Título
Tourism and Economic Growth. An empirical research for Argentina

Tipo de Producto
Ponencia (texto completo)

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Código del Proyecto y Título del Proyecto
C18S33 - Turismo y Crecimiento Económico. Un análisis empírico de Argentina

Responsable del Proyecto
Bianconi, Jesica

Línea
Turismo

Área Temática
Hospitalidad

Fecha
Septiembre 2019

INSOD
Instituto de Ciencias Sociales y Disciplinas Proyectuales

FUNDACIÓN UADE

UNCUYO UNIVERSIDAD NACIONAL DE CUYO | FACULTAD DE FILOSOFÍA Y LETRAS | LICENCIATURA EN TURISMO
CIITI CONGRESO INTERNACIONAL DE INVESTIGACIÓN EN TURISMO E IDENTIDAD

CONGRESO INTERNACIONAL DE INVESTIGACIÓN EN TURISMO E IDENTIDAD
"Aportes para la construcción de una mirada interdisciplinaria y científica"

Ponencia

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Sponsor: Universidad Argentina de la Empresa (UADE)

Eje Temático: Economía y gestión de las políticas públicas

Abstract

Tourism is assumed to provide an impetus to the economic progress of developing countries and its importance, during the last decades, has gained widespread recognition. In this way, some developing countries have decided to include tourism as one of their main exportable and economic sector. This study investigates if it exist a causal relationship between tourism and economic growth in Argentina by using a Granger causality test. After finding a two-way relationship between tourism to economic growth, the impulse-response function is also tested, showing that the maximum effect on economic growth caused by a shock in tourism is attained in the immediate following period and last for a maximum of three periods.

Keywords: Argentina; Tourism activity; Granger causality test; Impulse-Response Function.

Introduction

Over the past decades, international tourism has been steadily increasing, as well as the importance of the tourism industry for the economy of many countries. Among its major contributions are those of being an exportable sector that contributes to foreign exchange

earnings, an important generator of employment and foreign capital investment and also having significant multiplied effects on the whole economic activity that year after year contributes to the increase of the worldwide GDP.

The tourism sector in Argentina is developing in a rapid way. The number of visitors grows continuously meanwhile the number of hotels and restaurants augment in quantity and quality. Also, cultural and natural sites are improving their capacities and potentials.

This development of tourism not only takes place in Buenos Aires (the Capital city) but also in the provinces, making a strong development of regional tourism, which, in almost every case, gives employment to people from the place and also spills over into the whole region.

The rate of "tourism and travel economic activity" in Argentina represents around 5.2% of the total Gross Domestic Product (GDP) and constitutes 39.5% of the foreign exchange earnings over the total of exported services, totaling 5, 6 million dollars in 2017. This level of income places the activity in the 46th place in international tourism revenue worldwide.

The number of international tourist arrivals has increased 33% in the last 10 years in Argentina, reaching 5.6 million international tourists in 2017.

Compared to the international level, Argentina is the third largest destination of the South America region closely matched with Chile, which is in second place from 2016 by a slight difference with Argentina, and both countries behind Brazil, which remains first. At the global level, as we have already mentioned, Argentina ranks 46th. Between 2015 and 2017, the number of foreign visitors has stayed between 5.4, 5.2 and 5.6 million.

In the period from 2004 to 2009, the number of hotels in Buenos Aires has increased by 60%, and in several of the main tourist areas the increase is of an average of 80% for the same period of 5 years.

The technical report prepared by the INDEC on the statistics of international tourism of 2017 indicates that the flow of tourists registered by air, both receptive and emissive, increased

in comparison to the previous year, a situation that had remained relatively stable between 2014 and 2016.

In that sense, in the year 2017 the arrival of 2.6 million non-resident tourists was registered (increase of 7.4% with respect to the previous year) and the exit of 4.5 million resident tourists (annual increase of 17, 7%) concentrating 92% and 82.6% respectively in the airports of Ezeiza and Aeroparque.

In relation to receptive tourism, in December 2017, non-resident tourists arrived by air, mainly from Europe, 23.8%, followed by Brazil 21.6%, 13% from the United States and Canada, 33%. 6% of the rest of America and 8% of the rest of the world. Tourism from Asia is still scarce.

The average stay of foreign tourists during 2017 was 16.2 nights. From this average stay, it turns out that the total daily expenditure per country of residence was US $ 100.6 on average.

It should also be noted that, taking as reference the fourth quarter of 2017, which represents the beginning of the peak season, the number of overnight stays per tourist destination is placed first in the City of Buenos Aires (57.4% of the total), followed by the Buenos Aires region (16.3%) and to a lesser extent the Litoral (6.5%), Córdoba (3.2%) and Cuyo (2.9%).

Bearing in mind that Buenos Aires, with its two airports, represents the largest flow of tourists both entering and leaving the country, it should be noted that port activity also adds to this phenomenon.

In that sense, the receptive tourism by port had a total of 259.7 thousand arrivals of tourists, which represents a decrease of 1.9% in relation to the previous year. Overnight stays totaled 1,226.5 thousand beds, with a total cost of US $ 107.2 million.

This increase in the tourism activity has a direct (and indirect) impact in the national economy, but, does it help to the economic growth of Argentina? Or is an outcome from the growth that the country is experiencing during the last years that attracts more tourists?

This study will try to find an answer to these questions. It will focus in analyzing if there is causality between tourism and economic growth, measured by a Granger-causality test, trying to find out in which way this causality occurs. That is, if the economic growth led to tourism expansion; if the increase in tourism led to economic growth; or if the relationship is reciprocal. Furthermore, in either of the ways that the causality happens, it will analyze the magnitude of the effect that one variable produces on the other.

- **Public politics**

According to a report from the Ministry of Economy, an increase in the flow of international travelers to Argentina is projected. For this, plans are made to increase investment in the sector through public-private investment projects and to value domestic tourism with the maintenance of tourist holidays, the opening of domestic routes, to generate an increase of players in the market of air transporters, and thus achieve an increase in work recorded by direct activities of the tourism value chain.

In relation to international tourism on time, the country seeks to strengthen the areas of cooperation with Brazil, Uruguay and Chile so that the flow of tourists to the region is profitable for all its members. In this sense, Argentina has put into action the refund of VAT to foreign residents for each reservation made in hotel accommodation and for hoteliers, taking the model applied by Uruguay as successful several years ago.

Likewise, the planning of international tourist trails in relation to the Inca Trail, together with Bolivia and Peru, and the co-management of a binational park with Chile in Patagonia, among other actions to be carried out. The continuous creation of protected areas for tourism development, the promotion of an ecotourism route in the northeast of Argentina, the establishment of a federal gastronomic plan, the consolidation of Buenos Aires as a MICE destination (Meetings, Incentives, Conventions and Exhibitions) of excellence.

Together with the promotion and consolidation of destinations that allow observing a promising future for the activity.

- **Formalization of the Tourism Sector in Argentina**

In 2005, the National Tourism Law (Law No. 25,997) establishes the main regulatory framework for the activity, which allows that from that year on tourism will acquire a leading role as a generator of value and employment in the country, accompanied by institutionalism, generation of statistics and territorial planning.

Through the enactment of the Law, Argentina adopts the Uniform International Classification of Tourist Activities established by the World Tourism Organization (UNWTO), where all accommodation services, travel agencies and other activities are defined as part of the activity. related and complementary tourism support. Likewise, it includes all transportation services, and determines as activities of indirect linkage to the gastronomic, entertainment, along with the sale of regional items and antiques.

In 2010, under Decree No. 919, the Ministry of Tourism is created in Argentina, whose mission is to promote the optimal conditions of competitiveness that lead to the balanced and sustainable development of the sector and the improvement of the quality of life of residents and visitors.

In September 2018, before a national adjustment plan, different ministries merge and the Ministry of Tourism becomes the Ministry of Tourism of the nation and remains within the General Secretariat of the Presidency of the Nation.

Literature Review

The analyses of tourism and growth arise from the “Export led growth” (ELG) hypotheses that according to Marin (1992) are verified mainly in developed countries such as United States, Japan, United Kingdom and Germany. However, export promotion and economic growth have noticeably reinforced each other in the process of economic development in

many developing countries of South America, Africa and Asia, according to Bahmani-Oskooee & Alse (1993), Chow (1987) and Jin (1995).

Besides the tourism growth mentioned above, there is an unverified question of whether tourism growth actually caused an economic increase or, alternatively, did economic expansion strongly contribute to tourism growth. Also, according to a study of Kim et al. (2005), in their empirical analyses of Taiwan they found a bi-directional causality between the two factors, that is, tourism and economic development reinforce each other.

The study of Oh (2002) about Korea, found that the relationship is unidirectional going from economic growth to tourism growth and this causality is verified in the short run but not in the long run. In this way, the study made by Sahli, Nowak and Cortés-Jiménez (2007) on tourism and economic growth for Spain, had included in the causality analyses the import of capital good. With this variable they can establish the nexus between the short run and the long run, since the growth in tourism gives foreign currency earnings that finance the import of capital goods and so, the "Tourism led growth" (TLG) hypothesis is modified into EKIG (exports, capital goods imports and growth). With this new hypothesis the study found that the causality goes from tourism to growth in the short, and also, in the long run for Spain.

Whereas, in the study of Balaguer and Cantavella-Jordá (2000) they find that economic growth in Spain has been sensible to persistent expansion of international tourism. The long-run stable relationship between economic growth and tourism exist with the addition of the "external competitivity", using the exchange rate as a third variable. As well as the results of the causality analyses in Greece, studied by Dritsakis (2004), indicating that international tourism earnings and real exchange rate cause economic growth.

Other two empirical researches confirm the theory, one is made by Durbarry (2004) finding that exports led to economic growth in Mauritius and also confirming that tourism exports led to economic growth. The other is for Turkey by Gunduz and Hatami-J (2005), where they find that the tourism-led growth hypothesis is supported empirically.

Finally, a study of Uruguay made by Brida, Lanzilotta and Risso (2007) find the existence of a cointegrated vector between GDP, tourism receipts from Argentineans (that represents the 70% of total international tourist in Uruguay) and relative prices between both countries, for the long-run equilibrium. In this case, the Granger causality test indicated that the direction goes from tourism receipts to economic growth.

Data

To test the causal relationship, the data used in the present research is the annual GDP of Argentina and the annual International Tourism receipts, both series denominated in national currency (pesos) and at constant prices, for the period 1990 to 2017.

The data of international tourist receipts is obtained from the United Nations World Tourism Organization Barometer and also from the Balance of Payments. The data of real GDP is taken from the National Institute of Statistics and Census of Argentina and from the International Monetary Fund. Since the international tourism receipts were expressed in foreign currency (US dollars), the "Reference Exchange Rate" published by the Central Bank of Argentina was used. Finally, to have the monetary units at constant prices, the deflator used was the one published by the IMF.

This was made to have the data in monetary units and without any shock of variation in the exchange rate or inflation. The graph below shows the evolution of the variable:

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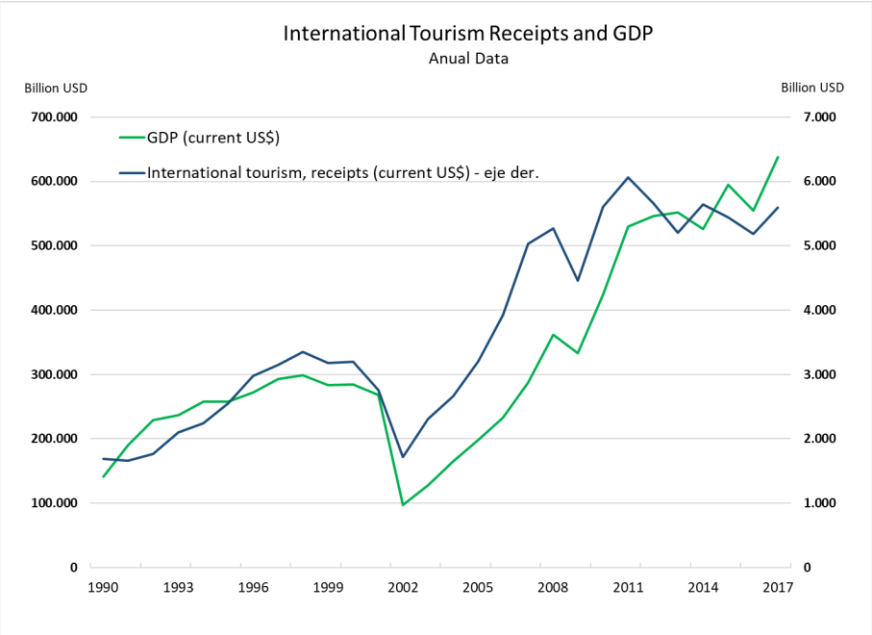


Methodology and Results

In the following section we will investigate the existence of a relationship between international tourism and economic growth in Argentina. To do so, we will analyze the causal relation of the two variables with the Granger causality tests.

The tested hypothesis will be if tourism leads economic growth; if the economic development leads tourism; or, with the combination of both test, if the causality is reciprocal.

1. Unit Root Tests

The first step is to analyze whether the variables we use are stationary or non-stationary. In the literature of time series, many test instruments have been proposed to discriminate the type of trend which a process presents, i.e., to see if the processes are or are not stationary in variance.

It is important to know if the non-stationary behavior of a time series is caused by the presence of a deterministic trend, a stochastic trend or both of them. If a time series has a stochastic trend, shocks will have permanent effects but if the time series has only a deterministic trend, the shocks will have a transitory effect. A wrong choice of transformation of the data gives bias results and has consequences for wrong interpretation. The presence of stochastic trend can be addressed by a univariate analysis through unit root tests.

The null hypothesis of non-stationarity against to the alternative of stationarity is tested:

$$H_0: x_t \sim I(1)$$

$$H_a: x_t \sim I(0)$$

Using,

$$\Delta x_t = f(t) + \rho x_{t-1} + \sum_{i=1}^{p} \gamma_i \Delta x_{t-i} + \varepsilon_t$$

Where $f(t)$ is the deterministic part,

$$f(t) = \alpha + \beta t \qquad (1)$$

And *"p"* is the number of lags. The lags of Δx_t in (1) are included to deal with the serial correlation.

Under H_0 the process follows a stochastic trend, that is, the use of difference operator $\Delta=(1-L)$ is needed to achieve stationarity.

Augmented Dickey-Fuller (see Hamilton, "Time Series Analysis", 1994) and Dickey-Fuller GLS tests were employed to examine the stationarity of the variables.

By not rejecting the null hypothesis, the series has stochastic trend (have a unit root) and so we have to work with their first differences to avoid the estimation of spurious

relationship, if there is no cointegration between the analyzed time series. The selection criteria for determining ρ are Modified Akaike, Modified Schwarz and Modified Hannan-Quinn, as proposed by Ng-Perron (2001). With the three methods we obtain the same value for ρ (see table 1).

The Dickey-Fuller with GLS de-trending (DF GLS) proposed by Elliot, Rothenberg and Stock (1996) is a simple modification of the ADF tests in which the data are de-trended so that explanatory variables are "taken out" of the data prior to running the test regression.

The results of testing the order of natural logarithm of GDP and Tourism are provided in the next Table 1:

Null Hypothesis: LOGGDP has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=6)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.255514	0.6349
Test critical values:	1% level	-3.699871	
	5% level	-2.976263	
	10% level	-2.627420	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: LOGTOUR has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=6)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.306088	0.6118
Test critical values:	1% level	-3.699871	
	5% level	-2.976263	
	10% level	-2.627420	

*MacKinnon (1996) one-sided p-values.

As we can see, the null hypothesis of unit root can't be rejected for any of the two variables at every level of significance, under the ADF test. Also with the DF GLS test, the null hypothesis is not rejected for the GDP at all the significance level, but for the Tourism

variable the null hypothesis is rejected at the 5% and at the 10% levels. So, we find strong evidence in favor of first difference stationary.

In addition, by finding that they are I(1), it would exist the possibility of a cointegration between them. For that we used the test procedure of Johansen S. (1995), finding that there are not evidence in favor of a long-run relationship between the variables. Therefore, our analysis will be focus on the short-run effects.

2. VAR estimation

The analyses of the dynamic relationship between the two variables will be made by testing the cointegration of the two variables, constructing a bivariate Vector Autoregressive (VAR) model of order *k*:

$$X_t = \mu + \Pi_1 X_{t-1} + \Pi_2 X_{t-2} + \cdots + \Pi_k X_{t-k} + E_t$$

The VAR models are a generalization to more than one variable of the autoregressive processes or models. Instead of being interested in a single variable x_t we are interested in the possible dynamic relationship between a set of variables (where in our case are GDP and Tourism receipts) collected in a vector X_t of order nx1.

$X_t = [\Delta \ln(GDP)_t \quad \Delta \ln(Tour)_t]'$ is a vector of 2x1 order.

$\mu = [\mu_1 \quad \mu_2]'$ is a vector of 2x1 order.

$E_t = [\varepsilon_{1t} \quad \varepsilon_{2t}]'$ is a vector of 2x1 order.

$\Pi_i = \begin{bmatrix} \pi^i_{11} & \pi^i_{12} \\ \pi^i_{21} & \pi^i_{22} \end{bmatrix}$ is a matrix of 2x2 order.

To confirm the lag structure selected, the VAR Order Selection Criteria was used. The next table shows the results indicating that a lag of 1 period (*k*=1) is an optimal selection for the VAR model, VAR(1).

Also, to test the possible autocorrelation of the residuals of the model, the residual tests of Portmanteau and Autocorrelation LM were used. In both of them the p-values were high, confirming that there is no autocorrelation, from what we can assume that they follow a white noise process (see Table 2.b).

VAR Residual Portmanteau Test for Autocorrelations
Null Hypothesis: No residual autocorrelations up to lag h

Sample: 1990 2017
Included observations: 26

Lags	Q-Stat	Prob.*
1	0.747985	---
2	1.520948	0.8229
3	2.354022	0.9682
4	3.278477	0.9932
5	8.606761	0.9287
6	13.82440	0.8393
7	15.39052	0.9088
8	18.78203	0.9047
9	23.19960	0.8719
10	25.88749	0.8935
11	27.21405	0.9384
12	29.77342	0.9502
13	33.20820	0.9485
14	35.06103	0.9655
15	36.54946	0.9795
16	36.74695	0.9922

*Test is valid for lags larger than the VAR lar order

VAR Residual Serial Correlation LM Tests
Null Hypothesis: No serial correlation at lag h

Sample: 1990 2017
Included observations: 26

Lag	LRE* stat	df	Prob.
1	2.668350	4	0.6148
2	0.845390	4	0.9323
3	0.719014	4	0.9490
4	0.852522	4	0.9313
5	5.144039	4	0.2728
6	6.955469	4	0.1383
7	1.745836	4	0.7824
8	3.585336	4	0.4650
9	6.783107	4	0.1478
10	3.012033	4	0.5558
11	1.672789	4	0.7957
12	4.019119	4	0.4034
13	4.125473	4	0.3893
14	3.300561	4	0.5088
15	1.997542	4	0.7362
16	0.564233	4	0.9670

*Edgeworth expansion corrected likelihood ratio statistic.

3. Granger Causality Test

The third and final step is to determine the direction of causality between the two variables.

The hypotheses tested were if tourism affects economic growth, or if economic growth affects tourism. As resulting from the previous tests, the variables used were the first difference of the natural logarithm of GDP and of international tourism receipts (Tour).

The method used was the Granger causality test. This method is best suited to determine whether the lags of one variable enter into the equation of another variable. In our model of two variables, VAR is specified as:

$$\begin{bmatrix} \Delta \ln(GDP)_t \\ \Delta \ln(Tour)_t \end{bmatrix} = \begin{bmatrix} \mu_1 \\ \mu_2 \end{bmatrix} + \begin{bmatrix} \pi_{11} & \pi_{12} \\ \pi_{21} & \pi_{22} \end{bmatrix} \begin{bmatrix} \Delta \ln(GDP)_{t-1} \\ \Delta \ln(Tour)_{t-1} \end{bmatrix} + \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \end{bmatrix}$$

In equations:

$$\Delta \ln(GDP)_t = \mu_1 + \pi_{11} \Delta \ln(GDP)_{t-1} + \pi_{12} \Delta \ln(Tour)_{t-1} + \varepsilon_{1t}$$

$$\Delta \ln(Tour)_t = \mu_2 + \pi_{21} \Delta \ln(GDP)_{t-1} + \pi_{22} \Delta \ln(Tour)_{t-1} + \varepsilon_{2t}$$

Here, if $\pi_{12} = 0$ the lagged value of Tour would play no role in the determination of GDP. Thus, Tour is said not to Granger cause GDP. This could be tested by running the regressions of GDP on lagged values of GDP and Tour and examining whether the coefficient of the latter variable is significantly different from zero. The significance is tested through a series of F-tests. Where, the F-test of joint significance of the lagged terms constitutes the short-term Granger causality.

In the table below we can see the results. The first test, with GDP as the dependent variable, shows that tourism is causal to GDP in the Granger sense. In the second test, with tourism revenues as the dependent variable, we can see that they also have significance, that is, GDP is causal in Granger's sense of tourism. In this way we can deduce that the relationship is reciprocal and therefore bidirectional, between tourism and economic growth in Argentina.

VAR Granger Causality/Block Exogeneity Wald Tests

Sample: 1990 2017
Included observations: 26

Dependent variable: DLOGGDP

Excluded	Chi-sq	df	Prob.
DLOGTOUR	4.545560	1	0.0330
All	4.545560	1	0.0330

Dependent variable: DLOGTOUR

Excluded	Chi-sq	df	Prob.
DLOGGDP	4.256949	1	0.0391
All	4.256949	1	0.0391

Pairwise Granger Causality Tests

Sample: 1990 2017
Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
DLOGTOUR does not Granger Cause DLOGGDP	26	4.54556	0.0439
DLOGGDP does not Granger Cause DLOGTOUR		4.25695	0.0506

In both cases the null hypothesis is rejected that one variable does not cause in the Granger sense the other.

From the evidence we can conclude that there is empirical evidence to infer that an increase in International Tourism Income would cause an increase in the Argentine GDP and vice versa.

We must bear in mind that, since the use of the data is not too long (28 years), the results are useful, but the evidence they provide should not be taken as a solid long-term result and it is suggested that as Add more information (new annual data), perform the tests again because reciprocity can change over time and the economic dynamics of each country under study.

- ***Impulse-Response Function***

As a result, by having a bidirectional causality, we can test the impulse response function (IRF). To do this, we have to transform our representation of a VAR(k) model (with k=1) in terms of a VMA(∞).

The impulse response functions can be used to produce the time path of the dependent variables in the VAR, to shocks from the explanatory variables. If the system of equations is stable any shock should decline to zero, an unstable system would produce an explosive time path.

When a stationary process AR(k) is expressed as a MA(∞) we can analyze how the shocks (εt) affect the variable analyzed as time passes:

$$x_t = \theta x_{t-1} + \varepsilon_t$$

$$(1 - \theta L)x_t = \varepsilon_t$$

$$x_t = \frac{\varepsilon_t}{(1 - \theta L)} = (1 + \theta L + \theta^2 L^2 + \theta^3 L^3 + \cdots)\varepsilon_t$$

The same analysis can be performed for a VAR, but in this case the shocks are transmitted from one variable to the other:

$$X_t = \Psi(L)E_t = (I + \Psi_1 L + \Psi_2 L^2 + \Psi_3 L^3 + \cdots)E_t$$

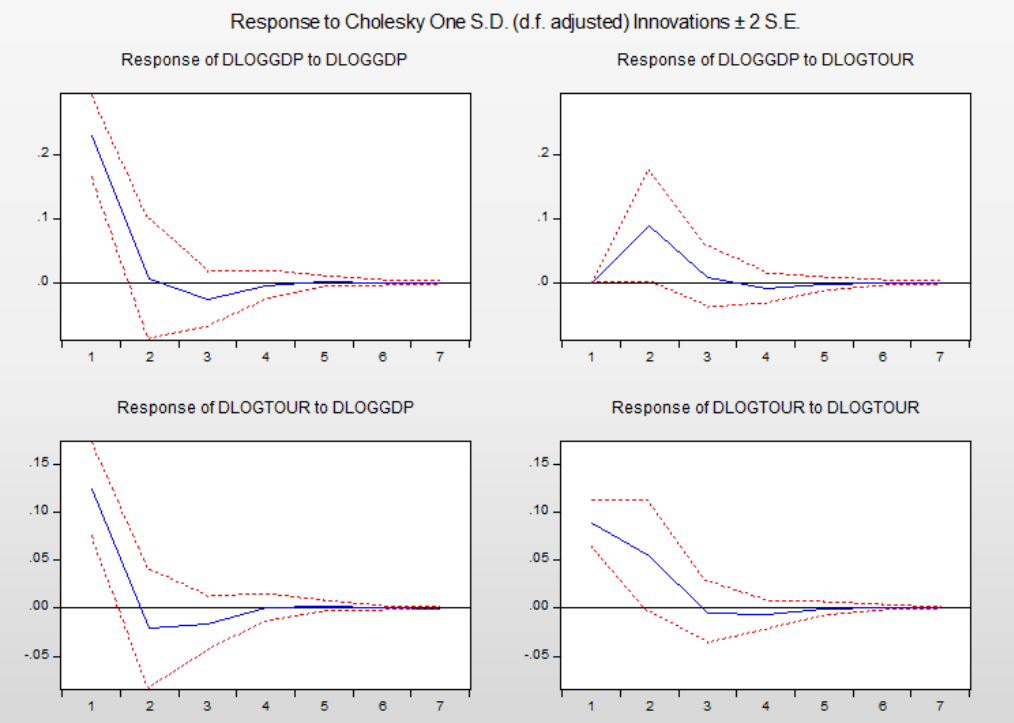
$$= E_t + \Psi_1 E_{t-1} + \Psi_2 E_{t-2} + \Psi_3 E_{t-3} + \cdots$$

That is,

$$\Pi(L)X_t = E_t$$

$$X_t = \Pi(L)^{-1} E_t = \Psi(L)E_t$$

The Cholesky decomposition is a widely use method, and the most popular one. It imposes a recursive causal structure from the top variables to the bottom ones. In some cases, it is still quite arbitrary attributing common effects, since by changing the order of the equation, the results of the impulse response function can vary dramatically. But, since we already know the bidirectional effect from the Granger causality, we can observe how the impulse may impact. The outcome is showed in the graphs below:



The effects are shown in the second and third graph. In the second graph we can see how the GDP responds after a tourist shock. As we can see, the main impact is produced in the immediate next period where it reaches its maximum, and then, in the second period it decreases and third becomes zero.

The effect of tourism on GDP (figure 3) is more instantaneous in the first period and becomes zero in the second period.

Given that the impulse-response function tracks the impact of any variable on others in the system, the IRF is an essential tool in the empirical analysis of causality to evaluate the effectiveness of a policy change, such as encouraging an increase in tourism. international to achieve an increase in economic growth.

Conclusions

This paper analyzes the impact of receptive tourism on Argentina's Gross Domestic Product. Specifically, if tourism impacts GDP growth, if the relationship is inverse, reciprocal or if there is no evidence of a relationship between the two variables. For this analysis, the Granger Causality model and the impulse-response functions were used, verifying that each of the variables causes in the Granger sense the other. That is, it was found that there is a bidirectional causality between Tourism and GDP.

Given that tourism can have a significant role in the economy of each country, it is valuable to examine that tourism contributes positively to the economy, as is commonly believed.

Our study supports this theory for the case of Argentina, showing that there is empirical evidence in favor of the tourism industry as a component of the country's economic growth.

Also, that the country shows growth - in the economic sense of a continuous increase in its GDP - favors international tourism. This conclusion is in line with what is observed in Argentina that receives a large percentage of tourists who stay in 4- and 5-stars hotels and seek well-being during their vacations. Therefore, investment in infrastructure (routes, airports, etc.) benefits not only the inhabitants of the country but also predisposes the conditions for an increase in the arrival of tourists.

In the impulse-response test, it was found that the lag time between the effects of GDP on tourism is up to 2 years and then decreases with a maximum of 3 years while the effects of tourism on GDP are checked in the first year and last up to a maximum of 2 years.

The impact of tourism on the economy may justify the need for public intervention to, on the one hand, promote and increase international tourism demand and, on the other hand,

provide and encourage the development of tourism. It is proven by other research that, without an active role from the State to promote the sector, the increase in tourism, although it is feasible in the long term is much slower than when the State promotes it and policies are applied in this regard promoting a sector exporter of great internal impact.

Although, in our study, the highest impact is achieved in the short term, to make this causality more stable over time, tourism actions should go hand in hand with the strengthening of competitiveness and sustainability policies, among others.

Finally, although we can not generalize our findings because the data period is not too long, the information provides good support that indicates that tourism can offer a potential for sustainable growth. And, given that it is an exportable sector, with specific characteristics, knowing how to manage it and reach an optimum level of development, its growth will be gratifying not only for the tourism sector itself but for the entire economy of the country.

ANNEX I

- ***Unit root Test (Table 1 and 2)***

Null Hypothesis: DLOGGDP has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=6)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.928189	0.0005
Test critical values:	1% level	-3.711457	
	5% level	-2.981038	
	10% level	-2.629906	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(DLOGGDP)
Method: Least Squares
Date: 08/12/18 Time: 13:27
Sample (adjusted): 1992 2017
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLOGGDP(-1)	-0.988663	0.200614	-4.928189	0.0000
C	0.046025	0.049756	0.925014	0.3642

R-squared	0.502972	Mean dependent var	-0.005974
Adjusted R-squared	0.482263	S.D. dependent var	0.344575
S.E. of regression	0.247936	Akaike info criterion	0.122509
Sum squared resid	1.475330	Schwarz criterion	0.219285
Log likelihood	0.407389	Hannan-Quinn criter.	0.150377
F-statistic	24.28705	Durbin-Watson stat	2.026078
Prob(F-statistic)	0.000050		

Null Hypothesis: DLOGTOUR has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=6)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.447346	0.0017
Test critical values:	1% level	-3.711457	
	5% level	-2.981038	
	10% level	-2.629906	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(DLOGTOUR)
Method: Least Squares
Date: 08/12/18 Time: 13:32
Sample (adjusted): 1992 2017
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLOGTOUR(-1)	-0.901077	0.202610	-4.447346	0.0002
C	0.042543	0.033036	1.287800	0.2101

R-squared	0.451791	Mean dependent var	0.003720
Adjusted R-squared	0.428948	S.D. dependent var	0.214989
S.E. of regression	0.162462	Akaike info criterion	-0.722936
Sum squared resid	0.633457	Schwarz criterion	-0.626160
Log likelihood	11.39817	Hannan-Quinn criter.	-0.695068
F-statistic	19.77889	Durbin-Watson stat	1.974866
Prob(F-statistic)	0.000169		

- ***VAR Estimation*** *(table 3 and 4)*

VAR Residual Portmanteau Tests for Autocorrelations
Null Hypothesis: No residual autocorrelations up to lag h

Sample: 1990 2017
Included observations: 26

Lags	Q-Stat	Prob.*	Adj Q-Stat	Prob.*	df
1	0.747985	---	0.777904	---	---
2	1.520948	0.8229	1.615281	0.8060	4
3	2.354022	0.9682	2.557017	0.9590	8
4	3.278477	0.9932	3.649554	0.9890	12
5	8.606761	0.9287	10.24648	0.8534	16
6	13.82440	0.8393	17.02940	0.6511	20
7	15.39052	0.9088	19.17252	0.7427	24
8	18.78203	0.9047	24.07136	0.6778	28
9	23.19960	0.8719	30.82765	0.5258	32
10	25.88749	0.8935	35.19547	0.5067	36
11	27.21405	0.9384	37.49485	0.5836	40
12	29.77342	0.9502	42.24797	0.5469	44
13	33.20820	0.9485	49.11752	0.4281	48
14	35.06103	0.9655	53.13199	0.4303	52
15	36.54946	0.9795	56.65009	0.4506	56
16	36.74695	0.9922	57.16355	0.5800	60

*Test is valid only for lags larger than the VAR lag order.
df is degrees of freedom for (approximate) chi-square distribution

VAR Residual Serial Correlation LM Tests
Date: 08/12/18 Time: 14:11
Sample: 1990 2017
Included observations: 26

Null hypothesis: No serial correlation at lag h

Lag	LRE* stat	df	Prob.	Rao F-stat	df	Prob.
1	2.668350	4	0.6148	0.672462	(4, 40.0)	0.6150
2	0.845390	4	0.9323	0.208333	(4, 40.0)	0.9323
3	0.719014	4	0.9490	0.176916	(4, 40.0)	0.9490
4	0.852522	4	0.9313	0.210109	(4, 40.0)	0.9313
5	5.144039	4	0.2728	1.336748	(4, 40.0)	0.2731
6	6.955469	4	0.1383	1.848848	(4, 40.0)	0.1385
7	1.745836	4	0.7824	0.435009	(4, 40.0)	0.7825
8	3.585336	4	0.4650	0.913847	(4, 40.0)	0.4653
9	6.783107	4	0.1478	1.799141	(4, 40.0)	0.1480
10	3.012033	4	0.5558	0.762300	(4, 40.0)	0.5560
11	1.672789	4	0.7957	0.416435	(4, 40.0)	0.7958
12	4.019119	4	0.4034	1.029929	(4, 40.0)	0.4037
13	4.125473	4	0.3893	1.058578	(4, 40.0)	0.3896
14	3.300561	4	0.5088	0.838305	(4, 40.0)	0.5091
15	1.997542	4	0.7362	0.499269	(4, 40.0)	0.7364
16	0.564233	4	0.9670	0.138569	(4, 40.0)	0.9670

References

Balaguer J. y Cantavella-Jordá M. (2000), "Tourism as long-run economic growth factor: the spanish case". Instituto Valenciano de Investigaciones Económicas. WP-EC 2000-10.

Brida J.G., Lanzilotta B. y Risso W.A. (2007), "Turismo y crecimiento económico: el caso de Uruguay".

Brida J. G. y Risso W. A. (2009), "Tourism as a factor of long-run economic growth: An empirical analysis for Chile"

Caglayan E., Karymshakov K. y Sak N. (2014) "Relationship between tourism and economic Growth: A panel Granger Causality Approach", Asian Economic and Financial Review 2(5):591-602

Dritsakis N. (2004), "Tourism as a long-run economic growth factor: an empirical investigation for Greece using causality analysis". Tourism Economics, Vol. 10, pp 305-316.

Durbarry R. (2004), "Tourism and economic growth: the case of Mauritius". Tourism Economics, Vol. 10, pp 389-401.

Echeverri Cañas, Lina María y Estay-Niculcar, Christian A. (2012), "The role of tourism in the country brand concolidation of Argentina".

Elliot G., Rothenberg T. and Stock J., (1992), "Efficient Tests for and Autoregressive Unit Root". National Bureau for Economic Research. Technical Working Paper N°130.

Granger C.W.J. (1969), "Investigating causal relations by econometric models and cross-spectral methods". Econométrica, Vol. 37, No. 3 (Aug., 1969), pp 424-438.

Guisan M.C. y Aguayo E. (2002), "Employment and regional tourism in European countries: 1995-2000". Estudios Económicos Regionales y Sectoriales. AEEADE, Vol. 2.

Gujarati Damodar N. (2010), "Econometría". McGraw-Hill.

Gunduz L. y Hatemi-J A. (2005), "Is the tourism-led growth hypothesis valid for Turkey?" Applied Economics Letters, Vol. 12, pp 499-504.

Hamilton J.D., (1994), "Time Series Analysis". Princeton University Press.

Hyun J.K., *et al* (2005), "Tourism expansion and economic development: The case of Taiwan". Tourism Management, Vol. 27, pp 925-933.

INDEC, "Estadísticas de Turismo Internacional, cuarto trimestre y año 2017". Turismo vol. 2 N°3.

Jafar Jafari (1987), "Tourism models: the sociocultural aspects", University of Wisconsin-Stout.

Johnston J. y Dinardo J. (1997), "Econometric Methods". McGraw-Hill, 4th Edition.

Johansen S. (1995), "Likelihood-Base Inference in Cointegrated Vector Autoregressive Models". Oxford University Press.

Ministerio de Hacienda y Finanzas Públicas de Argentina "Informes de Cadenas de Valor, Servicios Turísticos". Año 1 - N°11 Agosto 2016

Marin, Dalia (1992), "Is the Export-Led Growth Hypothesis Valid for Industrialized Countries?" The MIT Press. The Review of Economics and Statistics, Vol. 74, No. 4, pp. 678-688

Ng, S. y P. Perron (2001), "Lag length selection and the construction of unit root tests with good size and power". Econométrica, vol. 69, pp. 1519–1554.

Nowak J.J., Sahli Mondher y Cortés-Jiménez I. (2007), "Tourism, capital goods imports and economic growth: theory and evidence for Spain". Tourism Economics, Vol. 13, pp 515-536.

OECD (2014), "Tourism Trends and Policies" http://dx.doi.org/10.1787/tour-2014-42-en

Oh C. (2002), "The contribution of tourism development to economic growth in the Korean economy". Tourism Management, Vol. 26, pp 39-44.

Sturzenegger A. y Porto N. (2009) "Informe Económico Anual sobre la Actividad de Viajes y Turismo, 2008". Cámara Argentina de Turismo.

Vanhove N. (2005), "The economics of tourism destinations". Elsevier.

World Economic Forum (2009), "The Travel & Tourism Competitiveness Report 2009 - Managing in a Time of Turbulence".

World Tourism Organization (2017), "World Tourism Barometer". Vol. 15.