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THE RELATIONSHIP BETWEEN TOURISM AND ECONOMIC GROWTH: EVIDENCE FROM OCEANIA

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ABSTRACT

The article aims to examine the relationship between tourism and economic growth in four Oceanian countries between 1998 and 2017 using a VAR model. Results showed that international tourism receipts have a positive relationship with international tourism arrivals. Further, international tourism arrivals positively affect GDP growth rate, but international tourism receipts have a negative influence on GDP growth rate. These imply that economic growth of four Oceanian countries depends on the quantity of international tourists rather than expenditures of international visitors in domestic markets. In the short run, there is a directional relationship running from international tourism arrivals to international tourism receipts; from GDP growth rate to tourism arrivals; and from GDP growth rate to tourism receipts. In the long run, there is a relationship among variables at the 1% critical value and the 5% critical value. Lastly, we recommend that the tourism sector in the region should be improved to exploit expenditures of international tourists.

Contribution/Originality: This study contributes to the existing literature by clarifying the causal relationship between tourism and economic growth in four Oceanian countries between 1998 and 2017, using a vector autoregressive model.

1. INTRODUCTION

Toward 2030, many ocean-based industries have potential contributions to the global economy in terms of value added and employment. According to the prediction, the ocean economy is able to contribute more than double to global value added to reach over US$ 3 trillion between 2010 and 2030 (OECD, 2016). Tourism and travel is one of a large sector of the global economy. Demand for tourism services is projected to grow where consumption of leisure services becomes affordable (Adamou & Clerides, 2009). Tourism activities are defined as a source of economic growth throughout the world. Tourist spending is considered as an alternative form of exports that contributes to balance of payments through foreign exchange earning in many countries (Dritsakis, 2012).

Tourism has played an essential role in poverty alleviation in Pacific island countries. Tourism sector development contributes to ensure economic security along with broader development goals around infrastructure and employment. According to a study carried out by the Asian Development Bank (ADB), international arrivals and receipts increased by at least 30% and 50%, respectively, from 2005 to 2015 in six Pacific countries. For instance, Fiji dominated the market because of its established network of resorts and beach attractions, while Solomon Islands welcomed just more than 20,000 international visitors. Outbound tourism demand from New Zealand to Pacific island countries increased by 8.7% annually from 2014 to 2016. In Australia, the number of ocean cruise passengers grew 21% from 2015 to 2016 (ADB, 2018).

There are some existing studies examining the relationship between tourism and economic growth in different countries all over the world (Manzoor, Wei, & Asif, 2019; Mishra, Rout, & Mohapatra, 2011; Ridderstaat, Croes, & Nijkamp, 2014). However, none of these focus on assessing the relationship between tourism and economic growth in Oceania. What is the relationship between tourism and economic growth in Oceania? How do these variables correlate in the short run and long run? The article aims to examine the relationship between tourism and economic growth in four countries in Oceania between 1998 and 2017 using a vector autoregressive (VAR) model. More importantly, affordable policies are recommended to the governments of these countries to attract international tourists, boost economic growth and ensure sustainable development in the region.

The remainder of this paper is structured as follows. Section 2 presents the empirical review. Methods are presented in section 3. Section 4 presents results and discussion. Finally, conclusion and policy implications are summarized in section 5.

2. EMPIRICAL REVIEW

There are numerous studies assessing the relationship between tourism and economic growth in different countries all over the world. A research by Dritsakis (2012) investigated the relationship between economic growth and tourism development in seven Mediterranean countries between 1980 and 2007. Results showed that there are cointegration relationships between tourism development and gross domestic product (GDP) in these countries. Tourist receipts and the real exchange rate have significant effects on GDP. Likewise, Samimi, Sadeghi, and Sadeghi (2011) assessed the causality relationships between economic growth and tourism development in developing countries from 1995 to 2009. They found that there is a bilateral causality and positive long-run relationship between economic growth and tourism development. Further, output level encourages economic growth and level of development is an important determinant to attract tourists. Adamou and Clerides (2009) examined the relationship between tourism specialization, development and economic growth in Cyprus. Results addressed that there is a correlation between tourism specialization and level of development at relatively low levels of specialization, however eventually diminishing returns set in and tourism's contribution becomes minimal. Similarly, Akan, Arslan, and Işık (2007) investigated the causal relationship between tourism sector and economic growth in Turkey between1985 and 2007. They found that international tourism has a positive influence on the Turkey economic growth. Moreover, the tourism industry is defined as the most important contributor to expand globalization.

Further, a study by Ridderstaat et al. (2014) explored the long-run relationship between tourism development and economic growth in a small island destination. Evidences have been found that both tourism and tourism-related industries promote tourism development and economic growth. Likewise, Mishra et al. (2011) examined the relationship between tourism and economic growth in India for the period 1978–2009. They found that there is a long-run unidirectional causality running from tourism activities to economic growth. Therefore, in order to ensure sustainable growth in tourism and overall economy, the central and state governments, private bodies and voluntary organisations should become the active partners. Lastly, Manzoor et al. (2019) assessed the influence of tourism on economic growth and employment in Pakistan between 1990 and 2015. Results show that there is a positive and significant effect of tourism on Pakistan's economic growth and employment sector and there is also a long-run relationship among the variables.

3. METHODS

3.1. Data and Sources

A panel dataset for the relationship between tourism and economic growth of four countries in Oceania is gathered from the World Development Indicators released by the World Bank. Specifically, a panel dataset is collected for the last two decades (1998–2017). Thus, a total of 80 observations is entered for data analysis. The

panel data is used for this research because of the following advantages: (1) it benefits in terms of obtaining a large sample, giving more degree of freedom, more information, and less multi-collinearity among variables; and (2) it may overcome constraints related to control individual or time heterogeneity faced by the cross-sectional data (Hsiao, 2014).

3.2. The Vector Autoregressive (VAR) Model

The VAR model is used to examine the relationship between tourism and economic growth in Australia, Fiji, New Zealand, and Papua New Guinea between 1998 and 2017. The VAR model is chosen for this study because it interprets the endogenous variables solely by their own history, apart from deterministic regressors and therefore this method incorporates non-statistical a priori information (Pfaff, 2008). In addition, the VAR model is a popular method in economics and other sciences since it is a simple and flexible model for multivariate time series data (Suharsono, Aziza, & Pramesti, 2017).

The specification of a VAR model can be defined in Equation 1 as follows (Pfaff, 2008):

$$Y_t = A_1 Y_{t-1} + \cdots + A_p Y_{t-p} + \varepsilon_t \quad (1)$$

Where: Y_t denotes a set of K endogenous variables such as the number of international tourism arrivals, international tourism receipts, and annual GDP growth rate; A_i represents (K x K) coefficient matrices for i = 1,…, p; and ε_t is a K-dimensional process with $E(\varepsilon_t) = 0$ Equation 1.

Stability is an important characteristic of the VAR model, which generates stationary time series with time-invariant means, variances, and covariance structure, given sufficient starting values. This characteristic can be checked in Equation 2 with the following equation:

$$\det(I_k - A_1 z - \cdots - A_p z^p) \neq 0 \; for \; [z] = 1 \quad (2)$$

Where: I_k denotes the number of orders; A_i represents (K x K) coefficient matrices for i = 1,…, p; and z represents the number of roots Equation 2.

An important characteristic of the VAR model is stability and therefore it generates stationary time series with time invariant means, variances and covariance structure, given sufficient starting values. The stability of an empirical VAR model can be analysed by considering the companion form and computing the eigenvalues of the coefficient matrix. A VAR model may be specified in Equation 3 as follows (Pfaff, 2008):

$$\varepsilon_t = A\varepsilon_{t-1} + V_t \quad (3)$$

Where: ε_t denotes the dimension of the stacked vector; A is the dimension of the matrix (K_p x K_p); and V_t represents (KP x 1).

Indicators for Equation 3 can be calculated as follows:

$$\varepsilon_t = \begin{bmatrix} Y_t \\ \vdots \\ Y_{t-p+1} \end{bmatrix}; A = \begin{bmatrix} A_1 & A_2 & \cdots & A_{p-1} & A_p \\ I & 0 & \cdots & 0 & 0 \\ 0 & I & \cdots & 0 & 0 \\ \vdots & \vdots & \ddots & \vdots & \vdots \\ 0 & 0 & \cdots & I & 0 \end{bmatrix}; V_t = \begin{bmatrix} U_t \\ 0 \\ \vdots \\ 0 \end{bmatrix} \quad (4)$$

Table 1 presents covariates of the VAR model.

Table-1. Description of covariates in the VAR model.

Variable Definitions	Unit
Number of international tourism arrivals	person
International tourism receipts	US$
Annual GDP growth rate	%

In this research, the procedure of a VAR model includes six steps, consisting of (1) performing the unit root test; (2) determining lag length; (3) estimating the VAR model; (4) testing the Granger causality; (5) checking the stability of eigenvalues; and (6) implementing the Johansen test for co-integration. The VAR model is estimated by the Stata MP 14.2 software.

4. RESULTS AND DISCUSSION

4.1. Tourism and Economic Growth in Oceania: An Overview

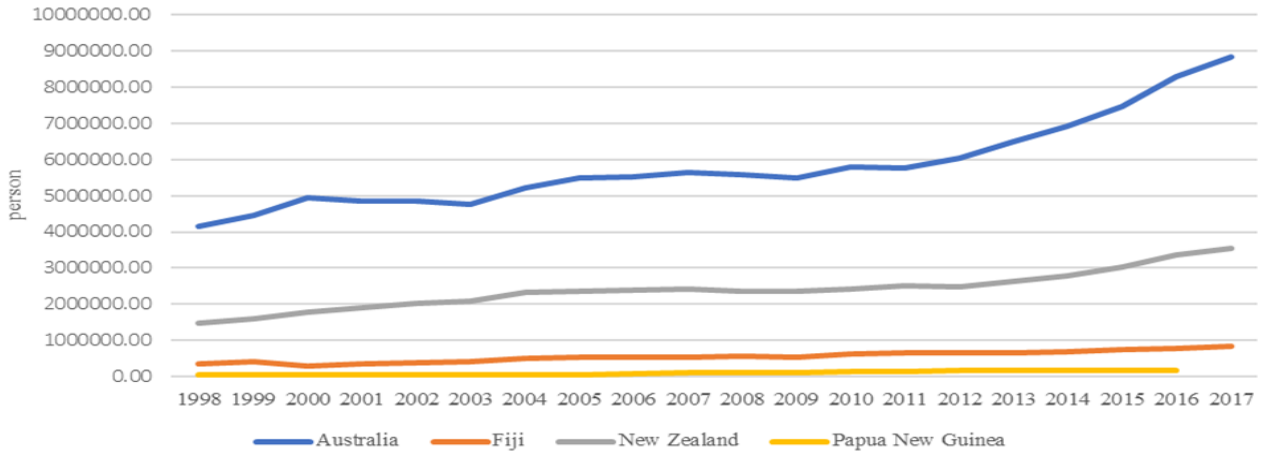

Figure-1. Number of international tourism arrivals of selected countries in Oceania.

Source: World Bank (2020)

As seen in Figure 1, the number of international tourism arrivals increased for the last two decades (1998–2017). The number of international tourists is dominated by Australia, followed by New Zealand, Fiji, and Papua New Guinea. For instance, by 2017, the number of international tourists of Australia accounted for more than 8.8 million, more than 3.5 million of international tourists visited New Zealand, and the number of international tourists went to Fiji was 843 thousand.

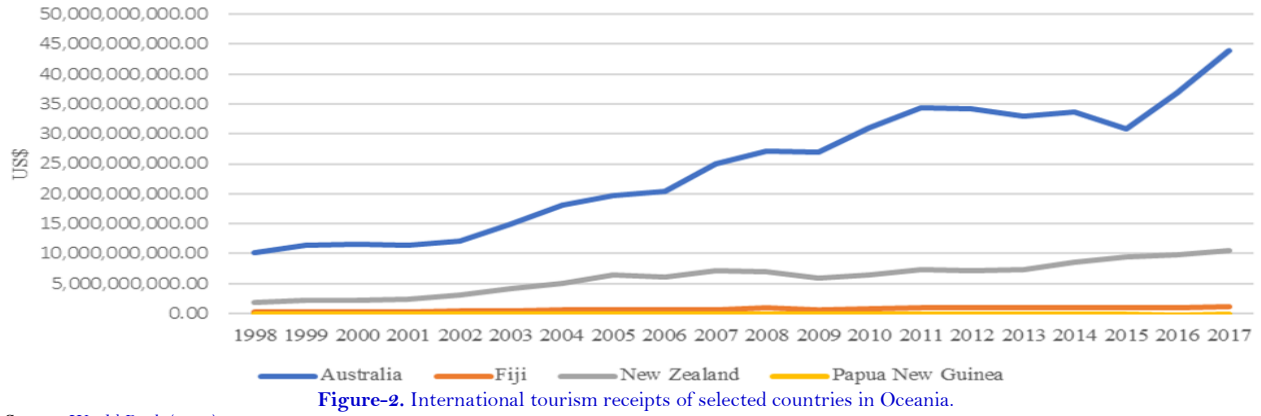

Figure-2. International tourism receipts of selected countries in Oceania.

Source: World Bank (2020).

Figure 2 shows international tourism receipts in Oceania which was dominated by Australia, followed by New Zealand, Fiji, and Papua New Guinea. For example, by 2017, international tourism receipts of Australia reached

nearly US$44 billion, while receipts of New Zealand accounted for more than US$10.5 billion, followed by Fiji (about US$1.1 billion), and Papua New Guinea (US$15.3 million).

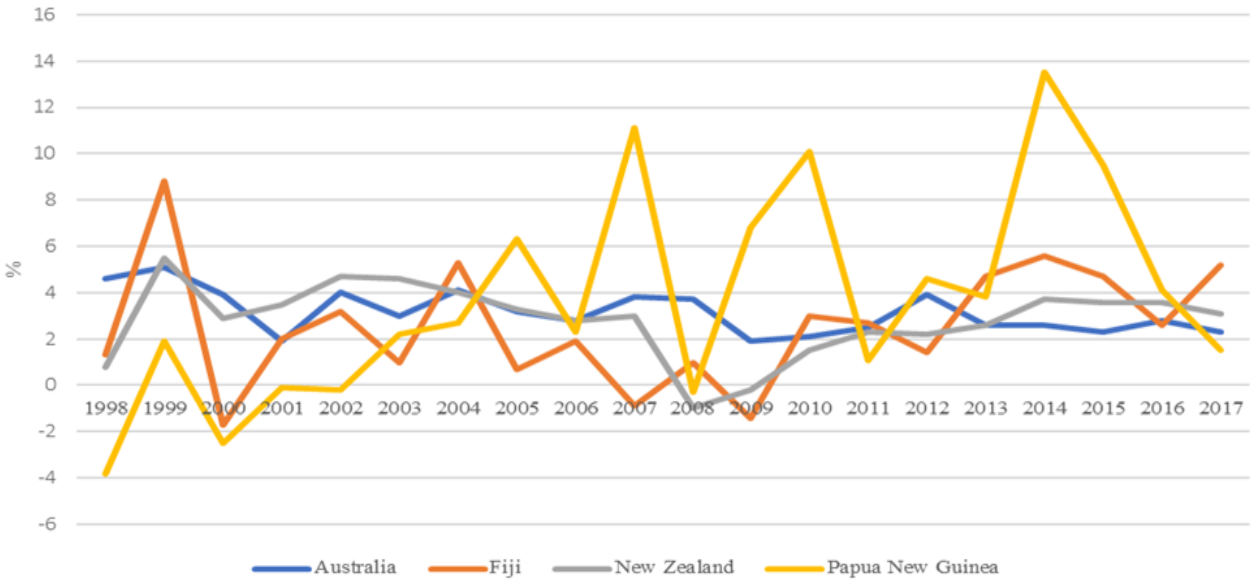

Figure-3. Annual GDP growth rate of selected countries in Oceania.

Source: World Bank (2020).

Figure 3 shows the rate of annual GDP growth of four countries which fluctuated between 1998 and 2017. From 2013 to 2017, annual GDP growth rate was dominated by Papua New Guinea, followed by Fiji, New Zealand, and Australia. By 2017, annual GDP growth rate of Fiji accounted for 5.2 percent, followed by New Zealand (3.1 percent), Australia (2.3 percent), and Papua New Guinea (1.5 percent).

Table-2. Characteristics of tourism and economic growth of selected countries in Oceania.

Variables	Mean	SD	Min	Max
International tourism arrivals	2221300	2358193	0	8815000
International tourism receipts	7.77e+09	1.12e+10	1600000	4.40e+10
Annual GDP growth rate	3.06	2.78	-3.8	13.5

Note: SD denotes standard deviation.

It is evident from Table 2 that the number of international tourism arrivals and international tourism receipts of four countries account for about 2.2 million and US$7.7 billion, respectively, on average. The average annual GDP growth rate of four countries accounts for 3.06 percent.

4.2. The Relationship between Tourism and Economic Growth in Oceania

4.2.1. Performing the Unit Root Test

The unit root test is carried out to check the stationarity of the time series variables. In this study, the Augmented Dickey-Fuller (ADF) test and the Phillips-Peron (PP) test are used to examine the stationarity of tourism and economic growth in four Oceanian countries with the hypothesis as follows:

Null hypothesis (H_0): The variables contain a unit root.

Alternative hypothesis (H_a): The variables do not contain a unit root.

If a variable contains a unit root, then this implies that the time series of this variable is not stationarity.

Table-3. Results of the unit root test.

Variables		ADF Test		PP Test		Conclusion
		Level	1st difference	Level	1st difference	
LnInternational tourism arrivals	Intercept	0.33	-6.69***	0.42	-9.15***	I(1)
	Intercept & trend	-1.05	-6.64***	-1.13	-9.08***	I(1)
LnInternational tourism receipts	Intercept	-1.19	-9.80***	-1.26	-9.89***	I(1)
	Intercept & trend	-2.14	-7.27***	-2.26	-9.82***	I(1)
LnAnnual GDP growth rate	Intercept	-7.85***	-4.37***	-8.02***	-20.15***	I(0)
	Intercept & trend	-7.84***	-4.40***	-8.00***	-20.04***	I(0)

Note: *** denotes statistical significance at 1%

The results in Table 3 show that the time series of GDP growth is stationary at the level [I(0)] because the absolute value of test statistic is greater than critical values at the 1% and 5%, respectively. However, the time series of tourism arrivals and tourism receipts are not stationary at the level. Thus, the first difference is carried out to examine the stationary of these variables. Results indicate that the absolute values of test statistics are greater than critical values at the 1% and 5%, respectively and therefore we can conclude that the time series of these variables do not contain unit roots and this suggests that the time series are stationary at the first difference [I(1)]. Results of the unit root test is consistent to employ the VAR model.

4.2.2. Determining Lag Length

The purpose of this step is to identify the optimal lag for the VAR model. If the lag is used too little, then the residual of the regression will not show the white noise process and as the result, the actual error could not be accurately estimated by the model (Lütkepohl, Saikkonen, & Trenkler, 2001).

Table-4. Selection of the lag length.

Lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-408.28				10.070	10.823	10.860	10.915
1	-308.28	199.99*	9	0.00	0.918*	8.428*	8.575*	8.796*
2	-303.54	9.48	9	0.39	1.029	8.540	8.798	9.184
3	-296.92	13.24	9	0.15	1.098	8.603	8.970	9.523
4	-293.35	7.13	9	0.62	1.274	8.746	9.224	9.942
Endogenous: LnTourism arrivals LnTourism receipts LnGDP growth Exogenous: Constant Number of observations = 76								

Notes: * denotes lag order selected by the criterion; LL—log-likelihood values; LR—sequential modified likelihood ratio test statistics; FPE—final prediction error; AIC—Akaike information criterion; HQIC—Hannan–Quinn information criterion; SBIC—Schwarz's Bayesian information criterion.

The results in Table 4 suggest that the optimal lag is 1 (the number of lags is equal to 1) as recommended by the FPE, AIC, HQIC, and SBIC indicators. Therefore, lag 1 was chosen to run the VAR model in the next step.

4.2.3. Estimating the VAR Model

In Table 5, we found that international tourism receipts have a positive relationship with international tourism arrivals. Further, international tourism arrivals positively affect GDP growth rate, but international tourism receipts have a negative influence on GDP growth rate. These imply that economic growth of four Oceanian countries depends on the quantity of international tourists rather than expenditures of international visitors in domestic markets.

Table-5. Estimation of the VAR model.

Variables	Coefficient	Standard Error	t	P-value
LnTourism arrivals				
LnTourism arrivals (L1)	-0.204	0.39	-0.51	0.611
LnTourism receipts (L1)	0.613***	0.19	3.23	0.002
LnGDP growth (L1)	0.251	0.26	0.93	0.354
Constant	3.552*	1.91	1.86	0.067
LnTourism receipts				
LnTourism arrivals (L1)	-0.024	0.28	-0.09	0.932
LnTourism receipts (L1)	0.970***	0.13	7.12	0.000
LnGDP growth (L1)	0.075	0.19	0.39	0.698
Constant	0.776	1.37	0.57	0.573
LnGDP growth				
LnTourism arrivals (L1)	0.490***	0.18	2.68	0.009
LnTourism receipts (L1)	-0.243***	0.08	-2.80	0.007
LnGDP growth (L1)	-0.046	0.12	-0.38	0.706
Constant	-0.723	0.87	-0.83	0.412

Notes: L1 refers to lag 1; *** and * denote statistical significance at 1% and 10%, respectively.

4.2.4. Testing the Granger Causality

The Granger causality assesses the predictive capacity of a single variable on the others (Musunuru, 2017) and was used in this study to test several hypotheses:

Testing the relationship between tourism arrivals and other variables:

Null hypothesis (H_{01}): Tourism arrivals do not cause tourism receipts and GDP growth rate.

Alternative hypothesis (H_{a1}): Tourism arrivals cause tourism receipts and GDP growth rate.

Testing the relationship between tourism receipts and other variables:

Null hypothesis (H_{02}): Tourism receipts do not cause tourism arrivals and GDP growth rate.

Alternative hypothesis (H_{a2}): Tourism receipts cause tourism arrivals and GDP growth rate.

Testing the relationship between GDP growth rate and other variables:

Null hypothesis (H_{03}): GDP growth rate do not cause tourism arrivals and tourism receipts.

Alternative hypothesis (H_{a3}): GDP growth rate cause tourism arrivals and tourism receipts.

Table-6. Results of the granger causality wald test.

Directional relationship	Probability	Conclusion
Tourism arrivals ⟶ Tourism receipts	0.00 < 0.05	Reject H_0
Tourism arrivals ⟶ GDP growth rate	0.35 > 0.05	Accept H_0
Tourism receipts ⟶ Tourism arrivals	0.93 > 0.05	Accept H_0
Tourism receipts ⟶ GDP growth rate	0.69 > 0.05	Accept H_0
GDP growth rate ⟶ Tourism arrivals	0.00 < 0.05	Reject H_0
GDP growth rate ⟶ Tourism receipts	0.00 < 0.05	Reject H_0

As can be seen from Table 6 there is a directional relationship running from international tourism arrivals to international tourism receipts; from GDP growth rate to tourism arrivals; and from GDP growth rate to tourism receipts.

4.2.5. Checking the Stability of Eigenvalues

If all the eigenvalues lie inside the unit circle, then the VAR model satisfies the stability condition see Figure 4.

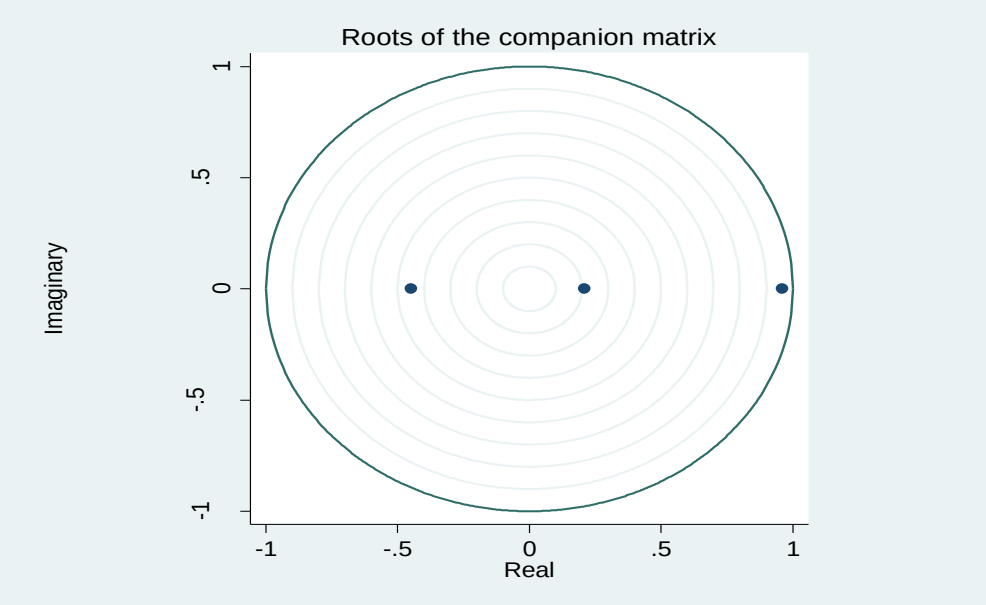

Figure-4. Checking the stability of eigenvalues in the VAR model.

4.2.6. Conducting the Johansen Test for Cointegration

The final step examines the long-term relationship among variables. If variables are cointegrated, then a long-term relationship among variables is possible (Musunuru, 2017).

The following hypotheses were tested:

Null hypothesis (H_0): There is no cointegration among variables.

Alternative hypothesis (H_a): There is cointegration among variables.

In this study, the Johansen cointegration test was performed using the trace statistic, which is a likelihood ratio-type test that operates under different assumptions in the deterministic part of the data generation process (Lütkepohl et al., 2001).

Table-7. Results of trace statistic in the Johansen cointegration test.

Maximum rank	LL	Eigenvalue	Trace statistic	5% critical value	1% critical value
0	-327.86	0.260	37.01	29.68	35.65
1	-316.08	0.146	13.46*1*5	15.41	20.04
2	-309.91	0.014	1.11	3.76	6.65
3	-309.35				

Notes: *1 and *5 denote the number of cointegrations (ranks) chosen to accept the null hypothesis at 1% and 5% critical values.

Table 7 shows that the null hypothesis cannot be rejected in rank 1 (one cointegration) because the trace statistic is less than the 1% critical value (13.46 < 20.04) and 5% critical value (13.46 < 15.41). These results thus imply one cointegration among variables at the 1% critical value and the 5% critical value.

4.3. Discussion

We found that international tourism receipts have a positive relationship with international tourism arrivals. Further, international tourism arrivals positively affect GDP growth rate, but international tourism receipts have a negative influence on GDP growth rate. These imply that economic growth of four Oceanian countries depends on the quantity of international tourists rather than expenditures of international visitors in domestic markets. In the short run, there is a directional relationship running from international tourism arrivals to international tourism receipts; from GDP growth rate to tourism arrivals; and from GDP growth rate to tourism receipts. In the long run, there is a relationship among variables at the 1% critical value and the 5% critical value.

5. CONCLUSION AND POLICY IMPLICATIONS

The aim of this article is to examine the relationship between tourism and economic growth in four Oceanian countries between 1998 and 2017. Results showed that international tourism receipts have a positive relationship with international tourism arrivals.

Further, international tourism arrivals positively affect GDP growth rate, but international tourism receipts have a negative influence on GDP growth rate. These imply that economic growth of four Oceanian countries depends on the quantity of international tourists rather than expenditures of international visitors in domestic markets.

In the short run, there is a directional relationship running from international tourism arrivals to international tourism receipts; from GDP growth rate to tourism arrivals; and from GDP growth rate to tourism receipts. In the long run, there is a relationship among variables at the 1% critical value and the 5% critical value. Evidences have been found that economic growth of four Oceanian countries rely on the number of international tourists rather than expenditures of international visitors in domestic markets. Therefore, the tourism sector in the region should be improved to exploit expenditures of international tourists.

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REFERENCES

Adamou, A., & Clerides, S. (2009). Tourism, development and growth: International evidence and lessons for Cyprus. *Cyprus Economic Policy Review*, *3*(2), 3-22.

ADB. (2018). Tourism as a driver of growth in the Pacific: A pathway to growth and prosperity for Pacific island countries. Issues in Pacific Development, No. 2, June 2018. Asian Development Bank, 6 ADB Avenue, Mandaluyong City 1550 Metro Manila, Philippines, pp. 1-26. Publication Stock No. ARM189372-2.

Akan, Y., Arslan, İ., & Işık, U. C. (2007). The impact of tourism on economic growth: The case of Turkey. *Journal of Tourism*, *9*, 1-24.

Dritsakis, N. (2012). Tourism development and economic growth in seven Mediterranean countries: A panel data approach. *Tourism Economics*, *18*(4), 801-816.Available at: 10.5367/te.2012.0140.

Hsiao, C. (2014). *Analysis of panel data* (3rd ed.). New York: Cambridge University Press.

Lütkepohl, H., Saikkonen, P., & Trenkler, C. (2001). Maximum eigenvalue versus trace tests for the cointegrating rank of a VAR process. *The Econometrics Journal*, *4*(2), 287-310.Available at: https://doi.org/10.1111/1368-423x.00068.

Manzoor, F., Wei, L., & Asif, M. (2019). The contribution of sustainable tourism to economic growth and employment in Pakistan. *International Journal of Environmental Research and Public Health*, *16*(3785), 1-14.Available at: 10.3390/ijerph16193785.

Mishra, P. K., Rout, H. B., & Mohapatra, S. S. (2011). Causality between tourism and economic growth: Empirical evidence from India. *European Journal of Social Sciences*, *18*(4), 518-527.

Musunuru, N. (2017). Causal relationships between grain, meat prices and exchange rates. *International Journal of Food and Agricultural Economics*, *5*(4), 1-10.

OECD. (2016). *The ocean economy in 2030*. Paris: OECD Publishing.

Pfaff, B. (2008). VAR, SVAR and SVEC models: Implementation within R package vars. *Journal of Statistical Software*, *27*(4), 1-32.Available at: https://doi.org/10.18637/jss.v027.i04.

Ridderstaat, J., Croes, R., & Nijkamp, P. (2014). Tourism and long-run economic growth in Aruba. *International Journal of Tourism Research*, *16*(5), 472-487.Available at: https://doi.org/10.1002/jtr.1941

Samimi, A. J., Sadeghi, S., & Sadeghi, S. (2011). Tourism and economic growth in developing countries: P-VAR approach. *Middle-East Journal of Scientific Research*, *10*(1), 28-32.

Suharsono, A., Aziza, A., & Pramesti, W. (2017). *Comparison of vector autoregressive (VAR) and vector error correction models (VECM) for index of ASEAN stock price*. Paper presented at the In AIP Conference Proceedings 1913 AIP Publishing: International Conference and Workshop on Mathematical Analysis and its Applications (ICWOMAA 2017), 1: 020032-1-020032-9.

World Bank. (2020). World development indicators. International tourism receipts in Oceania. Retrieved from: https://databank.worldbank.org/reports.aspx?source=2&series=NY.GDP.PCAP.CD&country=# [Accessed January 31, 2020].