Journal of Business Strategies, Vol.13, No.2, 2019, pp 79–92 *DOI:10.29270/JBS.13.2(19).06*

DYNAMIC CAUSAL ASSOCIATION BETWEEN TOURISM AND MACROECONOMIC VARIABLES: EMPIRICAL EVIDENCE FROM PAKISTAN

Saghir Pervaiz Ghauri, Anum Hayat, and Marium Mazhar

ABSTRACT

This research paper made an effort to define the association between Tourism and macroeconomic variables (Economic growth, Exchange rate, current account deficit and inflation). The objective is to discover if the association is unidirectional or bidirectional. For this purpose annual data has been used since 1995 to 2018. Furthermore, Cointegration has been calculated using Johansen's cointegration assessment on time series data to find if a long-run affiliation exists among the variables. Before the co-integration test, it is desirable to find the static of the series for which Augmented Dickey-Fuller technique used at first difference. Because of the existence of cointegration, there is a possibility of short-run disequilibrium, so Vector Error Correction Model (VECM) is utilized to examine the disturbances of divergence or convergence finally Granger causality/Block exogeneity test is useful to find the causal relationship among variables, it also specifies unidirectional relationship or bidirectional relationship. As a result, it is found that there is a significance co-integration equation which shows the existence of long-term affiliation among series. Moreover, there is also an indication of short-run affiliation among variables. Finally, by using Granger causality test we identified one-way causal relationship, from tourism to current account balance, from economic growth to tourism and from exchange rate to CPI and current account balance. Furthermore, there is a two-way causality existence found between current account balance and inflation (CPI).

Keywords: Economic Growth, Exchange Rate, Current Account Deficit, Inflation and Tourism.

INTRODUCTION

In the present economic scenario, the Tourism sector can not only be regarded as one of the most important ones but one of the very fast-growing sector, which is an extreme necessity in the progress of the economic conditions of any nation in the current scenario. This sector is especially focused by the developing countries due to its potential to improve the economic conditions. For many nations, it is the single largest employment sector. Because this sector is mostly labour intensive it is a very ideal development sector for developing countries. Although the importance of this sector cannot be denied its importance has only been accepted since the start 0f 2000.

United Nations World Tourism Organization (2019) report demonstrates that the arrival of international tourist reaches 1.4 billion in 2018. The target was expected to reach by 2020, but a two year ahead achievement of the forecast depicts the rapid pace at which the sector is growing worldwide due to high demand. (Khalil, n.d.) said that progress in tourism can increase in the earnings of the household. Not only would it affect the individual levels but also the government revenue both with direct earnings and indirect business enhancements which is due to the multiplier effect. Because of the chain reaction that leads to progress in other sectors as well, it is important to make sure that the sector achieves momentum in a sustainable direction.

Majority of the studies conducted on tourism focuses on any one of the four major dimensions of tourism(Dwyer & Forsyth, 1993), of which the most basic one to be addressed is of economic growth because of enlarged tourism which highlights Tourism Led Economic Growth hypothesis. So the importance to find out the strength of link among the variables international tourism and economic growth and also to find out if the existence of this link is only one way or bidirectional is evident. Studies have shown that tourism inculcates competition among the firms causing them to increase their quality standards and therefore efficiency. This rise efficiency is due to competition between domestic and foreign firms which also results in achieving economies of scale which further plays a role in economic development (Jalil, Mahmood, & Idrees, 2013). This paper not only focuses on the effects of tourism on economic growth but further focuses on its effects on current account deficit, exchange rate and inflation.

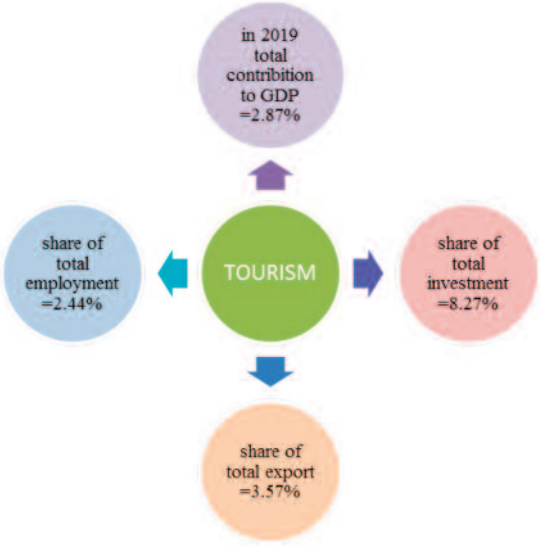
In many nations, the tourism sector has played as a fundamental industry in curbing the current account deficit for example in Turkey (Ongan, n.d.) and Portugal (Proença & Soukiazis, 2005). What needs to be taken care of is that the sector should have a sustained share as Current account balance is a prominent measure to investigate the health of an economy it is crucial to maintain a balanced current account because large

current account deficits would eventually lead to financial problems.

Moreover, any volatility in the national currency rate affects tourist spending on the destination. Depending on the strength of the internal currency and the strength of the currency the tourists intend to visit the sector is affected. This situation has been witnessed by even stronger states like the U.S (Ongan, Işik, & Özdemir, 2017) and Greece (Thompson Alexi & Thompson Henry, 2010). These changes in the exchange rate are partly effected by inflation, Therefore it is necessary to figure out the association between inflation and tourism. Inflation deteriorates the tourist's purchasing power which in turns affects the sector. If the domestic country is weaker the number of tourists from that certain nation might not wish to travel to a destination with stronger currency while if the destination intended has a stronger currency this reduces the no. of inbound tourists. (Fullard, 2014).

In the case of Pakistan, It has an intense potential for this sector. Each of the five provinces of Pakistan is unique in their manner with great opportunities and sites that can be of great attraction to international tourists. Recently the number of tourists arriving in Pakistan are increasing each year, One reason might be the fact that the current government is focusing on this sector very diligently to make it one of the prominent contributors towards the growth of the economy. Pakistan has intense scenic beauty and strong prospects for ecotourism as well as adventure tourism which can also further enhance our sports industry.

IMPACT OF TOURISM IN PAKISTAN ECONOMY



Source: World travel and tourism council (WTTC)

LITERATURE REVIEW

(Mohammed, Mostéfa, & Mohammed, 2015) studied causality between economic growth and tourism spending in 49 nations. Cointegration technique has been used, while Granger causality is also applied. The results show co-integration further two-way causality is also evident among tourism spending and economic growth. This implies that if resources are allocated properly it would enhance the industry and tourism growth will lead to economic growth.

(Mishra & Rout, 2011) they inspect the link among the expansion of the variable of the industry of tourism spending and economic growth in the economy of India. This paper verifies the possibility of a uni-directional causal relationship in the long-term from the tourism sector towards the growth and expansion of the economy. This paper has applied Johansen's method for co-integration, for causality granger method and error correction model has been used.

(Malik, 2010) examine the causal and co-integration relationship among current account deficit in tourism and growth in the economy of Pakistan by using Johansen co-integration techniques and Error Correction Model (ECM). The findings show that tourism increase which decreases the deficit in the current account which further leads to GDP growth and therefore an indication of long-run affiliation is highlighted. The paper also discovers the causal link between tourism and GDP, GDP and CAD, tourist and CAD by using Grangers Causality test. This study finds evidence of the one-way causal link between tourist to GDP, CAD to GDP and tourist to CAD.

(Stauvermann, Kumar, Jawad, Shahzad, & Kumar, 2018) in their research examined short and long-run association of GDP, exchange rate and tourism receipts (a case study of Srilanka) and they find out the evidence for both. The link exists among tourism receipt, exchange rate and GDP. They also found one-way causal relationship among exchange rate to output and receipts of tourism to output and capital and from production to capital (output and capital in each worker terms).

(Tang, 2011) in their study inspected the association among arrival of tourist, unemployment, crime rate and inflation by application of multivariate Johansen co-integration test is used to find out the long-term association and the granger causality approach by the VECM is applied to discover the causal association among mentioned variables (a case study

of Malaysia). As a result, they found that variables are cointegrated and in long-term crime, inflation and tourist arrivals all by nature represent bilateral causality although unemployment is unidirectional from unemployment to crime. However, in short-run, they found one-way causality from inflation towards tourist arrival while inflation does lead to crime. Fascinatingly tourist arrivals, unemployment and corruption are in a two-sided causal relationship in nature.

(Tang & Lumpur, 2012) examines three variables real tourism receipts, real income and a real exchange rate, the paper shows that a dynamic relationship is present between the variables. No evidence of Granger causality has been found in the short run but evidence of causality among real income and real tourism receipts both ways is highlighted in the long-term. Additionally, unidirectional causality has been found in both the long and short run in the direction of real exchange rates leading to real tourism and at last to real income.

(Schubert, Brida, & Risso, 2011) studies the influence of a small economy that is pushed forward by tourism. As the rate of international tourism demand expands this is reciprocated by the growth in the economy. The model used shows that transitional dynamics cautiously accelerating growth in the economy and accelerating terms of trade. The aim is to find out the possibility of a long-term link amid variables of economic growth. Cointegration analysis has been performed for calculating earnings from the real exchange rate and international tourism. The case of Antigua and Barbuda has been considered since 1970 – 2008.

(Kennedyja, 2010) inspects the case of Croatia in tourism-led growth hypothesis applying data quarterly from 2001 to 2008. In this study Toda-Yamamoto method for long run causality test has been used which shows positive one-way causality, from GDP towards international tourism revenues. It also reveals positive one-way causality leading from Real GDP towards the Real effective exchange rate. Therefore the outcome is supportive of Tourism growth Hypothesis.

(Brida, Cortes-jimenez, & Pulina, 2017) described the international trade is considered to be an unconventional kind of exports as it requires an origin of receipts and consumption. Exports help in the progress as it accelerates the level of investment in a country. This is caused by various reasons like a relief in the foreign exchange reserves which eventually

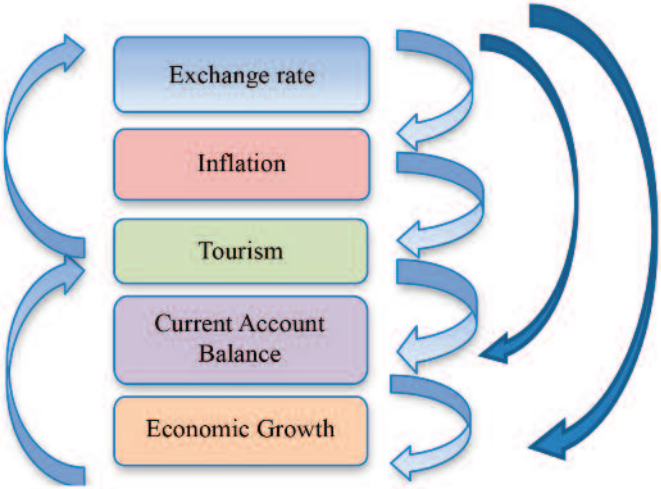
causes capital and intermediate goods to be imported (McKinnon, 1964), The import also causes voluntary domestic savings and investment opportunities resulting from government savings, external capital and banking system to enhance (Ghirmay, Grabowski, & Sharma, 2001).

(Milne, Ateljevic, & Milne, 2010) This paper inspects the complex link across the tourism industry and economic development. A brief overview has been given as to how this link is important to understand the theoretical framework to enhance international as well as local development process through further improvement in the tourism structure.

(Kim & Lee, 2016) takes the scenario of inbound tourism to Japan from South Korea. The study suggests that usually tourism is used as a strong indicator to reveal tourism demand. The purpose was to indicate genuine indicators of the price for the model of demand. Six different models were considered. Significance was found in the exchange rate, Relative price and per capita income in the model applied with the exchange rate and relative price excluding the transport cost.

(Şak2 & Karymshakov, n.d.)studies relationship across economic growth and tourism (1995-2008) in Europe, America and Asia discovered evidence of the two-way link between GDP and tourism revenue in Europe and one-way causality from GDP towards tourism in America, Caribbean and Latin America furthermore there is an indication of one way causality from tourism directing towards GDP in South Asia, East Asia and Oceania but no causal relationship in Middle East Asia and Sub Saharan Africa, North Africa and Central Asia.

THEORETICAL FRAMEWORK



DATA

The objective of the research is to observe the dynamics of causality between tourism/travel and macroeconomic variables in Pakistan by putting time-series annual data from 1995 to 2018. This study included macroeconomic variables — Real Exchange Rate (EXCH), Real Gross Domestic Product (GDP), Current Account Balance (CAB), Inflation (CPI index) and for Tourism, it included proxy tourism receipts (TR).

HYPOTHESIS

H_1: There is a long-term association between tourism and macroeconomic variable.
H_2: There is causality amongst tourism and macroeconomic variables

Table-I:

Variables	Measurement	Source	Expected sign
Tourism receipts	US dollar$	The World Bank, World development index	Dependent variable
Real GDP	US dollar $	Economic Survey of Pakistan	+ev
Current account balance (deficit)	US dollar $	Handbook of statistics, SBP	-ev
Inflation (CPI index)	In %	Handbook of statistics, SBP	-ev or +ev
Real exchange rate	US dollar	The World Bank, World development index	- ev

Table I shows variables included in the study their measurement, sources and expected relationship with dependent variable tourism receipt.

METHODOLOGY

This study is investigating that the development of tourism depends on economic growth through the improvement of macroeconomic variables — CAB, CPI and EXCH.

All variables are altered into logarithm to solve the issue of heteroscedasticity. Then, firstly, stationary of all series have been tested through the ADF unit root test. Secondly, Johansen's co-integration test has been implemented to find if there is a long-term association with VECM to find direction and speed of short-term to long-term affiliation and finally granger causality test to find out the pair-wise causal connection amongst variables.

RESULT AND DISCUSSION

Augmented Dickey-Fuller Unit Root Test:

Checking for the stationarity of series is of crucial importance before determining the integration of the series. This is necessary to avoid the issue of spurious variables, where two variables seem to associate with each other either because of the presence of a third variable or entirely due to coincidence. For this determination Augmented Dickey-Fuller test is applied. The outcomes are depicted in Table II

Here Null hypothesis: H0= series is non-stationary /series has a unit root.

Table-II

Series	Order of Integration I(0)	p-value of ADF Test	H0= series has a unit root
LCPI	Level	0.8912	ACCEPT H0
LEXCH	Level	0.4703	ACCEPT H0
LGDP	Level	0.9914	ACCEPT H0
LTR	Level	0.6484	ACCEPT H0
CAB	Level	0.6108	ACCEPT H0
Since p-value of ADF test of all the series is greater than 0.05 hence they all are non-stationary at a level.			
Series	Order of Integration I(1)	p-value of ADF Test	H0= series has a unit root
LCPI	1ST Difference	0.0220	REJECT H0
LEXCH	1ST Difference	0.0022	REJECT H0
LGDP	1ST Difference	0.0036	REJECT H0
LTR	1ST Difference	0.0055	REJECT H0
CAB	1ST Difference	0.0091	REJECT H0
Since p-value of ADF test of all the series is less than 0.05 hence they all are stationary at 1st difference.			

According to result at 1st difference I (1) all the series are stationary hence we reject the null hypothesis of the existence of unit root for all series at 5% level of significance.

Johansen's Co-integration Test:

To examine the unit root test is the precursor of co-integration modelling, which is the first step. Theories of economics and finance postulates that there is a long-term association among non-stationary time series variables. Cointegration equilibrium method applied to inspect the long-term association among variables if they are taken on the first difference I (I),

The second step is the co-integration test; co-integration is a situation in which the regression of all non-stationary series may not lead to a false/spurious regression. If series are co-integrated that means there equilibrium/ long-term association among them.

As multiple variables exist in this study Johansen's co-integration test has been used. The variables that have been studied have the following form of the equation:

$$lTOUR_t = \beta_O + \beta_1 lCAD_t + \beta_2 lEX_t + \beta_3 lINF_t + \beta_4 lGDP_t + ut$$

The initial step of applying Johansen's co-integration is to check Lag Length Criteria.

H0= no co-integration exist.

Table III. Johansen's Co-integration Test results:

Hypothesized Number of co-integration equations	Eigen values	Trace statistics	0.05(5%) critical value (p-value)	Max-Eigen statistics	0.05(5%) critical value (p-value)
None	0.846852	93.20222*	69.81889 (0.0002)	39.40340*	33.87687 (0.0099)
At most 1	0.726814	53.79883*	47.85613 (0.0551)	27.24965	27.58434
At most 2	0.456956	26.54917	29.79707 (0.1131)	12.82188	21.13162 (0.4688)
At most 3	0.339031	13.72729	15.49471 (0.0907)	8.695002	14.26460 (0.3124)
At most 4	0.213083	5.032291*	3.841466 (0.0249)	5.032291*	3.841466 (0.0249)

Trace test and indicates 2 cointegrating eqn(s) at the 0.05 level
Max-eigenvalue test indicates 1 cointegration at the 0.05 level
** denotes rejection of the hypothesis at the 0.05 level*
***MacKinnon-Haug-Michelis (1999) p-values*

Table-III illustrate the outcome of Johansen's cointegration test in which the Trace test indicates the 3 co-integrating equation at the significance level of 5% and Max-Eigen test specifies 1 co-integrating equation significance at 5% which robust the findings of trace test. Hence there is the presence of long-term nexus among variables.

Vector Error Correction Model:

Johansen's cointegration test outcomes depicted the presence of long-run or equilibrium affiliation among variables that means there must be volatility in short-run. Thus we have to verify in this study whether short-run disequilibrium diverges or converges in long-run and at what speed it will adjust. For this purpose, we have to use the vector error correction model. Engle, Granger, & Mar 2007 developed Error correction mechanism which integrates short-run performance with the long-run performance of variables.

For the application of VECM we need to find Lag length criteria (SIC) or lag exclusion test and according to this the number of lag is 1 further results of VECM are shown in table-IV

Table-IV:

Variables	Error correction Coefficients	Standard error	t-stats
D(LTR)	-0.249066	(0.14950)	[-1.66600]
D(LGDP)	-0.001623	(0.01974)	[-0.08222]
D(LCPI)	0.089730	(0.02788)	[3.21864]
D(LEXCH)	0.140485	(0.08734)	[1.60840]
D(CAB)	-1.70E+10	(3.9E+09)	[-4.35071]

The ECM table-III result depicts that the coefficient of error terms for the estimated DLTR, DLGDP, DLCPI, DLEXCH and DCAB from which DLTR, DLGDP AND DCAB are negative while DLEXCH and DLCPI are positive. As the theory suggests that if the variable was above the equilibrium level, it is negative therefore in the following era the error term will diminish to its equilibrium level while if the variable is below the equilibrium level it is positive therefore in the following era the trajectory of the error term will move upwards towards the equilibrium. The pace at which alteration takes place is the coefficient's value.

Granger Causality /Block Exogeneity Test:

Table V:

DEPENDENT VARIABLE	DLTR	DLGDP	DLCPI	DLEXCH	DCAB EXCLUDED
DLTR	-	1.69E-06 (0.9990)	3.645333* (0.0562)	0.602266 (0.4377)	1.155585 (0.2824)
DGDP	3.264288* (0.0708)	-	0.001392 (0.9702)	1.149744 (0.2836)	0.518768 (0.4714)
DLCPI	1.312871 (0.2519)	0.495227 (0.4816)	-	1.249171 (0.2637)	17.92912* (0.0000)
DLEXCH	0.126475 (0.7221)	1.909722 (0.1670)	7.984472* (0.0047)	-	5.450864* (0.0196)
DCAB	2.128674 (0.1446)	0.001056 (0.9741)	3.033202* (0.0816)	1.265916 (0.2605)	-

**Values show the significance of Chi-sq value at 0.10 level.*

Granger causality test specifies the presence of a one-way causal association between tourism and real GDP from DLGDP to DLTR and between exchange rate, inflation and current account balance from DLEXCH to DLCPI, DCAB and Two-way causality between DCAB to DLCPI. Furthermore, this study found a one-way causal association between tourism and inflation from DLTR to DLCPI.

One / Two-way causality between the macroeconomic variables:

DLGDP	⟶	DLTR
DLTR	⟶	DCAB
DLEXCH	⟶	DLCPI and DCAB
DLCPI	⟷	DCAB

CONCLUSION:

This study investigates the causality between Tourism and other variables including Economic growth, Inflation, Current account deficit and Exchange rate. To attain the goal first Dickey fuller test was used because of non-stationary variables and found that entire variables of the study are static at I (1). After taking the variables at the first difference I (1), Johansen's co-integration and Granger causality test was used to explore the possibility of both long-run and short-run relationship. Findings illustrate that long-term equilibrium exists. It is further concluded that one-way causality present between Tourism and Current account balance. An increase in Tourism receipts would help in curbing and reducing the current account deficit.

Moreover, it was also seen that there is evidence of a one-way causal association between exchange rate and other macroeconomic variables including CPI and CAB. Therefore a change in the exchange rate would affect Inflation levels and Current account balances in Pakistan. Furthermore, there is the existence of one-way causality from real economic growth to tourism which means the rise in real economic growth eventually causes an increase in tourism in Pakistan. Moreover, two-way causality between inflation and current account balance is also found. Further variables have no causal relationship or significant impact on each other.

POLICY IMPLICATION

Considering the influence of Exchange rate and tourism receipts on current account deficit strong and applicable steps and policies should be made to solve this problem. The government of Pakistan is currently investing both its energy and funds to boost this industry but further steps should be taken as there are still many constraints and hurdles for the inbound tourism to grow. Some of the major constraints where the government should focus on are:

1. Pakistan lacks the infrastructure to invite a large number of tourists, which includes trained and skilled manpower, proper tourist accommodation facilities and attractions etc.

2. Proper wastage disposal as the increasing number of tourists are causing insufficient resources for waste management which must be taken care of on an urgent basis.
3. Besides infrastructure efficient transportation is also required to boost the number of tourists.
4. Safety measures should be taken as the topmost priority, as in the past this particular issue led to a huge loss in the tourism industry.
5. Pakistan needs to focus on attractive marketing strategies to not only attract more tourists but also highlight a positive image of Pakistan.

EMPIRICAL FINDINGS OF THE STUDY:

Series	ADF Unit root test (Level of integration for Stationarity)	Johansen's Cointegration Existence	Speed of adjustment towards long-run equilibrium in %	VEC Granger Causality
	Level	*1st diff*		
Tourism receipt	No	Yes		
Real GDP	No	Yes		
Current account balance (CAB)	No	Yes		
Inflation (CPI)	No	Yes		
Real Exchange rate (EXCH)	No	Yes		
Tourism receipts, CAB, GDP CPI and EXCH		Yes		
Tourism receipts			-24.9%	
Real GDP			-0.01%	
CAB			-170%	
CPI			0.89%	
EXCH			1.40%	
TR cause GDP, CPI, CAB, EXCH				TR cause CAB
GDP cause TR, CPI, CAB, EXCH				GDP cause TR
CPI cause GDP, TR, CPI, CAB, EXCH				CPI cause CAB
CAB cause TR, CPI, GDP, EXCH				CAB cause CPI
EXCH cause TR, CPI, CAB, GDP				EXCH cause CPI and CAB
At the significance level of 0.05 Significance lag level at 1				

Source: Author's calculations

REFERENCES:

Brida, J. G., Cortes-jimenez, I., & Pulina, M. (2017). Current Issues in Tourism Has the tourism-led growth hypothesis been validated ? A literature review, *3500*(September). https://doi.org/10.1080/13683500.2013.868414

Dwyer, L., & Forsyth, P. (1993). Assessing_the_benefits_and_ris.PDF, *20*, 751–768.

Engle, R. F., & Granger, C. W. J. (2007). Co-Integration and Error Correction : Representation, Estimation, and Testing. *Econometrica, 55*(2), 251–276.

Fullard, H. (2014). The Impact of Inflation on Cartography. *The Cartographic Journal*, *13*(1), 85–88. https://doi.org/10.1179/caj.1976.13.1.85

Jalil, A., Mahmood, T., & Idrees, M. (2013). Tourism-growth nexus in Pakistan: Evidence from ARDL bounds tests. *Economic Modelling*, *35*, 185–191. https://doi.org/10.1016/j.econmod.2013.06.034

Kennedyja, T. J. F. (2010). Research note : The tourism – growth nexus in Croatia, *16*(4), 1089–1094. https://doi.org/10.5367/te.2010.0014

Khalil, S. (n.d.). Role of Tourism in Economic Growth :

Kim, J., & Lee, C. (2016). Journal of Destination Marketing & Management Role of tourism price in attracting international tourists : The case of Japanese inbound tourism from South Korea. https://doi.org/10.1016/j.jdmm.2016.03.002

Malik, S., Chaudhry, I. S., Sheikh, M. R., & Farooqi, F. S. (2010). Tourism, Economic Growth and Current Account Deficit in Pakistan : Evidence from Co-integration and Causal Analysis. *European Journal of Economics, Finance and Administrative Sciences ISSN*, *22*(22).

Milne, S., Ateljevic, I., & Milne, S. (2010). Tourism, economic development and the global-local nexus : Theory embracing complexity Tourism, economic development and the global-local nexus : theory, *6688*. https://doi.org/10.1080/146166800110070478

Mishra, P. K., & Rout, H. B. (2011). Causality between Tourism and Economic Growth : Empirical Evidence from India. *European Journal of Social Sciences*, *18*(4).

Mohammed, G., Mostéfa, B., & Mohammed, S. (2015). Tourism Spending-

Economic Growth Causality in 49 Countries : A Dynamic Panel Data Approach. *Procedia Economics and Finance*, *23*(October 2014), 1613–1623. https://doi.org/10.1016/ S2212-5671(15)00402-5

Ongan, S., Işik, C., & Özdemir, D. (2017). The Effects of Real Exchange Rates and Income on International Tourism Demand for the USA from Some European Union Countries. *Economies*, *5*(4), 51. https://doi.org/10.3390/economies5040051

Proença, S. A., & Soukiazis, E. (2005). Demand for Tourism in Portugal : A Panel Data Approach Demand for Tourism in Portugal : A Panel Data Approach. *Working Paper*, 1–22.

Şak2, E. Ç. N., & Karymshakov, K. (n.d.). Relationship Between Tourism and Economic Growth : A Panel Granger Causality Approach. *Asian Economic and Financial Review Journal*, *2*(5), 591–602.

Schubert, S. F., Brida, J. G., & Risso, W. A. (2011). The impacts of international tourism demand on the economic growth of small economies dependent on tourism. *Tourism Management*, *32*(2), 377–385. https://doi.org/10.1016/j.tourman.2010.03.007

Stauvermann, P. J., Kumar, R. R., Jawad, S., Shahzad, H., & Kumar, N. N. (2018). Effect of tourism on the economic growth of Sri Lanka : accounting for capital per worker, exchange rate. *Economic Change and Restructuring*, *51*(1), 49–68. https://doi.org/10.1007/s10644-016-9198-6

Tang, C. F. (2011). An exploration of the dynamic relationship between tourist arrivals, inflation, unemployment and crime rates in Malaysia. *International Journal of Social Economics*, *38*(1), 50–69. https://doi.org/10.1108/03068291111091963

Tang, C. F., & Lumpur, K. (2012). Temporal Granger Causality and the Dynamics Relationship Between Real Tourism Receipts, Real Income and Real Exchange Rates in Malaysia. https://doi.org/10.1002/jtr

Thompson Alexi, & Thompson Henry. (2010). Research Note : The Exchange Rate, Euro Switch And Tourism Revenue In Greece. *Tourism Economics*, *16*(3), 773–780.