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Dynamics of Tourism and Economic Growth in the Oil-Exporting Economies: A Tri-Variate Causality

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Abstract
The causality between tourism growth and economic growth would not be very accurate regardless of the environmental factors affecting them such as the oil revenues. The present study investigates the effects of oil revenues on the causality between them, to present the difference between the two variables in oil-exporting countries. We examined the causal relationship using Dumitrescu and Hurlin's model (2012) and the trivariate method in 9 oil-exporting countries from 1996 to 2019. The results show a one-way causal relationship between economic growth and tourism promotion in two variate causality but no relationship was found between them in trivariate. However, one-way causality is weakened when oil revenues are introduced. The causality of economic growth is not confirmed in the presence of oil revenues, as the causal relationship in the two-variable test is affected by the abundance of oil revenues.

Keywords: Tourism, Economic Growth, Oil-exporting Countries, Tri-Variate Causality.
JEL Classification: F49, L83, O47, C21, C23

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1- Introduction

The role that tourism can play in enhancing direct and indirect employment, increasing foreign exchange proceeds, boosting domestic industries, expanding international cooperation, and so on has changed how the countries look at tourism, especially in government policy. The tourism industry contributed 10.4% to the global GDP and provided jobs for 319 million people (WTTC, 2019).

In fact, economic growth is an critical macroeconomic variable, especially for developing countries. Growth is affected by several factors, among which the tourism industry can promote it. The crucial role of tourism in the economy includes job creation, infrastructure development, foreign exchange earnings, increasing demand for domestic goods, and increasing the possibility of foreign investment (WTTC, 2019).

This is more serious and important, especially for economies that depend on natural resources, such as oil-exporting countries. Studying the role of economic sectors such as tourism in the growth of resource-dependent economies is attractive and important for experts as well as policymakers. There are several studies on the channels through which the abundance of resources can affect growth.

Revenue generated from tourism could help oil-exporting countries to achieve development objectives and to build a resilient economy through diversification. Tourism development leads to the improvement of airports, hotels, shops, roads, restaurants, and the repairing of historic sites. Given the dependence of the oil-exporting economies on crude oil exports and the high vulnerability of these economies to oil price volatility, the development of the tourism industry can reduce this vulnerability and diversify oil-exporting economies. Therefore, there is a challenge that oil has contributed to the causality of economic growth for tourism development, or the relationship has been weakened by oil revenues.

Therefore, we use Dumitrescu and Hurlin's (2012) test to examine panel causality for measuring two-way casualties and comparison of the results obtained with tri-variate causality considering the effect of oil revenues in 9 oil-exporting countries. The first one considers both cross-sectional dependence and heterogeneity.

In this regard, we examined first, the two variables of causality of tourism and GDP growth for oil exporting economies. In the next step, the relationship is examined in the form of a triple causality, to realize whether oil revenues change the causality of tourism and GDP growth. It assesses whether tourism development contributes to diversifying the revenues of oil-exporting countries.

The rest of the study is structured as follows. Section 2 reviews the literature on this issue. Section 3 describes tourism and economic growth in Iran and other oil-exporting countries. Section 4 provides the methodology and section 5 interprets the empirical results. Finally, section 6 presents concluding remarks.

2. Tourism in the Oil-exporting Economies

We examine the dynamics of tourism activity and GDP growth in Algeria, Ecuador, IR Iran, Venezuela, Kuwait, Angola, Nigeria, Indonesia, and Saudi Arabia. Figure 1 shows the number and trend of international tourist arrivals in nine oil-exporting economies from 1997-2018.

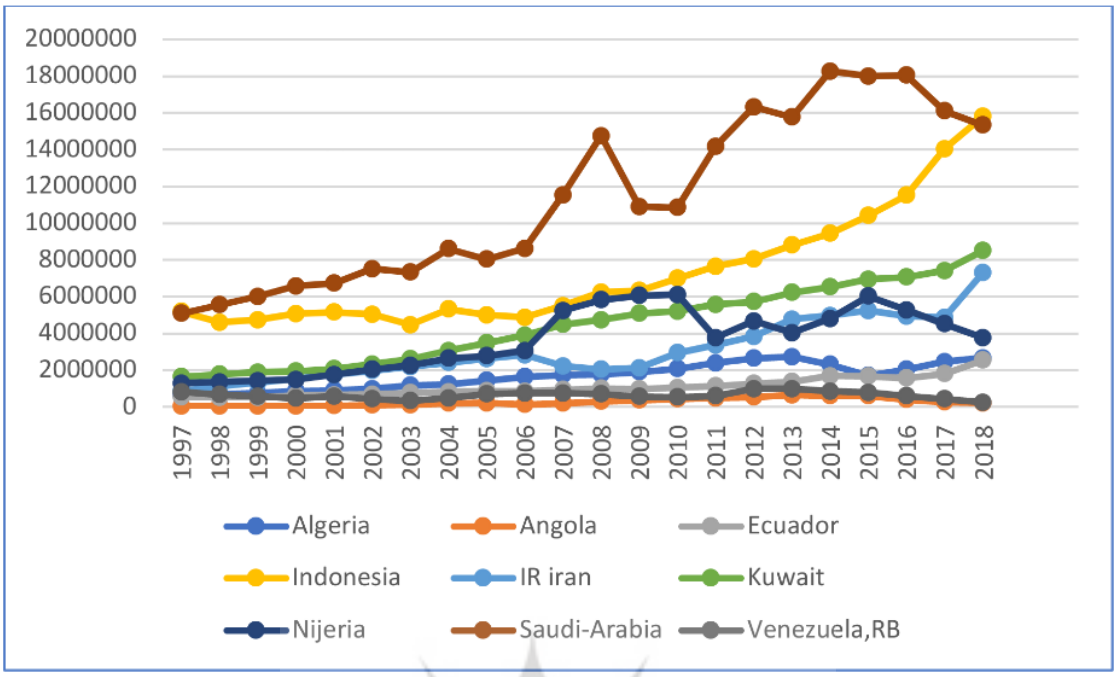

Fig 1. The Trend of International Tourist Arrivals in 9 Oil-exporting Countries (1997-2018)
Source: UNWTO, 2018a

During the last two decades, the number of incoming tourists to the 9 oil-exporting countries, notably Indonesia and Kuwait has increased significantly, but in some cases, such as Iran, the growth of incoming tourists has not been in tandem with the growth elsewhere.

According to statistics, the average growth of tourism during the period 1996-2019 was higher than economic growth, which shows the potential for tourism development in these countries. Put differently, it can be seen in Figure 2 that the radius of average tourism growth in most economies is greater than economic growth.

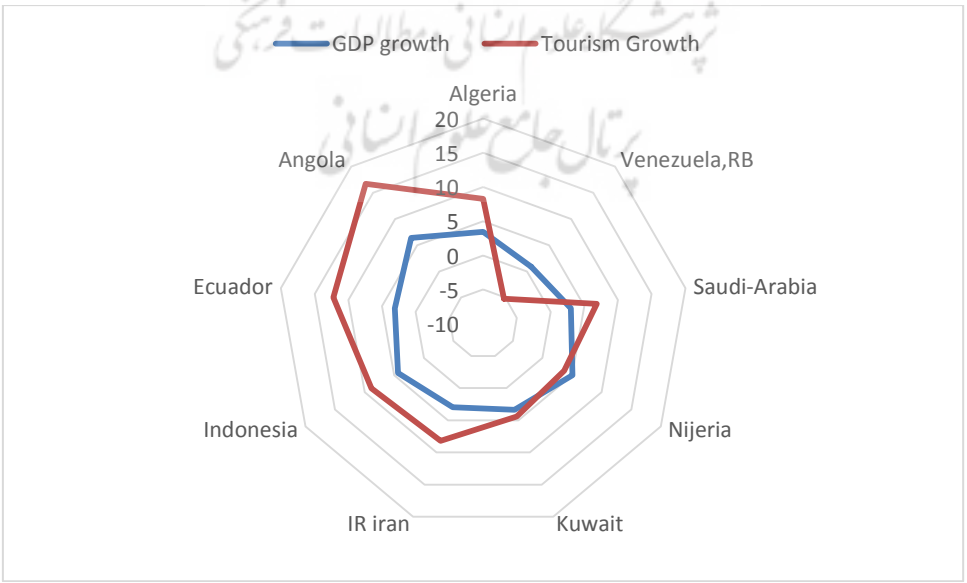

Fig. 2. Radius of Tourism Average Growth and Average Economic Growth of 9 Oil-exporting Countries (1996-2019)

Source: UNWTO, 2018b

In 2015, Iran ranked 136 out of 184 countries in terms of tourism contribution to GDP. Figure 3 indicates the induced, indirect, and direct effects of Travel and Tourism on Iran's Economy (WTTC, 2019).

GDP 2015 (Thousand Billion Dollars) Employment (Thousands)

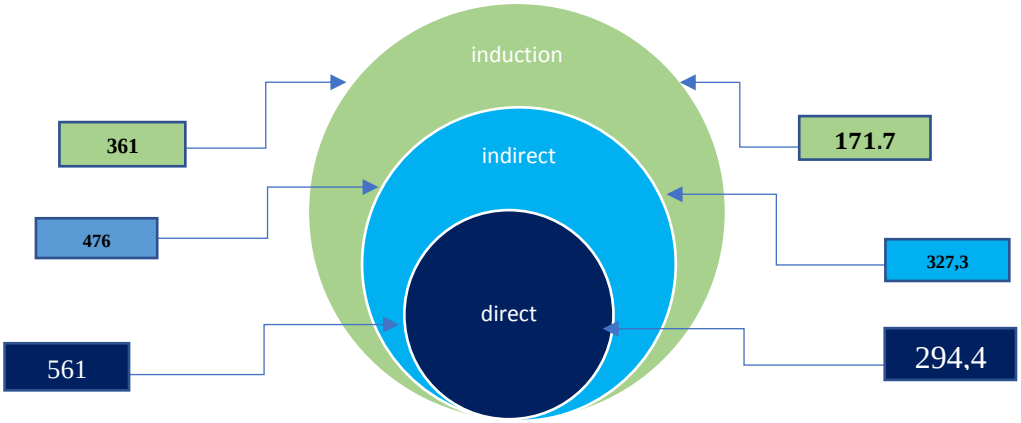

Fig. 3. Induced, In direct, and Direct Effects of Tourism and Travel on Iran's Economy (Source: WTTC, 2019)

As stated, tourism has direct and also indirect effects on GDP. Figure 4 shows the impact of total tourism effect on GDP growth in Iran over the period 2006-2016 and a forecast for 2026. (WTTC, 2019)

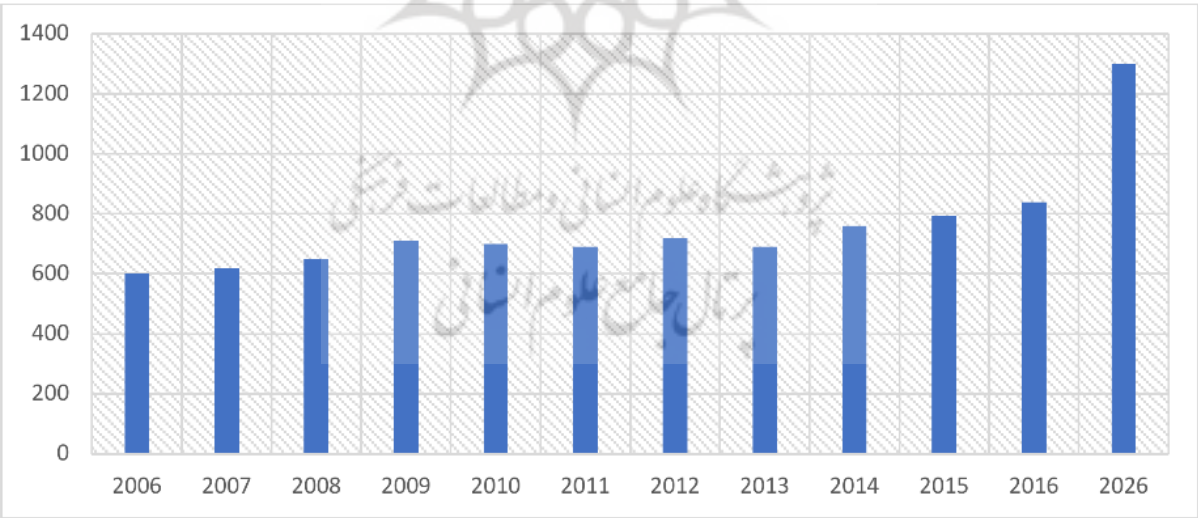

Fig. 4. The Effect of Tourism on Iran's GDP Growth (2006-2026)

Source: WTTC, 2019

3. Theoretical Background

Tourism is a multidimensional activity and has backward and forward linkages with other economic activities. Investment in the tourism industry is increasing all over the world with tourist attractions. This industry not only can promote the green economy but also increase foreign exchange revenues. Moreover, tourism earnings are stable and at the same time, it can be achieved in the short term. Also, the required manpower does not need long-term training.

Most of the research in the field of tourism has been done in the area of tourism effects, and among them, examining economic effects is more than other investigations. Regarding the economic effects, increasing foreign exchange earnings and government revenues, job creation, regional growth, and development are considered positive effects (Sheibaninia, et al., 2022).

We can also point to the role of tourism on important economic variables such as employment. Revenues from tourism, while increasing tax revenues, will reduce unemployment and increase life quality for citizens. In this case, the cost of tourism development opportunities may be small or even close to zero. These effects can take the form of retail, restaurant, hotel, transportation, and entertainment. Therefore, the effect of tourism on the economy includes a wide range of industrial and service sectors (Jani, et al., 2020).

Regarding the direct effect of tourism on GDP growth, by increasing tourists in a country, the demand for consumer goods and also services increases, and consequently production and employment increase, which in turn results in increased economic growth (Dogru and Sirakaya-Turk, 2017, p. 32).

These effects are shown in the broad dimensions and aspects of the economy. Employment, increasing the demand for local products, increasing the incomes of the target community and reducing inequalities, attracting foreign capital, improving small and medium-sized businesses, maintaining and upgrading infrastructure, and preserving cultural heritage are among them. All these and other factors affect the economic growth of the region (Doosti-Irani and Dehghan Khavari, 2021).

Increasing foreign exchange proceeds and thus improving the payment balance are other effects. Although, there is no consensus among researchers about the effect of the tourism industry on economic growth and development, and different effects have been obtained among different countries (Paramati, et al., 2017).

The indirect impact of tourism on GDP growth can also be referred to as the impact of the development of this sector on other economic activities. The positive effects of tourism development on public transportation, the aviation industry, hotel management, retail, travel and tourism agencies, and restaurants are among them. In its 2019 report, the World Travel and Tourism Council examined the share of tourism in developing and developed economies and concluded that the share of developing countries will increase day by day (WTTC, 2019). Therefore, the tourism industry could be a leading sector in the economy and a stimulus for other economic activities to elevate GDP growth.

On the other hand, GDP growth can positively affect the development of tourism by improving tourism-related infrastructure and services. These include the development of transportation and roads, information and communication technology, accommodation and catering, public health, as well as recreational businesses, which contribute to tourism development (UNWTO, 2018a).

While the dynamics of tourism and GDP growth have been elaborated in the

literature, this relationship needs to be examined in the context of oil-exporting countries. The fundamental question is the role that oil revenue has played in the dynamics of GDP growth and tourism.

Some economists attribute the slow economic growth in oil-exporting countries to the underdevelopment of non-oil export, especially the tourism industry. There are also theories on resource curse and channels that the oil sector can adversely affect services. This can lead to an increase in the share of unproductive activities and adversely impact entrepreneurship in economic activities. Hence, fewer savings and investments occur in oil economies (Gylfason, 2001).

Also, oil-dependent countries invest in their natural resources such as oil extraction to achieve more oil revenues. It makes them reluctant to invest less in other revenue-generating activities. An important question is: Does this important issue need to be addressed whether relying on oil revenues has disrupted the effect of tourism on growth?

On the other hand, another important issue in reforming the role of oil revenues is the necessity of export diversification in most developing countries that become an objective to provide foreign exchange earnings (Matthew et al., 2021). Therefore, the role of tourism in the growth of oil-exporting economies is important for experts as well as policymakers.

4. Review of the Literature

A leading study by Blake, Sinclair, and Soria (2006) examined how human and physical capital, innovation, and also the competitive environment can enhance tourism using computable general equilibrium modeling and business survey data analysis. The results indicated the contribution of these elements to improving the productivity of the industry.

Liu and Chenguang Wu (2019) examined the effect of tourism on GDP growth in Mauritius using a DSGE model over the period from 1999 to 2014. The simulation results indicate that the Mauritian GDP would increase by 0.09 percent if productivity is improved by 1 percent, which means that tourism contributes to GDP growth.

Nargesi, et al. (2019) explored the relationship between GDP growth, tourism, and financial development in Iran using the VEC Model over the period 1989-2015. The results show a significant and positive relationship between both GDP growth and tourism as well as economic growth and financial development.

Ali, et al. (2018) investigated the effect of macroeconomic shocks on the Malaysian tourism industry using a structural vector autoregression (SVAR) model over the period from January 2001 to December 2012. The results indicated that GDP growth, oil price shocks, export, and exchange rates adversely affect tourism revenues.

Brida, et al. (2016) examined the nonlinear relationship between GDP growth and tourism by a methodology that combines co-integration with asymmetric adjustment thresholds. The results show the nonlinearity of Brazil, which explored the dynamics of tourism and growth. They indicated that the threshold autoregressive model explains this relationship very well.

Sultana (2016) explored the economic role of tourism in Bangladesh using a multiple-regression method. The results show that tourist arrivals to Bangladesh increased by 4.3 percent in 2014 and provided significant export earnings.

Robert (2010) investigated tourism in food security and GDP growth using the balanced panel method. They find that tourism provided export earnings for developing countries, and could be a significant source of foreign exchange. Also, they indicated that tourism growth in 50 LDCs and lower-middle-income

countries doubled in recent years.

Hasanvand and Khodapanah (2014) examined the relationship between tourism and GDP growth, for 68 developing countries (in Asia, Africa, and Latin America countries). They used fixed effects estimators and System GMM to estimate the model over the period 1999-2011. The results indicated that there is a positive relationship between tourism and GDP growth.

Chatziantoniou, et al. (2013) explored the relationship between tourism, oil price shocks, and economic indicators in four European economies using a Structural VAR model. The results indicated that oil-specific demand shocks affect both inflation and the tourism index. By contrast, demand-side oil price shocks have a lagged effect on tourism earnings and GDP growth as well.

Pablo-Romero and Molina (2013) provided a literature review on the relationship between tourism and growth and find that the relationship depends on various factors, among which specialization in tourism plays a crucial role.

Seetanah, et al. (2011) examined the contribution of tourism to GDP in forty African economies from 1990 to 2006 using a panel autoregressive model. They find that tourism contributed significantly to African economic growth. They also find reverse causality from GDP growth to the development of tourism.

Seetanah (2011) explored the contribution of tourism to GDP growth based on the Solow growth model using the GMM model for 19 island economies from 1990 to 2007. The results indicated that tourism contributes largely to the GDP growth of island states. They find a granger bi-causal relationship between tourism and growth.

Tayebi, et al. (2008) examined the causal relationship between international tourism and economic growth in Iran, using the Panel-VAR model over the period 1959-2004. They also investigated such relationships for a set of selected countries including the OECD members, Malaysia, China, Hong Kong, Russia, and Thailand over the period 1995-2005, applying a Panel VAR Model. The empirical results indicated a two-way and long-term relationship between international tourism and growth.

Balaguer and Cantavella-Jorda (2002) explored the impact of tourism on long-term growth in Spain using cointegration and causality tests. The results indicated that tourism promotion has produced a multiplier effect on GDP and played a determinant role in Spanish economic growth.

5. Methodology

5.1. Data

Two variables in the model are economic growth (GR), which is real GDP growth, and the growth of tourist arrivals (GT). The annual data of these variables for the period 1996 to 2019 are extracted from the World Bank Database (World Bank, 2019) and World Travel and Tourism Council (WTTC). The dataset includes nine oil-exporting countries, namely Indonesia, Angola, Ecuador, Venezuela, Kuwait, Algeria, Nigeria, Saudi Arabia, and Iran.

5.2. Descriptive Statistics

Table 1 shows the descriptive statistics for nine oil-exporting economies.

Table 1. Descriptive Statistics for Economic Growth (G) and the Number of Tourists (GT)

COUNTRY		Mean	Median	Max	Min.	Std. Dev.
Algeria	GR	3.43	3.40	7.20	1.10	1.50
	GT	8.27	9.03	20.21	-25.68	10.52
Angola	GR	6.37	4.84	15.03	-2.58	5.54
	GT	16.72	14.44	133.33	-99.66	49.47
Ecuador	GR	-47.94	3.40	8.21	-1226.00	250.94
	GT	12.25	7.44	101.83	-6.38	21.58
Indonesia	GR	4.53	5.05	8.22	-13.00	3.98
	GT	8.84	8.22	70.57	-11.25	15.72
Iran	GR	3.00	2.92	13.40	-7.46	4.40
	GT	8.20	11.61	49.89	-96.41	26.88
Kuwait	GR	3.35	2.70	17.33	-7.08	5.32
	GT	4.43	6.95	17.45	-80.22	18.54
Nigeria	GR	5.05	5.61	15.33	-1.62	3.58
	GT	3.68	5.04	71.43	-87.88	28.06
Saudi Arabia	GR	3.02	2.74	11.24	-3.76	3.78
	GT	6.87	8.72	33.77	-26.16	13.46
Venezuela	GR	-0.34	0.82	18.29	-19.62	9.16
	GT	-5.25	-7.74	66.05	-95.43	32.02

Source: Authors

5.3. The Empirical Model

We employed the panel causality of Dumitrescu and Hurlin (2012) for two variables. According to this method, we explored the cross-sectional dependence. Also, we examined the slope homogeneity.

If cross-sectional dependence between sections (countries), as well as heterogeneity, is confirmed, then the mentioned causality method can be used. Also, in these conditions, Pesaran's (2007) unit root test was used. He employed the Augmented Dickey-Fuller test. We also used Breusch and Pagan's test (1980) to investigate cross-sectional dependence.

To investigate the causal relationship between two variables, a two-variable causality framework is often used. However, the results of two-variable causality between economic variables may lack statistical validity due to the elimination of important factors that affect both of these variables simultaneously. Therefore, causality tests based on a bivariate framework will not be reliable. So adding a third variable may affect both directions of the causality and the values of the estimates. Using the three-variable causality test, the effect of one variable that has a decisive role in the relationship between the two variables is investigated. Also, when considering the long-run convergence of variables, the use of a vector error correction model shows reliable results (Nikooghadam and Aboutorabi, 2019).

To investigate the tri-variate causality between tourism and GDP growth in these countries considering the effect of oil revenues, at first, we employed the Fully Modified Ordinary Least Square (FMOLS) method. The method is more suitable than the OLS method due to its advantages for serial correlation correction and also endogenous correction. After calculating the model and obtaining the error statements, the values of the ECTs are obtained (Fallahi, Aboutorabi, Salimi Far, & Hosseini, 2013).

However, the purpose is to identify the trivariate causal relationship by employing the granger casualty test and vector error correction (VEC) model which was estimated according to the following

equation:

$$\Delta GT_{it} = \alpha_{1j} + \sum_{q=1}^{p} \beta_{11iq} \Delta GT_{it-q} + \sum_{q=1}^{p} \beta_{12iq} \Delta G_{it-q} + \sum_{q=1}^{p} \beta_{13iq} \Delta LOIL_{it-q} + \delta ECT_{it-1} + \omega_{it} \quad (1)$$

First, the null hypothesis of the Wald test is based on $\beta_{12iq} = 0$ is checked, and then if the probability obtained is less than 0.05, the null hypothesis is rejected and the short-term Granger causality from the economic growth to tourism growth is confirmed. Also, the null hypothesis of the Wald test based on $\delta = 0$ is checked and then if the probability obtained is less than 0.05, the null hypothesis is rejected and the existence of a long-term Granger causality relationship is accepted (Granger, 2003).

To this end, once tourism growth is a dependent variable and economic growth is an independent variable, the opposite will be done. In both cases, inflation acts as an independent variable. Then, the vector error correction model will be used to examine the causal relationships. The vector error correction model for the trivariate causality test is performed in the same way as two variate causality with the presence of oil revenue. The difference is that the causality of oil revenue and economic growth simultaneously for tourism growth, and in the opposite hypothesis, the simultaneous causality of oil revenue and tourism growth for economic growth is tested.

6. Empirical Results

The results presented in Table 2 indicate that the null hypothesis of no cross-sectional dependence is rejected at a 1% statistically significant level. This finding indicates that a shock occurring in one oil-exporting economy could be transmitted to other economies in the data set.

Table 2. Cross-sectional Dependence Test

Test	Statistic	P-Value
Breusch-Pagan LM	826.5932	0.0000
Pesaran scaled LM	93.17230	0.0000
Bias-corrected scaled LM	92.97665	0.0000
Pesaran CD	15.89934	0.0000

Source: Authors

Besides, Table 3 suggests that the results of slope homogeneity tests cannot reject the null hypothesis of slope homogeneity.

Table 3. Heterogeneity Tests

Test	Statistic	P-Value
$\tilde{\Delta}$	0.135	0.893
$\tilde{\Delta}_{adj}$	0.148	0.883

Source: Aurhors

Table 4 shows the results of the unit root test. The statistic indicates that there is no unit root at a 1% level of significance for all variables. Therefore, all variables are stationary at levels.

Table 4. CADF Panel Unit Root Test

Critical values at		10%	5%	1%
		-2.21	-2.33	-2.57
Panel CIPS Test Statistic	GR		-2.682	
	GT		-4.581	

Source: Authors

Table 5 provides the outcome of applying the Dumitrescu and Hurlin's (2012) panel causality test in which the null hypothesis of no causality from the growth of tourism earnings to GDP growth cannot be rejected at a 10% level of significance, while the null hypothesis of no causality from GDP growth to growth in tourism earnings can be rejected at 1% level of significance. The finding suggests that GDP growth and tourism development are related bilateral.

Table 5. Dumitrescu and Hurlin's (2012) Panel Causality Test

H_0	Z-bar	p-value
gt does not Granger-cause GR	-1.38	0.16
GR does not Granger-cause gt	2.56	0.01

Source: Authors

This result is relevant due to the oil structure of the nine countries and their dependence on oil revenues. This result shows that whenever the economic growth of countries due to high oil revenues has increased, it has led to the growth of tourism, though it is not limited to the growth of tourism, but extends to other activities.

To estimate the trivariate causality between tourism and GDP growth in these countries considering the effect of oil revenues, at first, we did a panel unit root test for the logarithm of oil revenues (LOIL). Accordingly, the result points out that the null hypothesis of a unit root can be rejected at a 5% level of significance for the variable. In the first stage, we perform the mentioned process in a situation where tourism growth is a dependent variable.

Table 6. Tri-variate Causality between Tourism Growth and GDP Growth

Dep. Variable	The variable under the null hypo.	Short-term causality (Wald statistics)	Long-term causality (Wald statistics)	
GT	GR	1.54 (0.21)	0.049 (0.82)	Non-short-term and long-term caus.
	LOIL	0.83 (0.43)		
GR	GT	0.84 (0.44)	0.47 (0.49)	Non-short-term and long-term caus.
	LOIL	0.031 (0.96)		

Source: Authors

The results show that at a significance level of 5%, there is no relationship between the variables. In other words, economic growth and oil revenue variables do not have a significant effect on tourism growth. And similarly, the tourism growth and oil revenues variables do not have a significant effect on GDP growth both in the short and long run.

This means that the unilateral cause of economic growth in the two-variate causality is not confirmed in the trivariate causality in the presence of oil revenues. The causal relationship in the two variate tests is influenced by oil revenues in oil-exporting economies. As a result, by the inclusion of oil revenue in the trivariate causality test, the causal relationship has been weakened. These results confirm the view that the abundance of resources can negatively affect the growth of tourism. They confirm that the influx of accessible revenues from the export of natural resources in a country reduces the consideration and proper planning for tourism. When GDP growth does not lead to the growth of tourism, it can be said that economic growth has occurred, but it has not been purposeful and has not been promoting leading sectors such as tourism. It also has not led to the creation of the necessary infrastructure for tourism growth.

Also, in both the two variates and trivariate causality, there is no causal relationship between tourism development to GDP growth. This means that tourism has not been a determinant of the GDP growth of nine oil-exporting countries.

According to the results of this study, it can be said that oil revenues, on the one hand, due to the expansion of rent-seeking activities have led to the movement of human, financial, and technical capital from economic sectors such as tourism to oil and of course other rent-seeking activities. On the other hand, providing cheap and abundant resources has reduced the demand for the development of other economic sectors and therefore economic growth has not been able to encourage the growth of tourism. Therefore, the abundance of natural resources in these countries has been one of the important impediments to the effectiveness of tourism development on economic growth.

7. Conclusion

We examined the two and tri variate causality between tourism and economic growth in the 9 oil-producing economies by deploying a method used by Dumitrescu and Hurlin (2012) and VECM, respectively. We investigated the relationship based on the Feedback hypothesis. The results suggest that the causality between GDP growth and tourism development is not two-way in the nine oil-exporting countries in two causalities. Rather, there is a one-way path from tourism growth to economic growth. Tourism development has no significant relationship to the GDP growth of these countries, due to the relatively low number of international tourist arrivals and its relatively low revenues. However, tourism growth may contribute to the diversification of oil-export-dependent economies and promote the economic growth of these nine countries. But, when oil revenues are added to causality, even one-way causality is no longer established, and neither economic growth nor tourism growth has a causal relationship with each other.

In this respect, the development of the tourism industry can be of great importance for oil-exporting developing countries that face the problem of limited foreign exchange resources and are in pressing need of economic diversification. Also, systemic reforms must be done in the tourism sector to achieve faster economic growth. Realizing these recommendations depend on the government policies towards the non-oil sector. Therefore, the development of tourism can act as a strong stimulus for economic growth and vice versa.

The results clearly show that economic policy has not been directing oil revenues to strengthen the impact of tourism on economic growth on the one hand, and also economic growth on tourism on the other hand. And this relationship has been weakened. Oil revenues have not been able to create economic infrastructure for tourism growth. Also, the growth of tourism has not been significant due to the existence of oil revenues, which is the cause of economic growth. Targeted policy-making in this regard is very important and should be considered by the governments of oil-exporting countries to create sustainable sources for economic growth.

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