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## REVISITING THE TOURISM-LED ECONOMIC GROWTH HYPOTHESIS: EMPIRICAL INSIGHTS FROM SERBIA

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**Abstract:** *Although the tourism–growth nexus is extensively explored in the tourism and economics literature, empirical evidence specific to Serbia remains limited. To address this gap, the present study tests the tourism-led growth hypothesis (TLGH) by examining the impact of international tourism receipts, to the real GDP, using quarterly data. The ARDL model reveals that international tourism receipts have a statistically significant positive impact on economic growth. The TLGH is confirmed by the existence of a long run cointegration relationship between international tourism receipts and gdp growth, after accounting for control variables such as total fixed assets and real effective exchange rate. This finding suggests that, in the Serbian context, policies aimed at promoting international tourism could serve as an effective instrument for stimulating sustained economic growth.*

**Keywords:** *TLGH, international tourism receipts, GDP, ARDL, Serbia.*

### 1. INTRODUCTION

The development of tourism has emerged as a strategic priority for many countries, largely due to the sector's substantial potential to contribute to economic growth (Gwenhure & Odhiambo, 2017). Its sustained relevance positions tourism as an important driver of socio-economic progress across the globe (Băndoi et al., 2020). Despite the high sensitivity of the tourism sector to external shocks, such as the COVID-19 pandemic, tourism continues to be recognized as one of the contributors to economic growth. It remains one of the most significant sectors of the global economy, accounting for approximately 10% of global GDP and 10.4% of total employment (Travel & Tourism: Economic Impact Report 2024). In the case of Serbia, tourism has experienced notable growth over the past decade, based on the country's rich natural and cultural heritage, while also incorporating the growing segments of entertainment and business tourism. Serbia has made significant improvement toward establishing itself as a regional hub for congress tourism. This multidimensional potential should be harnessed in a sustainable and strategic manner to stimulate economic growth. Accordingly, the primary aim of this study is to empirically examine the relationship between tourism and economic growth, commonly referred to in the literature as the TLGH. The existing literature on the TLGH in the context of Serbia is limited to only few studies (Mitra, 2019; Mirović et al., 2020; Hristov Stančić et al., 2022; Pagria et al., 2022). However, neither of these incorporates control variables that may also influence GDP growth. Furthermore, Mitra (2019), Mirović et al. (2020), and Pagria et al. (2022), have examined the TLGH with Serbia considered as part of broader, cross-country analyses focused on the Western Balkans. Hristov Stančić et al. (2022) has conducted a country-specific analysis exclusively focused on Serbia examining the relationship between international tourism receipts and GDP based on data that end in 2017, whereas the present research extends the time horizon and provides additional insights by examining more recent developments and also using different econometric methodology.

### 2. LITERATURE

The TLGH, formally introduced as the “tourism growth model” by Balaguer and Cantavella-Jordá (2002), posits that international tourism serves as a driver of long-term economic growth, establishing a unidirectional causal relationship from tourism development to economic performance. According to this hypothesis, increases in tourist arrivals and tourism-generated revenues contribute to the expansion of national output (Song & Wu, 2022). Since its introduction, the TLGH has attracted growing scholarly attention and has been

tested across a wide range of geographical and economic contexts, encompassing both advanced and emerging economies, as well as mature and developing tourism markets (Chiriko et al., 2025). Extensive empirical research has investigated this hypothesis in various regions, including the European Union (Matzana et al., 2022), the African continent (Chiriko et al., 2025), and sub-Saharan Africa (Baidoo et al., 2022).

A comprehensive review of the empirical findings on the tourism growth nexus by analyzing 100 relevant research articles (Brida et al., 2016) has shown that in most cases, international tourism positively influences economic growth, although some studies report divergent results. Moreover, most empirical investigations employ a bivariate modeling framework, allowing for the assessment of both tourism-led growth and growth-led tourism hypotheses (Brida et al., 2016).

**Table 1:** TLGH in previous empirical findings

Author(s)	Country/Countries	TLGH confirmed
Eyuboglu & Eyuboglu (2020)	9 emerging countries	Yes
Balaguer & Cantavella-Jordà (2002); Perles-Ribeset al., (2017)	Spain	Yes; Yes
Dritsakis (2004); Mavrommati et al., (2024)	Greece	Yes; Yes
Gunduz & Hatemi-J (2005), Demiroz & Ongan (2005); Katircioglu (2009); Terzi (2015).	Turkey	Yes; Yes; No; Yes
Jalil et al. (2013)	Pakistan	Yes
Nepal et al., (2019)	Nepal	Yes
Sanchez Carrera et al., (2008)	Mexico	Yes
Aktar et al., (2014)	Bangladesh	Yes
Brida & Risso, (2009)	Chile	Yes
Chiriko et al., (2025)	27 African countries	Yes

Source: Compiled by the authors.

### 3. EMPIRICAL MODEL AND METHODOLOGY

To test whether tourism drives economic growth (TLGH), researchers often estimate the following regression model:

$$\ln Y_t = \beta_0 + \beta_1 \ln T_t + \beta_2 \ln X_t + \varepsilon_t \quad (1)$$

where  $Y_t$  denotes GDP at time  $t$ ,  $T_t$  represents tourism receipts, and  $X_t$  stands for a set of control variables.

In our analysis, we use two control variables: investment and the real effective exchange rate. Investment (total growth fixed assets) is included because it is one of the primary drivers of economic growth in many developing and transitional economies. The real effective exchange rate is also considered, as it directly influences a country's terms of trade, thereby affecting GDP growth.

We use the Autoregressive Distributed Lag (ARDL) model to test the TLGH in Serbia, due to its flexibility in dealing with time series that are integrated of different orders,  $I(0)$  or  $I(1)$ . As a preliminary step, we examine the stationarity properties of the variables involved. This step is essential to ensure that the ARDL bounds testing procedure can be validly applied.

The bounds testing methodology, developed by Pesaran and Shin (1999) and Pesaran et al. (2001), is then used to determine whether a long-run equilibrium relationship exists between tourism and economic growth. This approach allows for heterogeneous short-run dynamics and provides robust results even when variables are integrated of mixed orders.

If cointegration is confirmed, the ARDL model can be reformulated into an Error Correction Model (ECM), which captures both short-run adjustments and long-run equilibrium dynamics. The baseline ARDL( $p+1, q_1+1, q_2+1, q_3+1$ ) model can be expressed as the following unrestricted conditional ECM specification:

$$\Delta y_t = \alpha_0 + \sum_{i=1}^p \varphi_i \Delta y_{t-i} + \sum_{j=0}^{q_1} \beta_j \Delta x_{1,t-j} + \sum_{k=0}^{q_2} \gamma_k \Delta x_{2,t-k} + \sum_{l=0}^{q_3} \delta_l \Delta x_{3,t-l} + \theta_0 y_{t-1} + \theta_1 x_{1,t-1} + \theta_2 x_{2,t-1} + \theta_3 x_{3,t-1} + e_t \quad (2)$$

where  $y_t$  is real GDP,  $x_{1t}$ ,  $x_{2t}$ ,  $x_{3t}$  are independent variables (tourism receipts, total fixed assets, real effective exchange rate) and  $e_t$  is an error term. Initially, as in the traditional ECM framework, the F-test is applied to assess the null hypothesis that there is no level relationship among the variables ( $H_0: \theta_0 = \theta_1 = \theta_2 = \theta_3 = 0$ ). Rejection of the null hypothesis indicates the existence of a long-run (level) relationship between real GDP and the explanatory variables: tourism receipts, real effective exchange rate, and fixed assets.

#### 4. DATA AND DESCRIPTIVE STATISTICS

The data for research is obtained from Eurostat database and National bank of Serbia (NBS). The analysis is based on quarterly data spanning the period from 2010Q1 to 2024Q4. GDP and total gross fixed assets are seasonally and calendar adjusted data, chain linked volumes (2020), million euro data. International tourism receipts are in million euros. They are seasonally adjusted in EViews by using Tramo/seats option. Real effective exchange rate (REER) is expressed as the base index (2015=100), obtained from NBS. The REER is calculated by adjusting the nominal effective exchange rate for relative price levels between Serbia and its major trading partners. An increase in REER indicates a real appreciation (domestic goods become relatively more expensive, reducing competitiveness), while a decrease indicates a real depreciation (domestic goods become relatively cheaper, improving competitiveness). All data are log values.

Figure 1 presents data for international tourism receipt and GDP during the period of Q1 2010 – Q4 2024. International tourism receipt tripled in the 14 years period in Serbia. It increased from 605 mil. EUR in 2010 to 2,075 mil. EUR in 2024. International tourism receipts experienced a sharp decline of 25% in 2020 as a result of the COVID-19 pandemic. However, the reduction was temporary, since the receipts increased by 11% in 2021 compared with 2019. The increase in GDP during the whole period analyzed was 36%, whereas international tourism receipts increased by 243%.

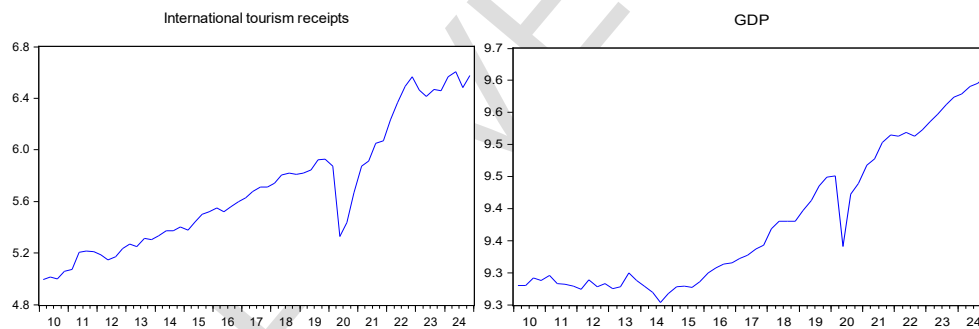


Figure 1: International tourism receipts and GDP, log values

#### 5. ECONOMETRIC ANALYSIS

Results for Dickey-Fuller unit root test are presented in Appendix (Table 6). All four variables real GDP, tourism receipts, REER and fixed assets are integrated of order one. In second step, we proceed with ARDL approach.

The optimal ARDL model was initially selected based on the lowest AIC, starting from a maximum of 4 lags. However, since serial autocorrelation was detected at lag four and eight, the model was re-specified by increasing the number of lags, resulting in the ARDL (3, 4, 1, 0) specification, which resolved the autocorrelation issue. Based on this specification, the conditional ECM is estimated without imposing any coefficient restrictions (Table 4).

Table 2 reports the results of the ARDL bounds testing procedure. The null hypothesis of no level (long-run) relationship between real GDP, international tourism receipts, real effective exchange rate, and fixed assets is rejected at the 5% significance level. However, the result is inconclusive at the 1% level.

**Table 2:** Bounds test results

<b>H<sub>0</sub> : There is no level relationship</b>	<b>5% critical value</b>		<b>1% critical value</b>	
	I(0)	I(1)	I(0)	I(1)
F statistic				
5.068	3.356	4.701	4.701	6.360

Note: If the value of F statistic is above the I(1) critical value, we reject null hypothesis and conclude that the variables have long run level relationship. If the test statistic is below I(0) critical value, we fail to reject the null hypothesis. For values between two critical values, i.e. between critical values I(0) and I(1), the test is inconclusive.

Table 3 reports the estimates for the long-run level equation. The statistically significant impact of international tourism receipts on GDP supports the TLGH. A 1% increase in tourism receipts is associated with a 0.081% rise in GDP. As expected, investments in fixed assets exert the most substantial influence on GDP growth. A 1% increase in fixed assets results in a 0.225% increase in output. Moreover, the real effective exchange rate has a positive effect on GDP growth. Although a stronger REER (or appreciation) may reduce export competitiveness, it can improve terms of trade by lowering import prices relative to export prices. While this effect mainly influences nominal net exports, in some cases it can also support real GDP growth by reducing input costs and stimulating domestic consumption and investment.

**Table 3:** ARDL, estimate of level equation

<b>Dep. var log GDP (<i>lgdp</i>)</b>	<b>Serbia</b>
Log int. tourism receipts ( <i>ltour</i> )	0.081*** (0.019)
Log fixed assets ( <i>lasset</i> )	0.225*** (0.035)
Log real effective exchange rate ( <i>lreer</i> )	0.251*** (0.078)

Notes: Standard errors in parentheses. \*\*\*, \*\* and \* denote respectively statistical significance at the 0.01, 0.05 and 0.1 levels.

The speed-of-adjustment coefficient is negative and statistically significant (Table 4), indicating that real GDP adjusts toward its long-run equilibrium path with tourism receipts, fixed assets, and the real effective exchange rate. The coefficient of -0.441 suggests that approximately 44% of any deviation from equilibrium is corrected within one period, implying moderate convergence speed.

**Table 4:** Estimate of ECM of the ARDL (3,4,1,0) , TLGH

Dependent variable $\Delta lgdp_t$	
$z_{t-1}$	-0.441*** (0.103)
$\Delta lgdp_{t-1}$	0.147 (0.146)
$\Delta lgdp_{t-2}$	0.207* (0.104)
$\Delta ltour_t$	0.070*** (0.017)
$\Delta ltour_{t-1}$	-0.002 (0.022)
$\Delta ltour_{t-2}$	-0.007 (0.020)
$\Delta ltour_{t-3}$	0.023 (0.017)
$\Delta lasset_t$	0.098**

	(0.039)
Dummy (Q3 2020=1)	0.054**
	(0.025)
Constant	2.645***
	(0.623)

Notes:

- 1) The regression follows the conditional ECM model presented in equation (2), applying the ARDL(3,4,1,0) specification. The variable  $z_{t-1}$  represents the equilibrium correction term lagged by one period, derived from the estimates reported in Table 3.
- 2) Adj  $R^2=0.849$ ;  $N=56$ ; Jarque-Bera test for normality:  $JB = 1.80 (0.407)$ ; Breusch-Godfrey LM test for autocorrelation: BG LM test (4) = 6.41 (0.171), (8) = 13.71 (0.090), (12) 17.53 (0.131).
- 3) Standard errors in parentheses. \*\*\*, \*\* and \* denote respectively statistical significance at the 0.01, 0.05 and 0.1 levels.
- 4) One impulse dummy variable is included to take only non-zero value 1 for Q32020 to capture the impact of the COVID-19 pandemic

## 6. CONCLUSION

The results support the validity of the TLGH in Serbia. Although the direct impact of international tourism receipts on real GDP is relatively modest, its statistical significance confirms that tourism is a relevant contributor to economic growth. This finding suggests that, in the Serbian context, policies aimed at promoting international tourism could serve as an effective instrument for stimulating sustained economic growth. Continued investment in the tourism sector is therefore both justified and strategically important. As traditional sources of growth, such as investments in fixed assets, gradually reach their saturation point, tourism may play an increasingly more significant role in supporting GDP growth in the years ahead.

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