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Studying the Relationship between Tourism and Economic Growth in Jordan during (1995-2022) Using the Autoregressive Distributed Lags (ARDL) Model

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Abstract :

This study primarily aimed to reveal the nature of the relationship between Jordan's economic growth and tourism during (1995 - 2022). Therefore, the autoregressive distributed lag (ARDL) model was used to achieve this objective,. Through the empirical findings, a long-run equilibrium relationship was revealed to exist between international tourism revenues and the gross domestic product (GDP). A unidirectional relationship was unveiled through the Granger causality test, which flows from international tourism revenues to GDP but not the reverse. Regarding Jordan, the tourism-led growth hypothesis was confirmed according to the relationship revealed to exist between tourism and economic growth.

Keywords: Autoregressive distributed lags (ARDL); economic growth; Jordan; tourism.

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1. INTRODUCTION:

Tourism is progressively acknowledged as a fundamental source of revenue and a significant instrument in reducing poverty, advancing economic growth, and fostering peace, environmental protection, a worldwide intercultural understanding, and food security especially in emerging or developing economies (Andrew, 2016, p. 31). As reported by the World Tourism Organization (2018), the advocacy of new destinations, the rise of international exchanges, and the massive investments in tourism during the past decades have aided this industry into becoming to a major constituent for advancing, increasing export revenues, improving infrastructure, promoting business, and creating employment opportunities (Alina et al, 2020, p867).

In Jordan, tourism is a rapidly expanding industry due to the richness of the Hashemite Kingdom of Jordan in tourist attractions that appeal to tourists from various parts of the world. For many factors, especially those related to heavenly religions, visiting Jordan has become of spiritual nature. In the hilly area west of the Jordan River, there are sacred shrines for followers of the world's monotheistic religions. In the East Bank, there are three world-famous tourist sites: Petra, Wadi Rum, and Jerash. Tourists can reach all of these sites easily via several roads from Amman or from other regions in Jordan (Zamil, 2011, p42).

Despite the enormous tourism potential of the State of Jordan and the great efforts made by the government in this field, the tourism sector of Jordan remains burdened by various hurdles related to low investment in tourism, lack of funding, the marketing the tourism product, and institutional and administrative challenges. However, the lack of competitiveness of the tourism industry is the chief obstacle because of the improper use of tourism resources, the expensive tax levy, and the high costs of tourism services in contrast with other countries (Mohammad et al, 2019, p08).

1.1. Statement of the Problem:

Previous empirical studies on the association of tourism to economic growth showed inconclusive outcomes, including ones that addressed the relationship between the two variables in the Jordanian economy (Maghlawi et al., 2020; AL-Tamim, 2020).

Based on the above, the following problem can be raised:

What type of relationship does tourism and economic growth have in Jordan during (1995-2022)?

1.2. Hypothesis/ hypotheses:

H_1: Tourism culminates in economic growth.

H_2: Economic growth influences tourism activity.

1.3. Significance of the Study :

This study's importance stems from the significance of tourism in the economy of Jordan. Its government has identified that to stimulating economic performance is aided by the tourism sector

1.4. Objectives of the Study:

Mainly, the current study specifies the quality of the relationship between Jordan's tourism and its economic growth as an ultimate purpose, specifically during (1995 - 2022). Other objectives include the following:

- Clarifying the theoretical relationship linking tourism and economic growth.
- Providing recommendations predicated on the outcome that will be obtained.

1.5. methodology of the Study:

In our research, we used a descriptive and analytical approach appropriate to our topic. This approach is utilized to determine the progressions of the phenomenon in Jordan as well as the trends of the variables studied by analysts in parallel with these developments. It should be noted that we used the ARDL methodology because the data we obtained was few and its time series was short. Moreover, the ARDL methodology is specifically applied to statistically approach the issue problem of short time series - and we found many studies that used this methodology in cases similar to or similar to ours.

1.7. previous researches: (literature review)

Both the empirical and theoretical literature are contained within this section of the study in relation to the connection that links tourism and economic growth:

Tourism and economic growth, in relation to each other, were approached by two separate levels of economics. The Keynesian multiplier theory is the origin of the first level. Following this theory, it is possible to consider international tourism to be an extrinsic aggregate demand element, which benefits employment and income, etc. This induces economic development through the multiplier.

In contrast, most literature focuses on the second level, exploring the possibility of implementing new trade theory and endogenous growth theory to the tourism sector of which the export-led growth hypothesis is an example (Hakan et al, 2015, p. 1076). Theoretically, the tourism-led growth hypothesis (TLGH) is stemmed from the export-led growth hypothesis (ELGH), which posits that amplifying exports can create economic growth (Indriana, 2022,P103).

According to TLGH, economic growth is incited by advancing the tourism sector. Further growth in economy occurs after a boost in tourism revenue and/or in tourist arrivals. This hypothesis indicates that the earnings of the current labor force is amplified due to investments in the tourism sector increase, simultaneously, creating new job

opportunities inside and outside the sector, which stimulates economic growth (Emrullah, 2022, p03).

Extensive International research have examined tourism's relationship to economic growth and vice versa, including:

By using multiple autoregression, the study (Maghlawi et al., 2020) sought to specify the bond connecting gross domestic product to Jordan's tourism spending and income from 2000 to 2018. Its findings showed a strong positive relationship with a significant effect between the gross domestic product and tourism revenues.

Via the ordinary least squares method, AL-Tamim (2020) investigated the outcomes occurring to the growth rate of GDP from the enhancements in the Jordanian tourism sector in (2010 - 2017). It found inconsequential effects of the ratio of tourist arrivals on the GDP growth rate as well as that of Jordan's tourism sector revenues to exports from 2010 to 2017. However, it discovered a significant negative effect on the growth rate of GDP caused by the ratio of the sector spending to imports.

Through 2003 to 2019's annual time series data, Sana (2021) investigated tourism's promotional contribution towards the Saudi Arabia's economic growth. Furthermore, for checking the variables' relationship, the investigation involved the Granger causality test, unit root test, cointegration regression test, Johansen cointegration test, and correlation coefficients. Its findings revealed a long-term relationship linking economic growth to tourism expenditures, tourism revenues, and incoming tourists' quantity, whose relationship with economic growth is stronger compared to other criteria.

Sushil (2019) took the case Nepal from 2000 to 2018, scrutinizing the influence of tourism over its economic growth through the multiple regression model. In addition, the dependent variable was GDP, an indicator of economic growth, whilst the Nepalese rupee/US dollar exchange rate and tourist arrivals were independent variables. The results show GDP and tourist arrivals' relationship to be both positive and significant compared to the exchange rate that has a positive yet insignificant relationship with GDP. Finally, it concluded that tourism and economic growth positively affect each other.

1.8. Organization of the Study:

To achieve the main goal of this study, it was divided into five sections: starting with the introduction. Section 2 contains the theoretical framework of the study and section 3 reviews literature concerned tourism as well as economic growth in terms of their relationship. Finally, section 4 covers the applied study while section 5 contains the conclusion, including the results and recommendations of the study.

2. The Theoretical Framework of the Study:

2.1.Tourism:

Based the United Nations World Tourism Organization (2009), tourism involves any action from people travelling and remaining in locations away from theirs for a maximum of year for work-related purposes or leisure purposes to name a few (Shahnawaz et al, 2010, p24). Tourism can be local (within the traveller's country) or international. Tourism can aid economic activity by being a means of foreign exchange earnings that promote financial capital formation and infrastructure investment. Moreover, tourism helps create jobs, increases income, and stimulates other sectors of the economy (Wanvilai, Jorge, p.297).

2.2.Economic Growth:

In macroeconomic theory, economic growth is explored extensively (Vladana, 2015, p). It can be defined as a rise in real GDP or per capita GDP (Chathuni et al, 2022, p01).

3. Applied Study:

This study addresses economic growth in Jordan through international tourism revenues by using 1995 to 2022's annual data series. The World Bank database was the source from which we obtained the time series data for this study's selected variables.

3.1.Study Model:

The model studies the effects on economic growth by international tourism revenues. This is demonstrated through the equation:

$$\text{GDP} = f(\text{International tourism receipts}) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(01)$$

Where:

GDP growth rate: is Gross Domestic Product growth rate.

f: is International tourism receipts.

Therefore, the linear model of the standard study can be written in the form:

$$\text{GDP} = \beta_0 + \beta_1 \text{International tourism receipts} + \mu_i \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(02)$$

Where:

β_0،β_1: are the model estimators or parameters;

μ_i: Random error term.

We relied on the model data shown in the following table:

Table N°01: Data on Study Variables during (1995-2022)

GDP	International Tourism Receipts. Billion dollars	years
6.73	0.973	1995
6.93	1.03	1996
7.25	1.06	1997
7.91	1.08	1998
8.15	1.02	1999
8.46	0.935	2000
8.98	0.884	2001
9.58	1.25	2002
10.20	1.27	2003
11.41	1.62	2004
12.59	1.76	2005
15.06	2.43	2006
17.11	2.75	2007
22.66	3.54	2008
24.54	3.47	2009
27.13	4.39	2010
29.52	4.35	2011
31.63	5.12	2012
34.45	5.14	2013
36.85	5.52	2014
38.59	4.97	2015
39.89	4.94	2016
41.61	5.55	2017
43.37	6.22	2018
44.99	6.76	2019
44.18	1.75	2020
45.74	3.43	2021
48.1	5.816	2022

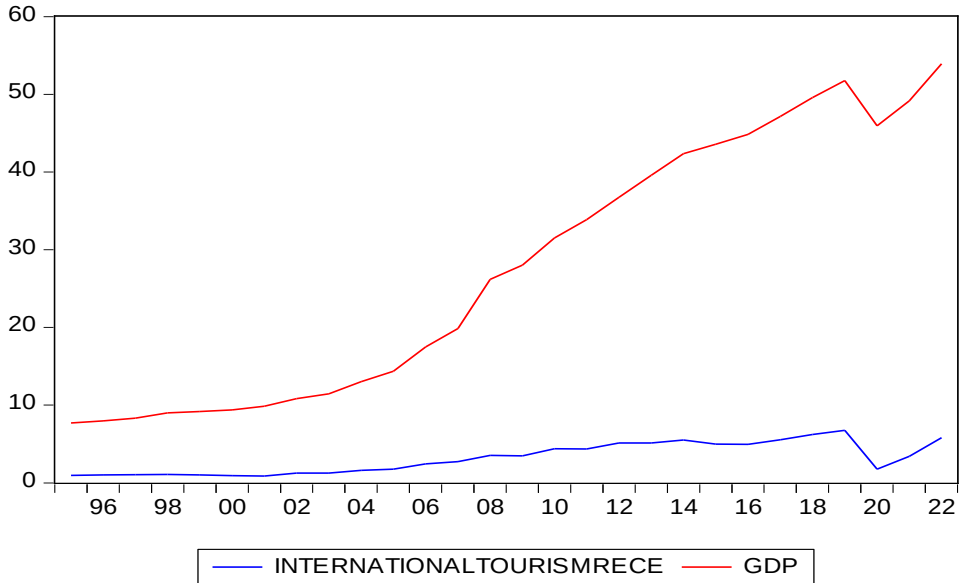
Source: https://data.albankaldawli.org › ST.INT.RCPT.CD

3.2.Stability Test:

The first step we can take is to take a reflective look at the data. This can be done by observing data scatter plots, for example.

This produces the following charts:

Figure N°01: Line Chart of Study Variables to Give a Contemplative Look at the Series.



Source: EViews Student Version Lite

In the above graphics, changes in international tourism revenues are fluctuating, especially in recent years, while the dependent variable, GDP, is more stable.

After giving commands to the program to test stability - the pre-tests are a variable, and the program chose a 7 degree of slowness - and after performing the Dickey-Fuller test.

The series is unstable given the probability value of the Dickey-Fuller statistic of 0.9863, which exceeds 0.05. It can be noted that the series contains a general trend because the general trend variable is significant. The same results are obtained in three cases.

As for the independent variable, the series is unstable at level 1, whereas it is stable at level .

The series is stable given the probability value of the Dickey-Fuller statistic of 0.000, which is under 0.05. It can be seen that the series contains a general trend because the general trend variable is significant.

3.3. Cointegration Test (Bounds Test)

In comparison, it was revealed that the remaining errors of the study model have no serial correlation problem by examining its serial correlation. Additionally, the value calculating F and Chi-Square was not significant at 5% level of significance through the Breusch-Godfrey Serial Correlation LM test (BGLM Test). Consequently, we accept the null hypothesis claiming that the estimated model lacks serial correlation problem between its errors.

Using the heteroskedasticity test, it was found that the value of both the calculated F and Chi-Square was not significant at the 5% level. Consequently, we accept the null hypothesis proclaiming that the estimated model does not have a heterogeneity problem of the random error of the residuals.

On the other hand, when extracting the regression line equation through the ARDL method, we compare the "F-statistic" values of I1 and I0. We note that the “F-statistic” value is 19.35, higher than the values or the upper limit of I1, as this equation is integrated (there is cointegration between the variables).

The output of eviews demonstrates the outcome of the ARDL test, where the calculated F-statistic value was equal to (11.35), which exceeds the upper limit value of the critical values in the model at 1%, 2.5%, 5%, and 10% significant levels. These results support rejecting the null hypothesis. There is a long-term equilibrium relationship between gross domestic product and the independent variable, international tourism revenues in the model in Jordan. This implies a stable economic relationship between them in the long-term, which means that the variables move convergently.

Additionally, measuring the model with time lag periods heeds results shown through the output of eviews, including ARDL (1, 0). This is predicated on the Akaike criterion (AIC) values, which is amongst the twenty topmost model specifications due to contributing the smallest value to that criterion and to being automatically detected by the utilized program. Value (0) suggests no time lag and Value (1) signifies a one period time lag, et cetera.

The long-term relationship can be drawn through the output of eviews according to this:

GDP = 0.78*GDP(-1) + 0.69*INTERNATIONALTOURISMRECE + 0.19 + 0.29*@TREND

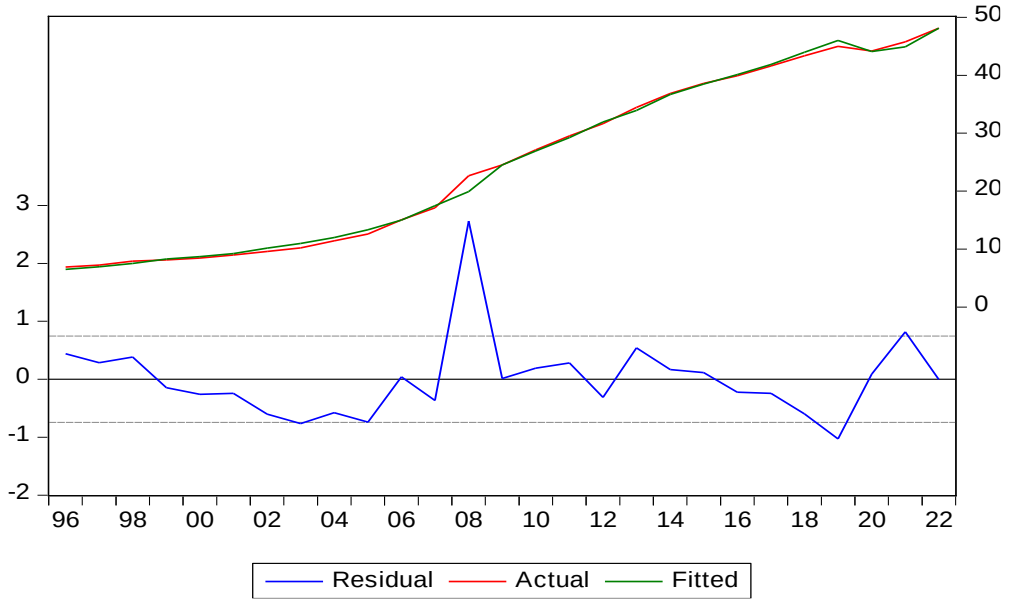
The short-term relationship (cointegrating equation) can be interpreted through the output of eviews according to:

D(GDP) = 0.69*D(INTERNATIONALTOURISMRECE) + 0.29*D(@TREND()) - 0.21*(GDP - (3.23*INTERNATIONALTOURISMRECE + 0.92 + 1.36*@TREND())

3.4. Statistical Evaluation of the Estimated Model:

1% level of significance, including the anticipated negative sign, has been achieved by the error correction term according to the unconstrained error correction model. Reverting to a long-term equilibrium position requires the correction of around 21.57 % of instability in the short-term yearly. Furthermore, all independent variables are statistically significant, which would give us a statistical view of the model's effectiveness in explaining changes in the dependent variable. We can see this in the following figure, where we notice the apparent great similarity in the behavior and path of the lines of both estimated and original series.

Figure N°02: The Original Series, the Estimated Series, and the Estimated Remainder

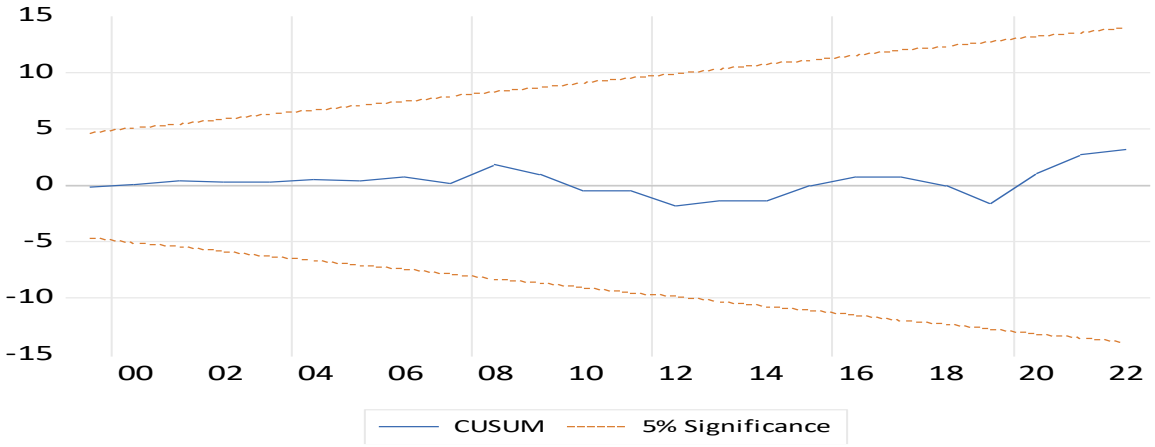


Source: EViews Student Version 12

3.5. Testing the Model's Structural Stability:

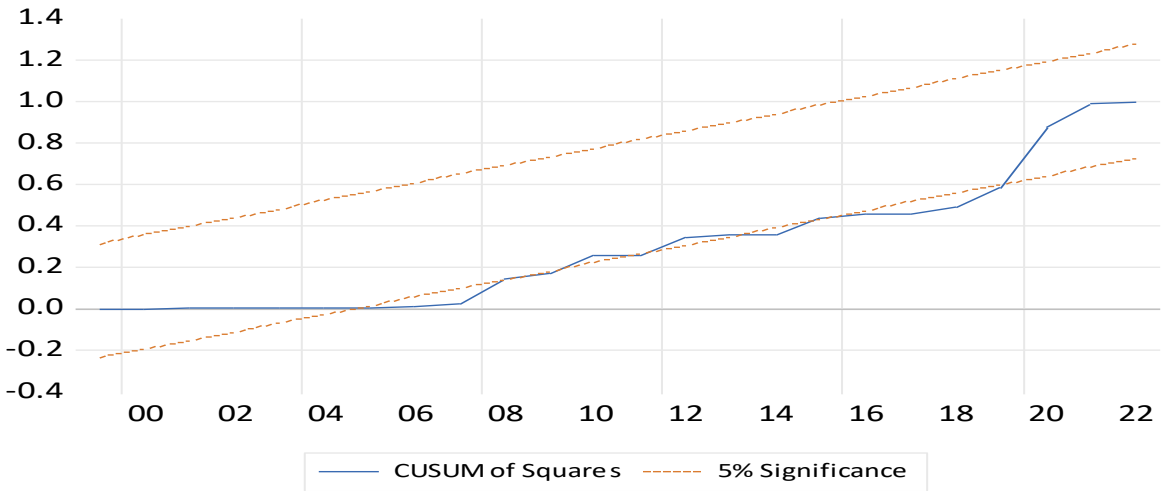
The cumulative sum of the squares of the recursive residuals and the cumulative sum of the recursive residuals were tests selected to examine the stability of the model's parameters. We note the stability representing the model throughout all study durations, including other various tests we conducted, such as the Heteroskedasticity Test, ARCH, and other tests. The following two charts can be illustrated:

Figure N°03: Cumulative Sum Test Line for Recycled Residues (CUSUM).



Source: EViews Student Version 12

Figure N°04: Cumulative Sum of Squares Test Curve for the Recursive Residuals CUSUM SQ



Source: EViews Student Version 12

We notice that both figures fell within the confidence range (the two red lines) throughout the study period, except the short period in Figure 03. Therefore, we can rely on this model and assume its stability in the long-term.

3.6. Granger Causality Test:

After giving the commands to the program, we note in the Prob column that GDP has no Granger causality on international tourism revenues, as the probability value was 0.0228, under 0.05.

The probability value of 0.677 is higher than 0.05; therefore, international tourism revenues have a Granger causal relationship with GDP, and thus accepting the first hypothesis, which establishes that international tourism revenues lead to economic growth however not vice versa.

4. CONCLUSION:

4.1. Results:

After presenting the research, we can extract a set of important results, which we list as follows:

- 67% of the change in GDP was due to the change in international tourism revenues after calculating the coefficient of determination or interpretation factor R-squared, where its value was 0.67. In contrast, the remaining 33% (100% - 67% = 33%) is due to other variables that contribute to the GDP, such as agriculture and industry - especially the pharmaceutical industries and other variables that can contribute to Jordan's GDP during the studied period.
- Considering outcomes of the unconstrained error correction model, a 1% significance level concerning the error correction term has been achieved, including the anticipated negative sign. Restoring the long-term equilibrium position requires rectifying around 21.57% imbalance in the short-term yearly. Furthermore, the independent variable is also statistically significant, which would give us a statistical insight into the mode's effectiveness in terms of clarifying the differences happening to the dependent variable. We noticed an apparent great similarity in the behavior and path of the lines of both the original and estimated series.
- The experimental results indicated that GDP and international tourism revenues are connected by a long-term equilibrium (co-integration). Additionally, it was uncovered through the Granger causality test that international tourism revenues and GDP possess a one-way relationship, but not vice versa. This is because the international tourist comes to the country for its cultural heritage and tourism, rather than its economy. This does not interest him as much as the archaeological sites and tourist areas that the country abounds with, such as Jordan. In general, the findings reveal that tourism is a major driver of economic growth, and they confirm the hypothesis stating that Jordan's economic growth is led by tourism (TLGH).

4.2.Recommendations:

- It is necessary to provide the required funding for tourism promotion and work to target new tourism markets to attract international tourists from different parts of the world, improving economic growth in Jordan.
- Countries should encourage investing in tourism-related industries for all kinds of local and foreign investors by reducing taxes and fees on them because this ultimately enhances the country's gross domestic product.

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