

## TOURISM-LED ECONOMIC GROWTH HYPOTHESIS - AN EMPIRICAL INVESTIGATION FOR SERBIA

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### Abstract

As it is commonly believed that tourism contributes positively to economic growth, many developing countries rely on tourism in their efforts to enhance their economic conditions. Serbia has also given priority to the development of tourism industry as a part of its economic growth strategy. In this paper we analyze the long-term effects of tourism on the economic growth of Serbia. More specifically, the tourism-led economic growth (TLEG) hypothesis is tested, which implies that tourism is a trigger of Serbian economic growth. This study investigates the causal relations between tourism growth and economic expansion for the Serbian economy by using cointegration analysis. The obtained results show that the hypothesis of tourism-led economic growth in the Serbian economy is confirmed.

**Key words:** TLEG, economic growth, tourism, GDP, cointegration analysis

## ХИПОТЕЗА О ПОДСТИЦАЈУ ЕКОНОМСКОГ РАСТА ОД СТРАНЕ ТУРИЗМА – ЕМПИРИЈСКО ИСТРАЖИВАЊЕ ЗА СРБИЈУ

### Апстракт

Како је прихваћено да туризам позитивно доприноси економском расту, многе земље у развоју се ослањају на туризам у својим напорима да побољшају своје економско стање. Србија је, такође, дала приоритет развоју туристичке индустрије као саставном делу своје стратегије економског раста. У овом раду анализиран је дугорочни ефекат туризма на економски раст Србије. Тестирана је хипотеза економског раста вођеног туризмом (ТЛЕГ), која подразумева да је туризам покретач српског привредног раста. Ова студија истражује узрочне везе између раста туризма и економске експанзије за српску економију коришћењем

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коинтеграционе анализе. Добијени резултати показују да је у српској економији потврђена хипотеза о привредном расту вођеним туризмом.

**Кључне речи:** ТЛЕГ, економски раст, БДП, коинтеграциона анализа.

### *INTRODUCTION*

In last several decades, tourism has been characterized by a high growth trend that made it into one of the largest and fastest growing industries in the world in the second part of the twentieth century (Goh & Law, 2002). According to World Travel Organization (UNWTO) data, for many countries, tourism has been identified as one of the most important sources of foreign receipt and employment growth. The number of foreign tourists in 2017 increased 7% in comparison to the previous year; over 1.3 billion travelers generated \$1.340 billion of tourism income, a 5% increase in comparison to the previous year (UNWTO, 2018). It is expected that by 2030, the number of international arrivals will be at the level of 1.8 billion (Statista, 2015). Besides the obvious financial effects coming from international travelers' flows and from domestic tourism for destinations and countries, it is necessary to note that tourism also employs labor, resources, equipment and facilities which further add value to the local economy and quality of local life (Hazari & Sgro, 1995). In many countries, tourism represents one of the leaders of national progress. Also, tourism is the catalyst for capital transfers between countries. Since the total tourism expenditures and tourism income are higher than global export of good and services, tourism is a good solution for the encouragement of the development for many regions and destinations (Brau, Lanza & Pigliaru, 2003). In global tourism figures, Europe represents the most dominant player with over 50% share of international arrivals (Statista, 2021), and that is the reason why EU countries have put emphasis on tourism industry as a great platform for economic growth and development (Lee & Brahmašrene, 2013), much like other countries around the globe (Matarrita-Cascante, 2010).

The purpose of this study is to investigate the tourism-led economic growth (TLEG) hypothesis for Serbia. Although tourism industry has grown significantly in Serbia in the last decade excluding 2020, there is a lack of research papers in the domain of the contribution of the tourism sector to the country development. Our research is the first one in this field and the aim is to give answers to the two following questions. Firstly, is there a long-run equilibrium relationship between tourism and economic growth in Serbia? And, if a stable long-run relationship exists, what is the direction of the causal relationship between these two variables?

### *THE IMPACT OF TOURISM ON ECONOMIC DEVELOPMENT*

The importance of tourism for the global economic development can be seen in the fact that tourism directly generated 4.6% of the global GDP, and when we add indirect and induced effects, the total contribution is 10.4%, while the contribution to global employment is also high with 9.9% of employees in the world working directly or indirectly in the field of tourism (WTTC, 2018). This means that tourism has been given a lot of official attention from country economies, since it is considered as the third job-making and profitable industry in the world (Balaguer & Cantavella, 2002). At the same time, the term “industry” is used to emphasize tourism as a sector due to its status for the national economies and the fact that many countries start to refocus their economies from other industries (such as the oil industry) to tourism (Razaghi & Alinejad, 2012). Increasing every year, both in quantity and quality, the international tourism bears a significant influence on economic performances and exchange balance of national economies and their payments (Sinclair, 1998).

The economic impact of tourism on the national economic performances and growth indicators is a lot more important than what was thought few decades ago (Razaghi & Alinejad, 2012). One of the key roles of tourism from the economics perspective is a role in accumulating capital and income, and presenting positive figures in the national account balances (Durberry, 2004). In addition, tourism is a platform of redistribution of the capital and wealth of nations (Hazari & Sgro, 1995).

According to academic research, we can differentiate between various types of tourists types based on the manner of interaction with the destination, where interaction can vary between being very high (high consumption of typical local products and increased expenditure in local economy) and being very low (almost without using local products and low level of expenditure) (Williams and Shaw, 1998): expeditor, elite, guest owner of the second house, individual tourist and mass tourist. In general, mass travelers create an economy of scale, meaning that income will rise due to large number of tourists. But, individual travelers and elite ones are those who will choose to organize customized trips to fully understand the local destination, and therefore will create higher impact to local economy.

Theoretical and empirical research show no consensus on whether tourism stimulates economic activity, or economic activity leads to tourism growth since changes in economic and/or tourism conditions can alter the nature and magnitude of the relationship between these two over time, among others (Antonakakis, Dragouni and Filis, 2015). Research shows that countries with developed tourism sectors record above average economic growth, meaning that countries with relative abundant natural resources will specialize in tourism and achieve faster economic growth (Lanza and Pigliaru, 2000). Tourism is an important factor in the diffu-

sion of technical knowledge, stimulation of research and development, and the accumulation of human capital and all mentioned influence long-term sustainable economic growth (Schubert, Brida and Risso, 2011).

#### *TOURISM-LED ECONOMIC GROWTH (TLEG) FRAMEWORK*

Chatziantoniou, Filis, Eeckels & Apostolakis (2013) defined four types of links between economic and tourism development: unidirectional causality between the two variables in a form of tourism-led economic growth (TLEG), unidirectional causality in a form of economic-driven tourism (EDTG), a bidirectional relationship between tourism and the economy (BC) and the form in which there is no relationship at all (no causality NC).

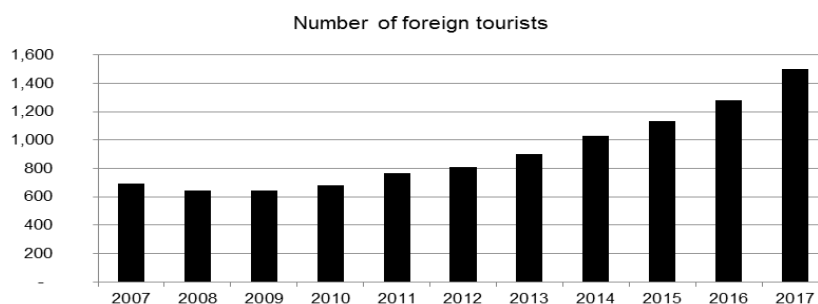
TLEG hypothesis was directly derived from the export-led growth theory which starts from the postulate that economic growth is generated not only by the increasing the amount of labor and capital within an economy, but also by expanding exports (Brida, Cortes-Jimenez & Pulina, 2016). According to the TLEG hypothesis, there is a flow of benefits from tourism to the economy, due to additional multiplicative effects (Schubert, Brida & Risso, 2011), most often seen through direct financial benefits (McKinnon, 1964), the increase of investments, competition and small and medium enterprises (SMEs) efficiency (Balaguer & Cantavella-Jorda, 2002) increase employment since tourism is a human-resources based industry (Brida & Pulina, 2010), and lead to positive economics of scale (Croes, 2006). Positive results of TLEG hypothesis are also seen in other researches as well (Ivanov & Webster, 2013; Surugiu & Surugiu, 2013). On the other hand, some researches show that the growth of tourism is the result of economic growth and the increase of economic activities (Narayan, 2004; Tang, 2011), meaning that is it result for the well-planned and well-implemented economic and infrastructure policies (Payne & Mervar, 2010).

At the same time, recent research shows that the tourism-economic growth relationship is not stable over time in terms of either magnitude and direction, indicating that the tourism-led economic growth (TLEG) and the economic-driven tourism growth (EDTG) are time-dependent (Antonakakis, Dragouni & Filis, 2015). This was confirmed by other authors as well (Lean & Tang, 2010; Tang & Tan, 2013).

National development strategies should try to alleviate the negative effects of the economic conditions on the tourism sector by employing cost-effective strategies, which can promote tourist activity and increase tourism income, and lead to a change of the current EDTG to TLEG (Antonakakis et al., 2015).

### *SERBIAN TOURISM PERFORMANCES AND THE CURRENT SITUATION*

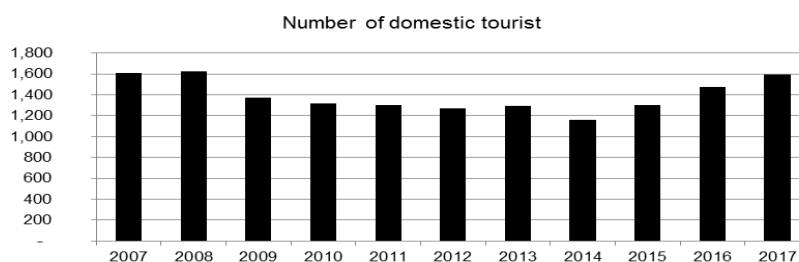
Serbian tourism performances in the observed period (2007-2017) had fluctuations that are typical for emerging markets without the properly implemented destination management system in place, and at the same time, the of the global tourism market trends. After a period of political challenges, it is logical that in years up to 2005 tourism performances (arrivals, overnights and income) were decreasing. In the period 2006-2007, before the economic crisis, tourism in Serbia showed slight increase, but in the period 2009-2011, the growth rate was negative again. From 2011 to 2017 tourism in Serbia had an average annual growth rate of 6% in number of arrivals. It is interesting to note that in the entire observed period the number of foreign tourists was increasing year-to-year and 2017 saw 4.8 times more foreign travelers, meaning that for the entire period the cumulative growth rate of foreign tourist was 20.21%.



*Figure 1. Number of foreign tourists in Serbia from 2007-2017*

Source: Authors calculation, based on data from Statistical office of Serbia

Domestic tourist arrivals had an average annual growth rate of -28% in 2007-2014, but in 2015-2017, the performance of domestic tourists was on the rise, with an average growth rate of 11.87%. However, the total volume of tourist arrivals did not reach that of the base year.



*Figure 2. Number of domestic tourists in Serbia from 2007-2017*

Source: Authors calculation, based on data from Statistical office of Serbia

When it comes to international tourism receipts, in 2017 it amounted to 1.17 billion euros, which is 1.9 times more than in 2007. The average annual growth rate of international tourism receipts in the period 2011-2017 was 7.52%, with a small decline in the period 2007-2010, when the average annual growth rate was -0.9%.

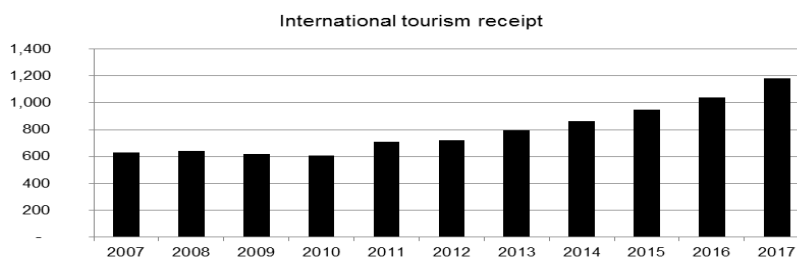


Figure 3. International tourism receipt in Serbia from 2007-2017

Source: Authors calculation, based on data from Statistical office of Serbia

In 2017, tourism contributed directly to GDP in amount of 0.9%. Observing the total contribution of the tourism industry to the Serbian economy, this contribution increases to RSD 294.6 billion in 2017 including the effects from investment, supply chain and induced income impacts (OECD, 2020).

For research purposes in this paper, we used data of international tourism receipts to show whether and what impact tourism has on the economic growth of the country measured in the amount of GDP. This variable was used in other similar studies with the same goal to analyze the impact of tourism on the country's economic growth (Arslanturk et al., 2011; Belloumi, 2010; Boğa & Erkişi, 2019; Demiroz & Ongan, 2005; Wu & Wu, 2018). One more reason for using this variable lies in the fact that tourism in Serbia has faced strong restructuring of the tourism demand in the last 15 years. On the one hand, the strong decrease of the domestic tourism performances is evident due to visa liberalization, and the negative influence of economic crisis on the local travelers' house income. Visa liberalization allowed middle- and higher-income segments to travel to destinations, such as Greece, Italy and Spain, while the lower income segments were constrained by the economic crisis. Regarding foreign tourists, strong increase of visitations from neighboring countries, as well as from Italy, Germany and Russia, influenced positive total tourism performances. This restructuring of the key segments and the focus on foreign tourists, made tourism more important for the Serbian economic development (Zečević, et al., 2014). At the same time, constant work on upgrading regulatory framework, investments in road infrastructure and tourism infrastructure, and the support to the tourism investment, are also seen as the factors that influenced the increase in the number of for-

foreign tourists in Serbia (Čerović, et al., 2015). Development of new tourism products with focus on unique experience, such as rural tourism and messages-based tourism (Bošković & Maksimović, 2019) or niche tourism based on bird watching (Krejić et al., 2019) are also an inevitable attraction-moment for foreign tourists. Market restructuring, best seen through the opening of brand new hotel properties in upper and upper-upscale segment, with significant congress facilities, increase Serbia's attractiveness for foreign business travelers (Kovacevic, et al, 2019). Also, the evident proactive approach to the activities of bidding for international events to take place in Serbia are also important, representing a market driven factor that influences the increase in the number of foreign tourists in Serbia (Kovačević et al, 2020).

### RESEARCH MODEL AND THE ECONOMIC RESULTS

Econometric results of the model are presented through four subsections of the paper. First, the obtained results of the cointegration analysis are reported and the estimated vector equilibrium correction model (VECM) is explained. Then, dynamic responses of gross domestic product (GDP) to unexpected structural shocks in consumption of foreign tourists (CFT) are presented via forecast error variance decomposition (FEVD). Also, FEVD was used vice-versa, i.e. to show dynamic responses of the consumption of foreign tourists to unexpected structural shocks in the gross domestic product. Results are obtained using Eviews10 software.

#### Sample View and Data Analyses

Two variables are observed in this paper. Data on the gross domestic product are available from Statistical Office of Republic of Serbia and data on the consumption of foreign tourists are available from the National Bank of Serbia. We created quarterly data of the consumption of foreign tourists since the monthly data are available from the National Bank

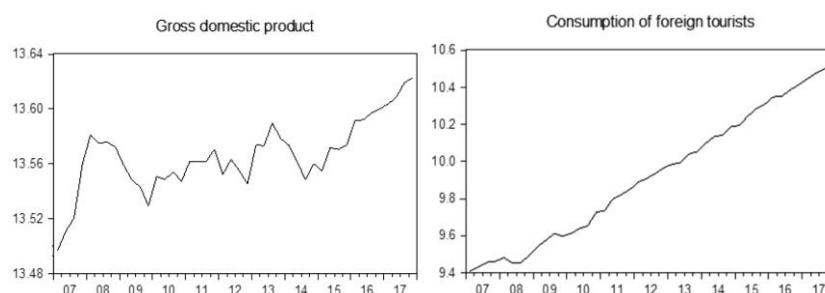


Figure 4. GDP and CFT, log values, Q1 2007-Q4 2017

Source: Authors' calculation

of Serbia. Considering the consumption of foreign tourists is a variable of flow, we have aggregated monthly data into quarterly data by summarizing monthly data. Quartile observations in logs are used covering the period: the first quarter of 2007 to the last quarter of 2017. All the data are seasonally adjusted. The results were obtained using Eviews10.

#### *Methodology Used*

The paper examined the existence of a cointegration relationship between the gross domestic product and the consumption of foreign tourists.

Before defining and estimating the cointegration vector, the stationarity of the variables should be examined. Weak stationarity means that the mean and the variance of a series are constant through time and the autocovariance of the series is not time varying (Enders, 1995). Since wrong choice of data transformation gives biased results and results in misinterpretation, the stationary test is of great importance for setting up the specification and estimation of the valid model (Engle & Granger, 1987). Therefore, the first step in testing for cointegration is testing the order of integration of the variables. In brief, integration means that if previous shocks remain undefined, they affect the realization of the series forever, and the series has a theoretically infinite variance and a time-dependent mean (Enders, 1995). There are many unit root tests, but we used Augmented Dickey–Fuller (ADF) (Dickey & Fuller, 1981), Phillips–Perron (PP) (Phillips & Perron, 1988) and Kwiatkowski–Phillips–Schmidt–Shin (KPSS) (Kwiatkowski, Phillips, Schmidt & Shin, 1992) tests in order to examine the stationarity of the variables. Once we have showed that variables are  $I(1)$ , we proceed with testing the cointegration. If we confirm the presence of the cointegration relationship between non-stationary variables, we will continue with estimating VECM. Granger causality testing will be performed. The premise is that if there is cointegration in the system of GDP and CFT, the dynamic relationship has to be analyzed.

#### *Testing for Cointegration in Model*

The first step of this paper is to demonstrate that the variables used are non-stationary. The results of testing the order of integration of GDP and CFT are provided in Table 1. Applying the ADF test to the first difference of GDP, we obtained that the first difference is stationary, which means that GDP is non-stationary. The first difference of GDP was stationary based on each unit root tests. On the other hand, the result of the ADF test for the CFT showed that the series is stationary, respectively that we reject the null hypothesis of non-stationarity. Next, we carried out PP and KPSS tests, and, based on the p-value for both tests, we conclude



that the null hypothesis of non-stationarity of variable is supported and that the first difference of CFT was stationary based on these unit root tests (Table 1). Accordingly, the variables were expressed to be I (1). Given the results of the unit root, cointegration was examined between GDP and CFT using Johansen procedure. (Johansen, 1988).

Table 1. Unit root tests

	ADF	SW	P	PP	KPSS	Results
	(p value)					ADF/PP/KPSS
GDP (constant & trend)	-2.75	1.39 (0,171)	0			I(1)
GDP (constant)	-2.12		0	-2.31	0.711	I(1)/I(1)/I(1)
$\Delta$ GDP	<b>-3.5</b>		1	<b>-6.34</b>	<b>0.090</b>	I(0)/I(0)/I(0)
CFT (constant & trend)	<b>-5.11</b>	9.19 (0.000)	8	-3.07	0.153	I(0)/I(1)/I(1)
$\Delta$ CFT				<b>-7.47</b>	<b>0.086</b>	-I(0)/I(0)

Source: Authors' calculation

Note: Test statistics that reject unit root null hypothesis is bolded for ADF and PP tests.

KPSS test, test statistics are bolded when we do not reject stationarity hypothesis. P denotes number of correction factors. The 5% critical value for the ADF and the PP tests is -3.41 in the model with a constant and trend and -2.86 in the model with a constant as only deterministic component. The 5% critical value for the KPSS test is 0.463 for GDP and 0,146 for CFT, and the 1% critical value for the KPSS test is 0.739 for GDP and 0,216 for CFT.

ADF unit root test for CFT shows that CFT is trend-stationary variable, whereas other tests give opposite result. Philips-Perron (PP) and Kwiatkowski–Phillips–Schmidt–Shin test (KPSS) both show that CFT has one unit root and that the first difference is stationary. Based on that, we can conclude that CFT is non-stationary and that it has one unit root, which will be confirmed within cointegration analysis.

Since both variables have one-unit root, we proceed with cointegration analysis. For cointegration analysis, we used GDP and CFT in levels since the variables are of the same order of integration.

The presence of one cointegrated vector and one common stochastic trend is detected by Johansen trace test, as presented in Table 2.

Table 2. Testing for cointegration

Hypotheses	Eigenvalue	Trace Statistic	0.05 Critical Value	p-value
H0: $r=0$ and $p-r=2$				
H1: $r>0$	0.485836	35.35194	25.87211	0.0025
H0: $r=1$ and $p-r=1$				
H1: $r>1$	0.178834	8.078236	12.51798	0.2454

Source: Authors' calculation.

Note: Number of cointegrated vectors is denoted by r and p is number of variables (GDP and CFT, which is two).

The results of Johansen procedure show that there is one cointegration vector in the system. The estimated cointegrated vector is as follows:

$$\text{GDP}=0.8\text{CFT}+0.021t-6.04$$

The estimated cointegration vector is also depicted in Figure 5. Evidently, cointegration vector neutralized the individual stochastic trends of variables.

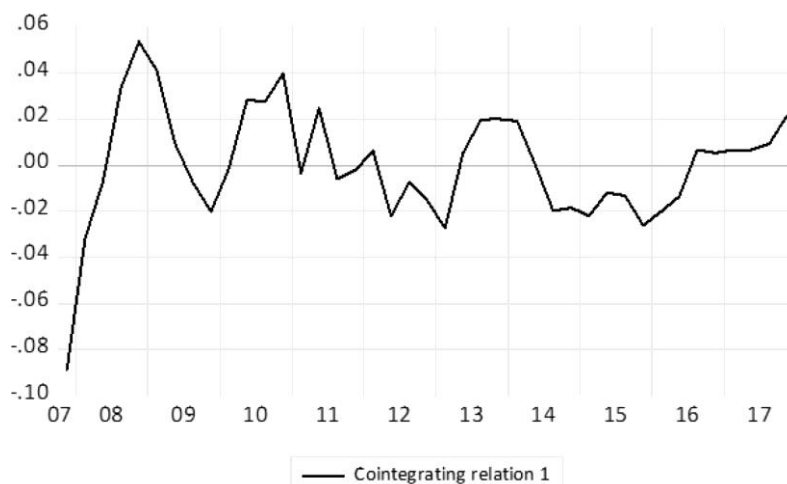


Figure 5. Estimated cointegration vector  
Source: Authors' calculation.

The presence of one cointegration relation in the model is also confirmed based on the corresponding roots derived under restriction that one cointegration vector exists. It is depicted in Table 3 and Figure 3 that only one of six values is exactly one, which indicates that system has a common stochastic trend.

Table 3. Roots of characteristic polynomials in modulus

Root 1	Root 2	Root 3	Root 4	Root 5	Root 6
1.00	0.77	0.77	0.55	0.55	0.17

Source: Authors' calculation.

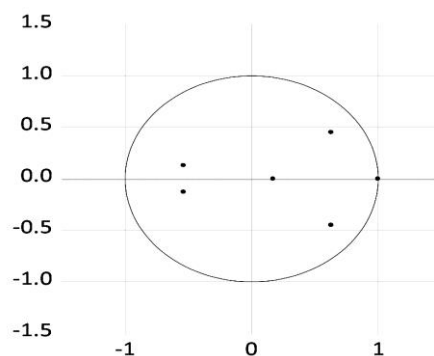


Figure 6. Graphic view of characteristic polynomials in modulus  
Source: Authors' calculation.

After we have shown that there is a cointegration relation between GDP and CFT, we have proceeded with the testing of causality according to the Granger causality test.

Table 4. The Granger causality testing

The null hypothesis	Test statistics (p value)	Testing results
Consumption of foreign tourists does not cause gross domestic product in the sense of Granger.	7.142018 (0.0281)	$H_0$ is rejected
Gross domestic product does not cause consumption of foreign tourists in the sense of Granger.	2.812171 (0.2451)	$H_0$ is not rejected

Source: Authors' calculation.

Based on the results from the first part of Table 4 we can conclude that the hypothesis claiming that consumption of foreign tourists does not cause gross domestic product in the sense of Granger does not stand. Precisely, it means that we reject  $H_0$  hypothesis because the p value of 0.0281 is less than critical value of 0.05.

Based on the results showed in the second part of Table 4, we can conclude that p value of 0.2451 is higher than critical value of 0.05, which indicates that we accept  $H_0$  hypothesis. Therefore, we can claim that CFT causes GDP in the sense of Granger, but does not stand the other way around. Model performs statistically well, as confirmed by multivariate tests for autocorrelation and normality. Multivariate tests for testing the presence of autocorrelation are performed. They are presented in Table 5, and we can conclude that there is no joint residual autocorrelation, as shown by the use of the Rao F statistics. There is autocorrelation at lags 2 and 4, but there is no cumulative autocorrelation on those both lags.

Table 5. Multivariate test statistics for autocorrelation

Lags (h)	H <sub>0</sub> : There is no correlation at lag h		H <sub>0</sub> : There is no correlation at lags 1 to h	
	Rao F statistics	P-value	Rao F statistics	P-value
2	2.249311	0.0735	1.508844	0.1733
4	2.545689	0.0478	1.264499	0.2550
6	1.027894	0.3998	1.122545	0.3606
8	0.040402	0.9968	0.763026	0.7798
10	0.375561	0.8252	0.664747	0.8837
12	0.656653	0.6244	0.690244	0.8536

Source: Authors' calculation.

The Doornik-Hansen multivariate version of the Jarque-Bera test statistics is  $\chi_4^2 = 1,751$  ( $p = 0.782$ ) indicating that residuals do not depart significantly from multivariate normal distribution. We can conclude that the model performs statistically well.

Estimated Vector equilibrium correction model (VECM):

$$\begin{bmatrix} \Delta \widehat{GDP}_t \\ \Delta \widehat{CFT}_t \end{bmatrix} = \begin{bmatrix} -0.290 \\ (-4.088) \\ 0.334 \\ (2.772) \end{bmatrix} \begin{bmatrix} 1 & -0.807 & 0.021 & -6.040 \\ & (-4.372) & (4.156) & \end{bmatrix} \begin{bmatrix} GDP_{t-1} \\ CFT_{t-1} \\ trend \\ c \end{bmatrix} + \begin{bmatrix} -0.041 & -0.242 \\ (-0.301) & (-2.659) \\ -0.165 & -0.044 \\ (-0.719) & (-0.284) \end{bmatrix} \begin{bmatrix} \Delta GDP_{t-1} \\ \Delta CFT_{t-1} \end{bmatrix} + \begin{bmatrix} 0.161 & -0.038 \\ (1.214) & (-0.404) \\ -0.343 & 0.275 \\ (-1.530) & (1.737) \end{bmatrix} \begin{bmatrix} \Delta GDP_{t-2} \\ \Delta CFT_{t-2} \end{bmatrix} + \begin{bmatrix} 0.009 \\ 0.021 \end{bmatrix}$$

Note: t-ratios are in parentheses and  $\Delta$  is the first difference operator.

Results obtained imply that in the long run, 1% of change in CFT is associated with 0,8% of change in the same direction in GDP. It means that the rise in the consumption generates, in the long run, a growing trend of gross domestic product, but not vice-versa. On the basis of the estimate of the adjustment coefficient in the equation for the first difference of GDP (-0,29), the dynamics of GPD is adjusted each quarter by a bit less than one thirds towards a long-run relation with CFT.

#### *Impact of Shocks on the Dynamic Effects of Time Series in Model*

Since the long-run influence of CFT on GDP has been found, it is important to establish how the impact of CFT on GDP evolves through the time. These dynamics effects are computed via the forecast error variance decomposition calculation based on vector equilibrium correction model (VECM). The results of the forecast error variance decomposition calculation are showed in Table 6.

*Table 6. Forecast error variance decomposition calculation of gross domestic product and consumption of foreign tourists*

Quartiles	Gross domestic product		Consumption of foreign tourists	
	Shock in gross domestic product	Shock in consumption of foreign tourists	Shock in gross domestic product	Shock in consumption of foreign tourists
2	93	7	1	99
4	72	28	3	97
6	50	50	8	92
8	40	60	13	87
10	37	63	15	85
12	36	64	15	85

Source: Authors' calculation.

Note: rows sum to 100% for each variable.

It is reported that variability of gross domestic product is in larger portion explained by shocks in consumption of foreign tourists when horizon of observation is longer than two years. The contribution of consumption of foreign tourists is estimated to be 28% for one year, but 60% and 64% for two and three years, respectively. On the other hand, the variability of consumption of foreign tourists is almost all due to its own shocks for six quartiles. It amounts to 92%. After three years, shocks drop to 85% whereas shocks in GDP amount to 15%.

### CONCLUSION

Tourism represents one of the most important sources of foreign exchange earnings, employment of domestic labor and a source of growth for a country. The governments of a great number of countries consider tourism as a trigger of economic growth and social progress. Consequently, they seek to maximize the potentials of tourism through adequate strategies. In this paper we try to analyze the impact of the tourism sector on the economic growth of Serbia. Excluding 2020, the last decade brought significant tourism market changes in Serbia, resulting in positive shifts in all aspects of tourism performances, such as changes in the offer structure, number and tourist segments, and tourism performance indicators. The period encompassed by our research is 2007-2017, which in general shows growth in number of international and domestic travelers, as well as growth in international tourism receipts. This is also the period when a significant level of investments in major and supporting tourism infrastructure has been done by government and private investors, and that supported the growth of tourism offer and its matching international standards. In this research we have used 11 years' data to explain tourism performances of Serbia on the macro level, and in general, the development of the country on the basis of changes in the gross domestic product.

Conducting the cointegration analysis, we have showed the presence of one cointegrated vector, which implied the positive relation between consumption of foreign tourists and gross domestic product of Serbia in the period 2007-2017. More precisely, with the growth of 1% of consumption of foreign tourists, the gross domestic product grew 0.8%. Furthermore, the Granger causality test has showed the positive impact of CFT on the GDP, but not vice-versa. Based on the all results obtained in this research we can conclude that the TLEG hypothesis is confirmed for Serbia.

The results of the obtained research should be understood in a limited manner since the obtained results could potentially differ if a larger number of variables were included in the model. Future research will certainly include some more variables such as total tourism earnings, total number of international tourist arrivals, real exchange rate, number of employees in tourism, etc. in order to more accurately demonstrate the impact of tourism on the country's economic growth.

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## ХИПОТЕЗА О ПОДСТИЦАЈУ ЕКОНОМСКОГ РАСТА ОД СТРАНЕ ТУРИЗМА – ЕМПИРИЈСКО ИСТРАЖИВАЊЕ ЗА СРБИЈУ

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### Резиме

У многим земљама туризам позитивно утиче на привредни раст, имајући у виду да се кроз туристичке токове врши акумулација и трансфер капитала, дохотка али и технолошког знања и људског капитала. Да туризам може представљати добру опцију за подстицање привредног раста сведочи и чињеница да земље са развијеним туристичким секторима имају изнад просечан економски раст (Lanza & Pigliaru, 2000).

Како би се утврдила веза између туризма и привредног раста Србије, у раду је спроведено тестирање тзв. ГЛЕГ хипотезе која тврди да туризам позитивно утиче на привредни раст земље. Циљ рада јесте да се покаже да постоји позитивна веза између туризма, израженог у потрошњи страних туриста (ЦФТ) и развијености привреде Србије, израженој у бруто домаћем производу (БДП). У истраживању је спроведена коинтеграциона анализа на кварталним подацима за ЦФТ и БДП у периоду од 2007. до 2017. године. Користећи се Јохансеновом процедуром потврђено је постојање једног коинтеграционог вектора, што даље имплицира постојање позитивне везе између потрошње страних туриста и бруто домаћег производа Србије. Како би се одредио смер узрочности коришћен је Грејнцеров тест каузалности, којим је потврђено да ЦФТ утиче на БДП, али да обрнуто не важи. Конкретно, резултати су показали да са променом од 1% у ЦФТ долази до промене од 0.8% БДП у истом смеру. То значи да ће у дугом року пораст потрошње страних туриста генерисати растући тренд БДП-а, али не и обрнуто.

На основу оцењеног коефицијента прилагођавања у оцењеном векторском моделу са корекцијом равнотежне грешке (ВЕЦМ) у једначини за прву диференцу БДП-а (-0,29), БДП се прилагођава сваког квартала за нешто мање од једне трећине дугорочној равнотежној вези са ЦФТ. На основу декомпозиције варијансе грешке предвиђања показано је да је варијабилност БДП-а у већој мери објашњена шокovima у ЦФТ-у, него обрнуто. Контрибуција ЦФТ варијабилности БДП-а, процењена је на 28% након прве године, док је након друге и треће године тај проценат 60% и 64%. С друге стране, варијабилност ЦФТ се највише дугује сопственим шокovima (92%) за период од 6 квартала. Након 3 године, варијабилност захваљујући сопственим шокovima пада на 85%, док се 15% варијабилности остварује захваљујући шокovima у БДП-у. Да је модел статистички валидан потврђују спроведени мултивариоациони тестови за испитивање аутокорелације и нормалности.

На основу свих добијених резултата истраживања може се закључити да у случају Србије важи тзв. ГЛЕГ хипотеза, тј. да туризам позитивно утиче на привредни раст Србије. Добијене резултате треба свакако тумачити са резервом јер би се исход истраживања потенцијално могао разликовати уколико би у модел био укључен већи број варијабли. Будућа истраживања ће сигурно укључити још неке варијабле као што су укупна зарада од туризма, укупан број долазака међународних туриста, реалан девизни курс, број запослених у туризму, итд., како би се прецизније одредио утицај туризма на економски раст земље.