amounted to 868.7 billion Armenian dram or 1.8 billion US dollars (14.1% of GDP). The total contribution of tourism to employment amounted to 169.3 thousand people (12.5% of the employed) (Armenia 2019, Annual research). In 2019 the total contribution of tourism to the GDP in Armenia was 774.67 billion Armenian dram or 1.6 billion US dollars (11.8% of the GDP) (Armenia 2020, Annual research).

Table 1 shows that in 2018 the expenditures of inbound tourists amounted to 1.24 billion USD, and expenditures of domestic tourists -0.22 billion USD. Government spending and capital investments in tourism are still very low.

**Table 1: The Main Indicators of the Economic Impact of the Tourism Sector in Armenia, 2012-2018**

(Source: The table was compiled by the author based on data from the World Bank, which is based on the analyses of the World Travel and Tourism Council)

Indicator	2012	2013	2014	2015	2016	2017	2018
A direct contribution of tourism to GDP (billion USD)	0,35	0,38	0,41	0,40	0,42	0,48	0,52
The total contribution of tourism to GDP (billion USD)	1,28	1,35	1,49	1,47	1,51	1,72	1,87
A direct contribution of tourism to employment (1000 jobs)	34.1	34.6	36.0	36.4	40.6	44.3	45,6
The total contribution of tourism to employment (1000 jobs)	125.6	126.1	131.9	135.0	149.9	161.9	169,3
Visitor exports (billion USD)	0,85	0,91	0,99	0,96	0,99	1,14	1,24
Domestic spending (billion USD)	0,16	,18	0,19	0,20	0,20	0,21	0,22
Capital investment (billion USD)	0.08	0.09	0.09	0.09	0.10	0.11	0.12
Government spending (billion USD)	0,01	0,01	0,01	0,01	0,01	0,01	0,01

To assess the role of the development of tourism in Armenian GDP and employment, it is necessary to carry out an analysis using regression models to understand, for example, how the spending of domestic and incoming tourists, capital investments in the tourism sector, and government spending influence on the change of tourism total contribution to GDP and employment.

For the analysis, the data published by the World Bank (based on the analyses of the World Travel and Tourism Council) for 1995-2019 were used (World Bank data on tourism for countries).

A regression model was created between the above indicators. Capital investments, domestic spending, incoming tourist, and government spending were total expenditures. After that, it was estimated how its impact would change the total contribution of tourism to GDP and employment. Before that, the time series of indicators were logarithmed on a natural basis, then the first-order differences were calculated, and the trend component was excluded from the time series. Thus, the all-time series became stationary.

At the same time, it should be noted that 75% of the total expenditures fall on the revenues from international tourist arrivals (visitor exports), 16% - on the expenditures made by domestic tourists (domestic spending), 8% - on capital investments, and only 1% on government spending.

The regression model of total expenditure and total contribution of tourism to GDP is as follows.

**Table 2: The Results of the Regression of the Projected Change in the Total Contribution of Tourism to GDP (Source: the analysis was performed by the author using EViews 10 software package)**

Dependent Variable: FD_TOURISM_TOTAL_TO_GDP				
Method: Least Squares				
Sample: 1996 2019				
Included observations: 24				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
FD_TOTAL_COSTS	0.987177	0.084820	11.638495	0.0000
C	-0.120072	1.822395	-0.065887	0.9480
R-squared	0.86028	Durbin-Watson stat		2.414

Table 2 shows that 86% of the volatility of the total contribution of tourism to GDP is explained by the volatility of total expenditures, which is relatively high. It follows from Table 2 that the constant coefficient does not differ significantly from zero. Still, the coefficient of the explanatory variable differs by 1% from zero, i.e., this variable has a decisive role in the variability of the total contribution of tourism to GDP. The insignificance of the constant is because the rows included in the regression equation are stationary. Thus, it turns out that a 1% change in total expenditure relative to its average value will lead to a 0.99% change in the total contribution of tourism to GDP relative to its average value.

The regression model between the total contribution of tourism to employment and total expenditures is as follows.

**Table 3: The Results of the Regression Model of the Projected Change in Employment in the Tourism Sector (Source: the analysis was performed by the author using EViews 10 software package)**

Dependent Variable: FD_TOURISM_TOTAL_TO_EMPLOYMENT				
Method: Least Squares				
Sample: 1996 2019				
Included observations: 24				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
FD_TOTAL_COSTS	0.402693	0.186360	2.160832	0.0418
C	-0.683536	4.004034	-0.170712	0.8660
R-squared	0.175078	Durbin-Watson stat		2.093

The explanatory variable in this model is 5% different from zero, contributing significantly to the dependent variable's variability. Not surprisingly, here, too, the constant is statistically equal to zero. Thus, a 1% change in total expenditure relative to its average value will result in a 0.4% change in tourism employment concerning its average value.

Table 3 shows that the change in total expenditures explains the change in total employment in the tourism sector by only 18%. This can be explained in the following way: employment increase is conditioned not so much by the expenses mentioned earlier but by favorable conditions of the business-investment environment, conditions of tax legislation, etc.

It is also necessary to consider the impact of tourism total expenditures on the country's total GDP. The regression model will be as follows.

**Table 4: The Results of the Regression of the Projected Change in GDP (Source: the analysis was performed by the author using EViews 10 software package)**

Dependent Variable: FD_GDP				
Method: Least Squares				
Sample: 1996 2019				
Included observations: 24				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
FD_TOTAL_COSTS	0.606815	0.146163	4.151634	0.0004
C	-0.250215	3.140375	-0.079677	0.9372
R-squared	0.439291	Durbin-Watson stat		2.219

Table 4 shows that changes in total expenditures explain 44% of GDP change.

A 1% change in the total expenditures of the tourism sector against the average value will lead to a change of 0.61% (relative to its average value) in the country's GDP.

As mentioned in the methodology, in the equations, the regression (or elasticity) coefficient is the correlation coefficient of the variables adjusted by the standard deviations of those variables. Double regressions were performed to calculate this elasticity coefficient without discussing the problem of endogeneity.

It should be noted that the residuals of all regressions have been checked, and there is no heteroscedasticity or autocorrelation between them.



The series of observations in the above models is 24, as there are no statistics for a more extended period.

Thus, it can be said that to increase the total contribution of tourism to GDP, it is necessary to stimulate inbound and outbound tourism, as most of the expenditures were in the income from inbound and outbound tourism, to stimulate capital investment in the sector, also to increase the share of government spending, which is still very little.

***Assessing the Impact of the Number of Incoming and Domestic Tourists on Economic Development Using Regressions***

In addition to the above, regression analyses were conducted between the total number of tourists in the Republic of Armenia (including the sum of the number of incoming and domestic tourists, of which 57% are incoming and 43% are domestic tourists) and the volume of services of hotel facilities and food and beverage service activities.

The data are based on the publications of the Statistical Committee of the RA; quarterly data for 2006-2020 were taken. The time series of indicators were logarithmized (on a natural basis), then seasonally adjusted (X12 ARIMA seasonal smoothing method), then, taking the first-order differences, the trend component was excluded from the series. Thus, the interconnections of the stationary series were discussed.

A regression analysis was carried out between the total number of tourists and the change in the accommodation volume and food and beverage services.

**Table 5: Regression Results Between the Volume of Accommodation and Food and Beverage Services and Total Number of Tourists (Source: the analysis was performed by the author using EViews 10 software package)**

Dependent Variable: FD_RESTAURANTS_AND_HOTELS_REVENUE				
Method: Least Squares				
Sample: 1 56				
Included observations: 56				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
FD_TOTAL_TOURISTS	0.110348	0.017934	6.152855	0.0000
C	2.424372	1.866226	1.299078	0.1991
R-squared	0.399099	Durbin-Watson stat		2.062

In the above model, 40% of the change in the volume of accommodation and catering services is explained by the change in the total number of tourists. This is logical, as first of all, about 25-30% of incoming tourists stay in hotel facilities, the rest stay in relatives' houses or rented apartments, and catering facilities are used not only by tourists but also by the entire population of Armenia. As the statistics on the volume of accommodation and catering services for the whole period covered have been published differently by the Statistical Committee (there has been a separate census since 2009, before the unified index of services was published), the aggregate indicators of the volume of these services have been taken. However, it should be noted that, for example, in 2018, the volume of accommodation services made up about 23% of

the total. In previous years the index fluctuated between 22-25%. This proves that the regression results are trustworthy.

It turns out that a 1% change in the number of tourists compared to its average value will lead to a 0.11% change in the volume of accommodation and catering services.

In addition, a regression analysis was carried out between the total contribution of tourism to GDP and the total number of tourists in Armenia. The data are based on the publications of the Statistical Committee of the RA and the World Bank; annual data were taken for 2002-2019. The time series of the indicators were again subjected to the natural logarithm, and the trend was excluded by the first differencing method.

**Table 6: Regression Results between Tourism Total Contribution to GDP and Total Number of Tourists**  
(Source: the analysis was performed by the author using EViews 10 software package)

Dependent Variable: FD_TOURISM_TOTAL_TO_GDP				
Method: Least Squares				
Sample: 2002 2019				
Included observations: 18				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
FD_TOTAL_TOURISTS	1.07328	0.37120	2.89133	0.01063
C	-0.45994	6.24528	-0.07365	0.94220
R-squared	0.34318	Durbin-Watson stat		2.293

In the above model, only 34% of the change in the tourism total contribution to GDP is explained by the change in the total number of tourists.

It turns out that a 1% change in the number of tourists relative to its average value will lead to an average change of 1.1% in tourism's total contribution to GDP.

It should be noted that there is no autocorrelation in the above regressions, as evidenced by the fact that the value of Durbin-Watson for all regressions fluctuates in the acceptable range [1.5-2.5].

In the above regression models, the p values were obtained significantly (less than 0.05). A value of P indicates whether the model describes a significant correlation, and R-squared ( $R^2$ ) measures the degree to which the model can explain the data. Therefore, it is possible to obtain a significant p-value with a low value of  $R^2$ . This often happens when there is much variability in the dependent variable, but enough data points reveal a significant correlation (Salvatore n.d.). In addition, according to some theorists,  $R^2$  in the social sciences may be lower (according to some authors, it should be greater than 0.10 (Falk and Miller 1992), 0.13 (this is considered average, 0.02 is weak, 0.26 is significant) (Cohen 1988).

At the same time, in the regression models, R-squared has such value for the regression between employment and tourists (18%). According to the authors mentioned above, this is considered an acceptable value. Since the significant values of p in the above models show a significant correlation between the dependent and independent variables, it can be said that the results obtained for Armenia reflect the real picture (discussed above) and are obtained accurate results.

### Tourism Contribution to the Economic Development in the EAEU Member States

Besides analyzing tourism development's impact on the economy of Armenia, a comparative analysis was done for the Member States of the Eurasian Economic Union. As known, the Member States of the Eurasian Economic Union are Armenia, Belarus, Kazakhstan, Kyrgyzstan, and Russia.

The correlation analysis was done between tourism total expenses (visitor exports, domestic spending, government spending, capital investments), tourism total contribution to GDP and employment.

Again, the data published by the World Bank (based on the analyses of the World Travel and Tourism Council) for 1995-2019 were used (World Bank data on tourism for countries).

The time series of indicators were logarithmed on a natural basis, and then the first-order differences were calculated. The trend component was excluded from the time series. Thus, the all-time series became stationary.

**Table 7: Correlation Results of Tourism Contribution to the Economy in the EAEU Member States**  
(Source: the analysis was performed by the author using EViews 10 software package)

	The correlation coefficient between total expenses and tourism's total contribution to GDP	The correlation coefficient between total expenses and tourism's total contribution to employment	R-squared (total expenses and tourism total contribution to GDP)	R-squared (total expenses and tourism total contribution to employment)
Armenia	0.94	0.42	0.88	0.18
Belarus	0.81	0.59	0.66	0.35
Kazakhstan	0.64	-0.03	0.41	0.001
Kyrgyzstan	0.38	0.28	0.14	0.08
Russia	0.99	0.26	0.97	0.07

Table 7 shows the correlation coefficient between total tourism expenses and tourism total contribution to GDP in the countries. Only in Kyrgyzstan, it is 0.38. The R-squared shows that in Armenia, 88% of tourism GDP change is explained by changes in total expenditures, in Belarus – 66%, in Kazakhstan – 41%, in Russia – 97%, and the lowest is in Kyrgyzstan – only 14%.

The correlation coefficient between total expenses and tourism total contribution to employment is negative in Kazakhstan, which means that there is no relationship between tourism expenses and employment in the sphere. The R-squared shows that in Armenia, only 18% of tourism employment change is explained by changes in total expenditures, in Belarus – 35%, in Russia – 0.07%, and in Kyrgyzstan – 0.08%.

So, the analysis shows that the relationship between tourism total expenses and employment in tourism is not as strong as the relationship between tourism total expenses and GDP in tourism. As discussed in the Armenian case, favorable conditions are needed for raising employment and investments.

## CONCLUSION

Tourism in Armenia has been growing recently, but in 2020 the sector suffered significantly because of the pandemic. To assess the economic impact of tourism, statistical methods were used to analyze the opportunities for tourism development with the help of various indicators, assessing the impact of some tourism indicators on the country's economy and employment.

Thus, using regression analysis, it can be said that in Armenia:

- a 1% change in the total expenditures of the tourism sector (capital investments of the sector, the sum of inbound and outbound tourist expenses, and government spending) relative to its average value will lead to a 0.99% change in the total contribution of tourism to GDP,
- a 1% change in the total expenditure of the tourism sector relative to its average value will result in a 0.4% change in employment in the tourism sector relative to its average value,
- a 1% change in the total expenditure of the tourism sector relative to its average value will lead to a change of 0.61% of the country's GDP relative to its average value,
- a 1% change in the total number of tourists relative to its average value will lead to a change of 0.11% in the volume of accommodation and catering services relative to its average value,
- a 1% change in the number of tourists relative to its average value will lead to a change of 1.1% in the total contribution of tourism to the country's GDP relative to its average value.

The correlation analysis between the Member States of the Eurasian Economic Union shows that the relationship between tourism total expenses and tourism employment is not as strong as the relationship between tourism total expenses and GDP in tourism. However, the results reveal that tourism development leads to economic development.

Thus, based on the results, the tourism led-growth hypothesis for Armenia (also for the EAEU Member States) may be proved; this means that the increase in tourism expenditures and the number of tourists will lead to an increase in GDP and employment. However, the change in tourism contribution to employment is not so high, which was explained by different reasons.

The obtained results prove the findings of different authors described in the literature review that tourism development contributes to the economic development of countries.

The article results may be helpful for future studies, as well as for government agencies for evaluating tourism's contribution to economic development and for elaborating tourism development policies.

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**Statement of Human Rights:**

This article does not contain any studies with human participants performed by any authors.

**Statement on the Welfare of Animals:**

This article does not contain any studies with animals performed by any authors.

**Informed Consent:**

Not applicable.

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## REFERENCES

1. Brida, Juan Gabriel, Matesanz, Gómez David, Segarra, Veronica. (2020). On the empirical relationship between tourism and economic growth. *Tourism Management* 81: 104–131, <https://doi.org/10.1016/j.tourman.2020.104131>
2. Bento, Joao Paolo. (2016). Tourism and economic growth in Portugal: an empirical investigation of causal links. *Tourism & Management Studies* 12(1): 164-171, DOI: 10.18089/tms.2016.12117
3. Bulin, Daniel, Miru, Nela, Gheorghe, Georgica. (2014). The Impact of the Tourism Industry on the Economy. The case of Black Sea Region Countries, *Knowledge Horizons – Economics*, Volume 6, No. 2: 74–79, Available at: [https://www.orizonturi.ucdc.ro/arhiva/2014\\_khe\\_6\\_pdf/khe\\_vol\\_6\\_iss\\_2\\_74to79.pdf](https://www.orizonturi.ucdc.ro/arhiva/2014_khe_6_pdf/khe_vol_6_iss_2_74to79.pdf)
4. Cohen, Jacob. (1988). *Statistical power analysis for the behavioral sciences*, 2<sup>nd</sup> ed, Lawrence Erlbaum Associates, USA, Available at: <http://www.utstat.toronto.edu/~brunner/oldclass/378f16/readings/CohenPower.pdf>
5. Falk, R. Frank, Miller, Nancy B. (1992). *A primer for soft modeling*, The University of Akron, Ohio, USA, Available at: [https://www.researchgate.net/publication/232590534\\_A\\_Primer\\_for\\_Soft\\_Modeling](https://www.researchgate.net/publication/232590534_A_Primer_for_Soft_Modeling)
6. Fayissa, Bichasa, Nsiah, Christian, Tadasse, Badassa. (2008). Impact of Tourism on Economic Growth and Development in Africa. *Tourism Economics*. Volume: 14 Issue: 4: 807-818, <https://doi.org/10.5367/000000008786440229>
7. Generalova, Nina. (2014). Forecasting in the field of tourism: classification and analysis of methods. *Journal of international law and international relations* N 4. (in Russian). Available at: <http://evolutio.info/ru/journal-menu/2014-4/2014-4-generalov>
8. Ivanov, Stanislav, Webster, Craig. (2007). Measuring the Impact of Tourism on Economic Growth. *Tourism Economics*. Volume 13, issue 3: 379-388. <https://doi.org/10.5367/000000007781497773>
9. Jamel, Lamia. (2020). The Relation between Tourism and Economic Growth: A Case of Saudi Arabia as an Emerging Tourism Destination, *Virtual Economics*, Issue 3, N 4: 29-47, Available at: <https://www.cceol.com/search/article-detail?id=914871>
10. Johnston, Jack, DiNardo John. (1996). *Econometric Methods*, McGraw-Hill economics series, 531p.
11. Kim, Hyun Jeong, Chen, Ming-Hsiang, Jang, Soo Cheong "Shawn". (2006). Tourism expansion and economic development: The case of Taiwan. *Tourism Management*. 27(5): 925–933. doi: 10.1016/j.tourman.2005.05.011, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7126590/pdf/main.pdf>
12. Kozhokulov, Sadyrbek, Chen, Xi, Yang, Degang, Issanova, Gulnura, Samarkhanov, Kanat, Aliyeva, Selvina, (2019). Assessment of Tourism Impact on the Socio-Economic Spheres of the Issyk-Kul Region (Kyrgyzstan). *Sustainability* 11: 3886. doi:10.3390/su11143886
13. Nunkoo, Robin, Seetanah, Boopen, Jaffur, Zameelah Rifkha Khan, Moraghen, Paul George Warren, Sannasee, Raja Vinesh. (2020). Tourism and Economic Growth: A Meta-regression Analysis, *Journal of Travel Research*. Volume 59, Issue 3: 404-423. <https://doi.org/10.1177/0047287519844833>

14. Papagianni, Alexandra. (2020). *The Impact of Tourism on Employment and Economic Growth*, Dissertation: 1-62, School of Economics & Business Administration, University of Patras, Department of Economics, Available at: [https://nemertes.lis.upatras.gr/jspui/bitstream/10889/14265/1/M\\_Sc\\_Thesis.pdf](https://nemertes.lis.upatras.gr/jspui/bitstream/10889/14265/1/M_Sc_Thesis.pdf)
15. Pavlić, Ivana, Tolić, Meri Šuman, Svilokos, Tonci. (2013). Impact of tourism on employment in Croatia. *Recent Advances in Business Management and Marketing conference proceedings* 99: 219-224, Available at: <http://www.wseas.us/e-library/conferences/2013/Dubrovnik/MATREFC/MATREFC-34.pdf>
16. Peña-Sánchez, Antonio Rafael, Ruiz-Chico, Jose, Jiménez-García, Mercedes, López-Sánchez, Jose Antonio. (2020). Tourism and the SDGs: An Analysis of Economic Growth, Decent Employment, and Gender Equality in the European Union (2009-2018). *Sustainability* 12, 5480. <https://doi.org/10.3390/su12135480>
17. Pratt, Stephen. (2015). The economic impact of tourism in SIDS, *Annals of Tourism Research*, Volume 52: 148-160. <https://doi.org/10.1016/j.annals.2015.03.005>
18. Ren, Taizeng, Can, Muhlis, Paramati, Sudharshan Reddy, Fang, Jianchun, Wu, Wanshan. (2019). The Impact of Tourism Quality on Economic Development and Environment: Evidence from Mediterranean Countries, *Sustainability* 11: 2296. doi:10.3390/su11082296
19. Salvatore, S. Mangiafico, n.d. p-values and R-square Values for Models. Available at: [https://rcompanion.org/handbook/G\\_10.html](https://rcompanion.org/handbook/G_10.html)
20. Selimi, Nasir, Sadiku, Luljeta, Sadiku, Murat. (2017). The impact of tourism on economic growth in the Western Balkan countries: An empirical analysis. *International Journal of Business and Economic Sciences Applied Research (IJESAR)*, ISSN 2408-0101, Eastern Macedonia and Thrace Institute of Technology, Kavala, Vol. 10, Iss. 2: 19-25, <http://dx.doi.org/10.25103/ijbesar.102.02>, <https://www.econstor.eu/bitstream/10419/185663/1/v10-i2-p19-25-tourism-economic-growth.pdf>
21. Sequeira, Tiago Neves, Nunes, Paulo Macas. (2008). Does tourism influence economic growth? A dynamic panel data approach. *Applied Economics*. Volume 40, Issue 18: 2431-2441, <https://doi.org/10.1080/00036840600949520>
22. Shahzad, Syed Jawad Hussain, Shahbaz, Muhammad, Ferrer, Roman, Kumar, Ronald Ravinesh. (2017). Tourism-led growth hypothesis in the top ten tourist destinations: New evidence using the quantile-on-quantile approach. *Tourism Management*, Volume 60: 223-232. <https://doi.org/10.1016/j.tourman.2016.12.006>
23. Tang, Chor Foon, Tan, Ee Chye. (2017). Tourism-Led Growth Hypothesis: A New Global Evidence, *Cornell Hospitality Quarterly*, Volume 59, Issue 3: 304-311. <https://doi.org/10.1177/1938965517735743>
24. The Statistical Committee of the RA. 2020. "The socio-economic situation in the RA, 2019 January-December", Accessed May 20, 2022. [https://www.armstat.am/file/article/sv\\_12\\_19a\\_421.pdf](https://www.armstat.am/file/article/sv_12_19a_421.pdf)
25. The Statistical Committee of the RA. 2022. "The socio-economic situation in the RA, 2022 January" Accessed May 20, 2022. [https://armstat.am/file/article/sv\\_01\\_22a\\_421.pdf](https://armstat.am/file/article/sv_01_22a_421.pdf)
26. Tovmasyan, Gayane. (2021). Capital investments, tourist tax and tourism development: The case study of Armenia. *Economics and Sociology*, 14(1): 199-213.

doi:10.14254/2071-789X.2021/14-1/13

27. Vicente, Guillermo Vazquez, Barroso, Victor Martin, Jiménez, Francisco Jose Blanco. (2021). Sustainable Tourism, Economic Growth and Employment—The Case of the Wine Routes of Spain, *Sustainability* 13(13): 7164. <https://doi.org/10.3390/su13137164>
28. World Bank data, Accessed May 20, 2022.  
[https://tcdata360.worldbank.org/indicators/cap.inv.tat?country=ARM&indicator=24674&viz=line\\_chart&years=1995,2028](https://tcdata360.worldbank.org/indicators/cap.inv.tat?country=ARM&indicator=24674&viz=line_chart&years=1995,2028)
29. World Bank data on tourism for countries, Accessed May 20, 2022.  
<https://s3.amazonaws.com/datascope-ast-datasets-nov29/datasets/79/data.csv>
30. World Travel and Tourism Council. 2019. "Armenia 2019, Annual research: Key highlights". Accessed May 20, 2022. <https://www.wttc.org/economic-impact/country-analysis/country-data/>
31. World Travel and Tourism Council. 2020. "Armenia 2020, Annual research: Key highlights". Accessed May 20, 2022. <https://wttc.org/Research/Economic-Impact>