Journal of the Asia Pacific Economy

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/rjap20

Tourism and economic growth in the Pacific region: evidence from five small island economies

Ronald Ravinesh Kumar & Peter Josef Stauvermann

To cite this article: Ronald Ravinesh Kumar & Peter Josef Stauvermann (2021): Tourism and economic growth in the Pacific region: evidence from five small island economies, Journal of the Asia Pacific Economy, DOI: 10.1080/13547860.2021.1944796

To link to this article: https://doi.org/10.1080/13547860.2021.1944796

JOURNAL OF THE ASIA PACIFIC ECONOMY
https://doi.org/10.1080/13547860.2021.1944796

Tourism and economic growth in the Pacific region: evidence from five small island economies

Ronald Ravinesh Kumar[a] and Peter Josef Stauvermann[b]

[a]School of Accounting, Finance and Economics, The University of the South Pacific, Suva, Fiji;
[b]Department of Global Business & Economics, Changwon National University, Changwon, Republic of Korea (South Korea)

ABSTRACT

We present a country-specific analysis on the effect of tourism on the economic growth of five small Pacific Island Countries (PICs) – Fiji, Samoa, Solomon Islands, Tonga and Vanuatu. The results show tourism development is growth-enhancing for all five countries. Foreign direct investment (FDI) is growth-enhancing for Fiji, Samoa, Solomon Islands and Vanuatu, and in the short run, a delayed negative association for Fiji and Vanuatu is found. Remittances are growth-retarding for Fiji, Samoa and Tonga, with a short-run delayed positive association for Fiji, Tonga and Samoa. Financial development is growth-retarding for Solomon Islands and Tonga, with a short-run positive association for Fiji and Samoa. While the results underscore the huge importance of tourism in generating growth and FDI in the Pacific, given the ongoing adverse effects of Coronavirus disease 2019 (COVID-19) pandemic, PICs will have to focus on alternative sectors to progress economic activities. Policy suggestions are discussed along these lines.

KEYWORDS

Small Pacific island countries; tourism; FDI; financial development; remittances; growth

1. Introduction

Economic growth is defined as an increase in real per capita income or gross domestic product (GDP). The expansion in economic activity arises from the operations of productive sectors in the economy. A growing economy signifies, among other things, growth in employment and productivity, and growth in consumption and investment activities in both real and financial sectors.

For the purpose of effective macroeconomic management, it is crucial to identify and validate the sources of economic growth. In this article, we examine some plausible sources' effect on the growth of five small Pacific island countries (PICs) – Fiji, Samoa, Solomon Islands, Tonga and Vanuatu. Considering the developments and the measures necessary to minimize the impact of the COVID-19 pandemic, it is clear that some sectors that were at the forefront of growth engine have shrunk dramatically. Also, the fact that the small PICs rely on a few sectors for economic

CONTACT Ronald Ravinesh Kumar ronald.kumar@usp.ac.fj

development and income generation among which tourism is the chief (Schubert, Brida, and Risso 2011; Seetanah 2011; Bojanic and Lo 2016), it is essential to stock-take the effects of at least a few of these sources.

Usually, growth theorists have been investigating the causes and drivers of growth by focusing on capital accumulation (Solow 1956), human capital (Lucas 1988), research and development and innovations (Romer 1987, 1990). Unfortunately, for most small island countries in remote areas, not only data are lacking on these variables, but the resulting policy recommendations cannot be efficiently applied, due to greater focus on non-conventional albeit non-trivial sources of economic growth such as tourism, financial development, inward remittances and foreign direct investment (FDI). Also, the current socioeconomic climate that requires short-to-medium terms solutions suggests that countries should look beyond the theoretical drivers of growth.

The small island countries' economic activities are constrained by the small size of domestic markets and population, the possibilities to exploit economies of scale and specialization, and far from perfectly competitive markets. Moreover, while there are some island countries that exports scarce natural resources (like phosphate mining from Nauru in former times and bauxite mining in Fiji), many lack major investments from pure economic viewpoint of foreign managers and investors.

Fortunately, the evolution of tourism and the coincidence that many island economies including the PICs have become relatively attractive tourist destinations provide an opportunity for PICs to catch up with other growing economies (Harrison and Prasad, 2013). The PICs to some extent have unique sceneries, environment and culture, which can support tourism activities. Nevertheless, tourism is a blessing and a curse, because the progress and prospects of the industry are dependent on the economic developments of tourists' home countries. The revenues from tourism grow when the incomes of the tourists' increase.

The development of tourism can be supported by the development and improvement of financial services, because both decrease transaction costs and give the low-income domestic population an opportunity to participate in economic activities such as small and medium enterprises. However, when tourists are unable to spend their holidays in PICs, like at the moment due to COVID-19 pandemic or due to global recessions such as the global financial crisis of 2008, the incomes from tourism drop sharply. As the sector is linked to other economic activities, the economy- and region-wide effects are catastrophic. Unfortunately, it is difficult to diversify such systemic risks.[1]

Tourism development and remittances can have linkages where relatives and friends are both tourists and senders of remittances to the home country. Inflows like remittances support economic growth if they are invested. FDIs can bring new ideas, technologies and better management strategies to the host county, which can enhance the economic efficiency and productivity. The extent to which these supporting factors will have positive impacts depend strongly on the preferences and abilities of economic agents. Further, the growth-enhancing effect vanishes if in the economy, inflows like remittances are spent on conspicuous consumption goods imported from abroad, the financial sectors provide credits mainly for consumption purposes or

accumulate huge non-performing loans (Chand, Kumar, and Stauvermann 2021; Kumar et al. 2018), and the FDIs are mainly brown field investments which may end up in the bankruptcy of the respective firms. However, studies have shown that in addition to tourism development, FDI (Wang 2009; Sokhanvar 2019), remittances (Makun 2018) and financial development (Chen and Jayaraman 2016) can be growth-enhancing sources for small island economies, and thus should be considered in growth and development plans (Jayaraman and Singh 2007; Narayan et al. 2010).

To this end, we examine the country-specific relationship between tourism and economic growth, alongside other key factors noted in the above studies, namely remittances, financial development and FDI. The five countries under consideration are similar in terms of their level of economic development, population size (less than a million people) and dependence on a few key sectors for major economic development. Prior studies specifically on tourism–growth relationship on PICs include counties such as Fiji, Cook Islands, Solomon Islands, Tonga and Papua New Guinea (Taylor 2001; Narayan et al. 2010; Kumar, Stauvermann, and Samitas 2016). Studies on tourism–FDI relationship in small island economies include Seetanah and Fauzel (2019) for Mauritius and Craigwell and Moore (2008) for small island-developing states (SIDS). Pertaining to small PICs, studies, such as Jayaraman and Singh (2007) and Jayaraman, Chen, and Bhatt (2014) on Fiji, underscore positive association between FDI and tourism. Some studies underscore the growth-enhancing effect of remittances and financial development for countries such as Fiji, Samoa, Solomon Islands, Tonga and Vanuatu (Chen and Jayaraman 2016; Jayaraman, Lau, and Ng 2018; Jayaraman, Choong, and Kumar 2011). Moreover, FDI has been identified as a significant contributor to economic activity in Fiji (Jayaraman and Singh 2007; Gani 1999).

In this study, an attempt is made to examine the effect of tourism, along with FDI, remittances and financial development on the economic growth, in a single model. The aim was to ascertain the strength and the direction in which these sources influence economic growth. Being mindful of a plethora of studies on tourism and economic growth, the contribution of this study is as follows. This study is an initial attempt to examine at country level, the effects of tourism alongside the other identified plausible sources of growth. A country-specific study is conducted on five small PICs – Fiji, Samoa, Solomon Islands, Tonga and Vanuatu – to capture the plausible uniformity and differences in the effects, which can facilitate dialogues on development policies in the region. Also, there are very few country-specific studies examining tourism–growth relationship for countries such as Samoa, Solomon Islands, Tonga and Vanuatu, although studies on Fiji have been forthcoming. Moreover, there is no study up to this point that has considered tourism along with the highlighted factors. By including Fiji with four other PICs, this study provides new and potentially interesting insights in terms of the plausible sources of growth. A caveat against this study is the missing of a conditioning variable in the model specification. A commonly used conditioning variable is the capital stock (Rao and Takirua 2010), which is omitted due to a significant lack of data on capital stock in four countries (Samoa, Solomon Islands, Tonga and Vanuatu). Arguably, applying the perpetual inventory method to construct capital stock data requires some strong assumptions on the

proxy data to start with, which may question the reliability of the capital stock, especially in the absence of reliable data on domestic investment. Therefore, it is appropriate to exclude capital stock as an explanatory variable in this case. Nevertheless, by including the additional key factors drawn from the literature on small PICs, and accounting for significant structural breaks, the problem of omitted variable bias is minimized. Further, the bi-variable causality between the plausible key factors and economic growth is unaffected in the absence of capital stock.

The study aims to ascertain answers to the following questions: Is the effect of tourism on the economic growth uniformly positive? Is tourism-led growth hypothesis (still) valid for the selected PICs? Are there any linkages between tourism and other plausible sources of growth? Alongside tourism, what are the effects of other factors on the economic growth? The study is useful from the point of view of macro-economic policy discussions at country and regional level. At the regional level, the results will support collective consideration of policies on tourism development and sustainable economic growth. At country level, the findings can facilitate policy discussions on resource allocations to growth-enhancing sectors. The remainder of the study is set out as follows. In Section 2, a literature on tourism and other factors (FDI, financial development and remittances) *viz.* economic growth follows. Section 3 presents the data and methods. Section 4 is on analyses and results. Finally, Section 5 concludes with some policy matters.

2. Literature review

A number of studies have examined the relationship between tourism development and economic growth. For SIDS, tourism is necessary for economic development (Algieri 2006; Bojanic and Lo 2016; Stauvermann and Kumar 2016; Seetanah 2011). In an extensive review of empirical studies on tourism and economic growth, Pablo-Romero and Molina (2013) show that positive association between tourism and economy is dependent on how strongly a country relies on tourism, that is, a country's degree of tourism specialization, and from an empirical point of view, on such factors such as model specifications and econometric methods used in the analysis.

Using visitor arrivals as a measure of tourism development, Seetanah (2011) examines the relationship between tourism development and economic growth for 19 island economies from 1990 to 2007. The study finds a bidirectional causality between tourism and economic growth, and that developing countries achieve higher growth effects from tourism than the developed countries. On the other hand, Cárdenas-García, Sánchez-Rivero, and Pulido-Fernández (2015) note from a study of 144 countries that tourism supports economic development mostly in more developed countries. Shahzad et al. (2017) find a positive association between tourism and growth for the top 10 tourist destinations (China, France, Germany, Italy, Mexico, Russia, Spain, Turkey, the UK and the USA) with the weakest linkages for China and Germany. With a focus on the emerging market economies, Sokhanvar, Çiftçioğlu, and Javid (2018) confirm a unidirectional causality from tourism to growth in Brazil and Philippines, a reverse causality for China, India, Indonesia, Malaysia, and Peru, a bidirectional causality for Chile, and no causality for seven other emerging

economies. For island economies, Bojanic and Lo (2016) highlight that tourism contributes hugely to their economic development. Antonakakis et al. (2019) analyze the relationship between tourism and economic growth using a panel vector autoregressive model for 113 countries over the period from 1995 to 2014. Interestingly, they find growth-led tourism for countries that are developing, non-democratic, highly bureaucratic and have low tourism specialization, and bidirectional causality for economies that have strong democratic setting, and possess high levels of government effectiveness.

Remittances inflow is the personal income that a family member working and living abroad sends to its family in another country, which usually is the birth country of the sender. Remittances can support consumption, investment, financial wealth, education and living standards, and alleviate poverty (Brown 1997; Brown and Ahlburg 1999; Buch and Kuckulenz 2010; Adams and Page 2005; Gupta, Pattillo, and Wagh 2009; Jimenez and Brown 2013). However, studies on remittances–growth and remittances–productivity relationship have yielded mixed results. Kumar's (2014) study on tourism and remittances in Kenya shows that tourism has a permanent positive effect, whereas remittances have a negative effect. Rao and Hassan (2012a) study on Bangladesh, an economy that receives high inflow of remittances, notes insignificant growth effects of remittances. Further, using 40 high remittance-receiving countries, they show that remittance inflow influences growth indirectly through its positive effect on financial development (Rao and Hassan 2012b), a result that resonates with some other studies (Giuliano and Ruiz-Arranz 2009; Mundaca 2009). For a small island economy of Kiribati, Rao and Takirua (2010) note a negative effect of remittances on output, which they argue could be due to unproductive use of remittances such as leisure. Moreover, for remittances to be effective, they need to be utilized in productive sectors of the economy, and since small island economies like Kiribati do not have the necessary economic and financial sectors to absorb remittances, the opportunity and the incentive to utilize remittances are low.

On a positive note, Cooray's (2012a) study on five countries in South Asia (Bangladesh, India, Nepal, Maldives, Pakistan and Sri Lanka) confirm that remittances inflow, and its interaction with education and financial development, positively impact growth. Further, remittances contribute to increasing the size and efficiency of the financial sector (Cooray, 2012b). Growth-enhancing effect of remittances is also noted for countries such as Guyana, Vanuatu, Samoa, Tonga and recently for 29 transition countries (Kumar 2014; Kumar, 2013; Kumar, Naidu, and Kumar, 2011; Jayaraman, Choong, and Kumar 2011; Kumar et al. 2018; Cao and Kang 2020; Cazachevici, Havranek, and Horvath 2020).

Interestingly, Cao and Kang (2020) conclude that remittances and the financial development are substitutes in promoting economic growth and hence economies with low level of financial development have positive effect of remittances on economic growth, whereas the effect of remittances is negative for countries with high levels of financial development. Deonanan et al. (2020) explore the relationship between remittances and financial development in Jamaica using annual data from 1976 to 2016, and the ARDL bounds approach. They note that remittances promote financial development and that remittances can substitute for financial development

in the short run. Chen and Jayaraman (2016) note that, for Fiji, remittances and financial development independently are growth enhancing; however, the interaction between the two has negative effect; they conclude that the inefficiency of the financial systems can be compensated by remittances as an alternative source of funding for productive investment. Similar conclusions are made for other small PICs such as Samoa, Solomon Islands, Tonga and Vanuatu (Jayaraman, Lau, and Ng 2018).

FDI is an important source of investment capital for SIDS. Various studies show that FDI supports tourism development (Barrowclough 2007; Read 2008; Jayaraman, Chen, and Bhatt 2014; Ravinthirakumaran et al. 2019), and it promotes the introduction and exchange of advanced knowledge and technologies necessary for the functioning of key economic sectors (Endo, 2006; Selvanathan, Selvanathan, and Viswanathan 2012; Stauvermann and Kumar 2017). Read (2008) notes that some of the key determinants of FDI in SIDS are trade openness, income levels and regional location. Craigwell and Moore (2008) note that generally FDI causes tourism. In a recent study on Mauritius economy, Seetanah and Fauzel (2019) confirm a positive association and a bidirectional causality between FDI and tourism. Using Fiji as a case, Jayaraman and Singh (2007) ascertain a short-run unidirectional causality from FDI to GDP and from FDI to employment. Tang, Selvanathan, and Selvanathan (2007) and Selvanathan, Selvanathan, and Viswanathan (2012) conclude that for large-developing economies such as China and India, a unidirectional causality runs from FDI to tourism, and two-way causality for India, respectively.

3. Methodology and data

3.1. Model

The basic model setup is as follows:

$$\mathrm{GDPC} = f(\mathrm{VST}, \mathrm{FDI}, \mathrm{CRD}, \mathrm{REM}) \tag{1}$$

where GDPC = GDP per capita (economic growth), VST = the number of visitor arrivals to each country (tourism development), FDI = ratio of FDI inflows to GDP, CRD = domestic credit as a percent of GDP (financial development), REM = remittances inflow as a percent of GDP. In log-form, the following linear equation is specified:

$$\widehat{\mathrm{GDPC}}_t = \alpha_0 C + \alpha_1^{\mathrm{VST}}\widehat{\mathrm{VST}}_t + \alpha_2^{\mathrm{FDI}}\widehat{\mathrm{FDI}}_t + \alpha_3^{\mathrm{CRD}}\widehat{\mathrm{CRD}}_t + \alpha_4^{\mathrm{REM}}\widehat{\mathrm{REM}}_t + \varepsilon_t \tag{2}$$

where C is the constant term with coefficient α_0, and ε is the error term; α_1^{VST}, α_2^{FDI}, α_3^{CRD} and α_4^{REM} are the coefficients of the respective terms of explanatory variables noted in Equation (1). A positive coefficient would imply the associated variable is growth-enhancing, while a negative coefficient would imply the associated factor is growth-retarding. For ease of reference, we shall use the terms GDPC, VST, FDI, CRD and REM for further model formulations and discussion of the results.

3.2. Data

Annual data were mainly sourced from the World Bank (2019) database. These include the following series: GDP per capita in constant US dollars (GDPC), visitor arrivals (VST), domestic credit as a percent of GDP (CRD), FDI inflows as a ratio of GDP (FDI) and personal remittances (REM). Additionally, for Fiji, some earlier years of data on visitor arrivals were drawn from Narayan et al. (2010). For the purpose of analysis, all variables were made unit-free by taking a natural log transformation. Further, for the country that had at least one negative FDI value, we scaled the series using the formula: $\mathrm{FDI}_t^{\mathrm{scaled}} = \ln(\mathrm{FDI}_t^{\mathrm{actual}} + \mathrm{ABS}(\min(\mathrm{FDI}^{\mathrm{ALL}}) + 0.0001))$, where ABS is the absolute value, min is the minimum (largest negative) value of the FDI, $\mathrm{FDI}^{\mathrm{ALL}}$ is the entire series and 0.0001 is the correction factor. There were a few instances of missing values mainly on visitor arrivals and remittances. To ensure consistency in each country sample, the missing data points were approximated from the actual data using the exponential growth formula and the assumption of a constant average growth rate (c.f. Kumar, Stauvermann, and Samitas 2016). Based on the data availability, the sample for each country varies. The complete sample for each country is as follows: 1970–2018 for Fiji ($n = 49$), 1982–2018 for Samoa and Tonga ($n = 37$), 1982–2018 for Solomon Islands ($n = 37$) and 1989–2018 for Vanuatu ($n = 30$). The data description and correlation between variables for each country are presented in Tables 1 and 2, respectively. In Figures 1 to 5, we present the plots of each variable for the five countries. To ensure uniformity, the plots are restricted to the time series from 1989 to 2018.

3.3. Methods of estimation

3.3.1. ARDL

The auto-regressive distributed lag (ARDL) approach provides flexibility in that different orders of integration, that is I(0) and I(1) series can be used to ascertain cointegration. Additionally, the method works well for small samples and minimizes endogeneity issues. Moreover, the method allows for the inclusion of structural breaks, which can improve the cointegration results and provide early detection of their importance in the short- and long-run estimations. For unit root analysis, we use the ADF (Dickey and Fuller 1979), PP (Phillips and Perron 1988) and KPSS (Kwiatkowski et al. 1992) tests, and to identify structural breaks in the dependent variable, we use the multiple breaks test of Bai and Perron (2003).

The following ARDL model is specified.

$$\begin{aligned}\Delta \mathrm{GDPC}_t = {} & \beta_{10} + \beta_{11}\mathrm{GDPC}_{t-1} + \beta_{12}\mathrm{VST}_{t-1} + \beta_{13}\mathrm{FDI}_{t-1} + \beta_{14}\mathrm{CRD}_{t-1} + \beta_{15}\mathrm{REM}_{t-1} \\ & + \sum_{i=1}^{p} \theta_{11i}\Delta\mathrm{GDPC}_{t-i} + \sum_{i=1}^{p} \theta_{12i}\Delta\mathrm{VST}_{t-i} + \sum_{i=1}^{p} \theta_{13i}\Delta\mathrm{FDI}_{t-i} \\ & + \sum_{i=1}^{p} \theta_{14i}\Delta\mathrm{CRD}_{t-i} + \sum_{i=1}^{p} \theta_{15i}\Delta\mathrm{REM}_{t-i} + \varepsilon_{1t}\end{aligned} \tag{3}$$

Table 1. Descriptive statistics.

	GDP per capita (US$) (GDPC)	Total visitor arrival (VST)	FDI (% GDP)–(FDI)	Domestic Credit (% GDP) (CRD)	Remittances (% GDP) (REM)
FIJI ($N = 49$)					
Mean	3216	327,027	3.33	43.59	2.67
Median	3086	294,070	2.56	34.16	1.66
Maximum	4795	870,309	19.28	93.54	6.76
Minimum	2207	29,977	−7.57	12.38	0.19
Std. Dev.	614	256,295	4.95	25.99	2.18
Skewness	0.729	0.492	1.244	0.589	0.442
Kurtosis	2.933	2.023	5.692	1.812	1.658
Jarque-Bera	4.353	3.920	27.426	5.712	5.267
Probability	0.113	0.141	0.000	0.058	0.072
Samoa ($N = 37$)					
Mean	2984	88,016	1.58	36.86	20.00
Median	2856	88,000	0.81	27.27	17.88
Maximum	3847	164,000	7.41	87.31	34.19
Minimum	2271	41,343	−0.45	9.20	0.21
Standard deviation	581	33,448	1.97	25.25	6.58
Skewness	0.140	0.307	1.476	0.674	0.179
Kurtosis	1.332	1.997	4.556	1.919	4.380
Jarque-Bera	4.409	2.134	17.168	4.599	3.132
Probability	0.110	0.344	0.000	0.100	0.209
Solomon Is. ($N = 30$)					
Mean	1371	14,188	4.41	22.34	1.19
Median	1434	11,650	2.79	20.12	1.20
Maximum	1655	27,900	24.36	38.37	2.45
Minimum	1062	4,981	−2.15	11.46	0.29
Standard deviation	164	7,016	5.76	9.29	0.73
Skewness	−0.223	0.399	1.843	0.454	0.148
Kurtosis	2.067	1.878	6.339	1.739	1.636
Jarque-Bera	1.338	2.371	30.911	3.018	2.434
Probability	0.512	0.306	0.000	0.221	0.296
Tonga ($N = 37$)					
Mean	3183	35,514	1.35	36.87	23.69
Median	3279	32,000	0.49	37.69	25.75
Maximum	4090	62,500	6.16	54.78	40.70
Minimum	2305	18,422	−1.31	20.71	13.08
Standard deviation	517	12,640	1.80	8.55	7.68
Skewness	−0.032	0.389	1.136	0.032	0.329
Kurtosis	1.897	1.927	3.473	2.522	2.003
Jarque-Bera	1.883	2.708	8.301	0.359	2.199
Probability	0.390	0.258	0.016	0.836	0.333
Vanuatu ($N = 39$)					
Mean	2659	62,890	7.32	43.88	5.29
Median	2676	50,000	6.98	36.43	5.07
Maximum	2995	116,000	13.81	71.73	14.51
Minimum	2071	34,206	1.63	29.15	1.05
Std. Dev.	222	26,654	3.37	14.45	3.44
Skewness	−0.767	0.772	0.613	0.914	0.792
Kurtosis	3.354	1.998	2.555	2.135	3.184
Jarque-Bera	4.026	5.508	2.767	6.640	4.129
Probability	0.134	0.064	0.251	0.036	0.127

Source: Author's own estimation,

To determine the presence of cointegration, question (3) is estimated using the ordinary least squares, and then, the lagged level coefficients are equated to 0. The null hypothesis of no cointegration implies: $\beta_{11} = \beta_{12} = \beta_{13} = \beta_{14} = \beta_{15} = 0$. The alternative hypothesis requires $\beta_{11} \neq 0; \beta_{12} \neq 0; \beta_{13} \neq 0; \beta_{14} \neq 0; \beta_{15} \neq 0,$ hence

Table 2. Correlation matrix.

	GDPC	VST	FDI	CRD	REM
FIJI					
GDPC	1.00				
	———				
VST	0.87***	1.00			
	(0.00)	———			
FDI	0.07	0.02***	1.00		
	(0.64)	0.89	———		
CRD	0.90***	0.95***	0.14	1.00	
	(0.00)	(0.00)	0.32	———	
REM	0.80***	0.94***	0.03	0.92***	1.00
	(0.00)	(0.00)	0.85	(0.00)	———
Samoa					
GDPC	1.00				
	———				
VST	0.94***	1.00			
	(0.00)	———			
FDI	0.08	0.16	1.00		
	(0.63)	(0.34)	———		
CRD	0.92***	0.97***	0.20	1.00	
	(0.00)	(0.00)	(0.23)	———	
REM	−0.26	−0.22	−0.01	−0.10	1.00
	(0.13)	(0.19)	(0.96)	(0.54)	———
Solomon Is.					
GDPC	1.00				
	———				
VST	0.49***	1.00			
	(0.01)	———			
FDI	0.31	0.43***	1.00		
	(0.10) *	(0.02)	———		
CRD	−0.17	0.61***	0.12	1.00	
	(0.36)	(0.00)	(0.54)	———	
REM	−0.42***	0.36**	0.03	0.79***	1.00
	(0.02)	(0.05)	(0.88)	(0.00)	———
Tonga					
GDP	1.00				
	———				
VST	0.96***	1.00			
	(0.00)	———			
FDI	−0.06	−0.07	1.00		
	(0.72)	(0.66)	———		
CRD	0.61***	0.60***	0.09	1.00	
	(0.00)	(0.00)	(0.58)	———	
REM	0.50***	0.51***	−0.09	0.20	1.00
	(0.00)	(0.00)	(0.58)	(0.25)	———
Vanuatu					
GDPC	1.00				
	———				
VST	0.78***	1.00			
	(0.00)	———			
FDI	−0.07	−0.30	1.00		
	(0.66)	(0.07) *	———		
CRD	0.60***	0.92***	−0.24	1.00	
	(0.00)	(0.00)	(0.14)	———	
REM	−0.39***	−0.39***	0.01	−0.23	1.00
	(0.01)	(0.01)	(0.94)	(0.16)	———

Notes: Correlations are on variables in their natural log form. *** and * indicate significance at 1% and 10% levels, respectively; (.) contains *p* values.
Source: Author's own estimation

implying cointegration. The F-statistics is examined against the critical bounds of Pesaran, Shin, and Smith (2001). If the computed F-statistics is above the upper I(1)

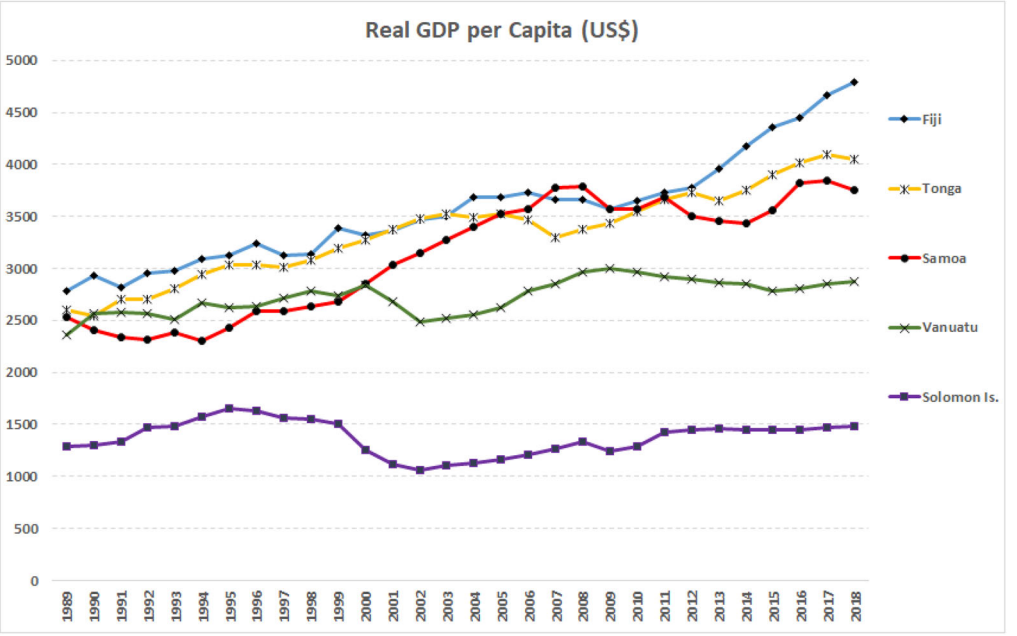

Figure 1. Real GDP per capita.

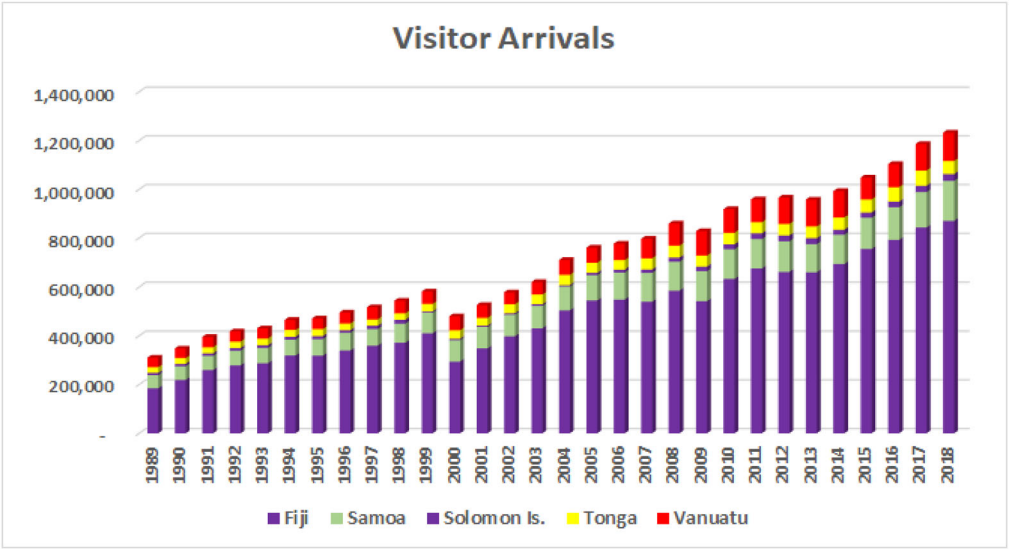

Figure 2. Visitor arrivals.

critical bounds, then cointegration is accepted, at a given statistical significance level. If the F-statistics is below the lower I(0) critical bounds, then the null hypothesis of no cointegration holds. If the F-statistics is between the upper and lower bounds, the decision on cointegration is inconclusive.

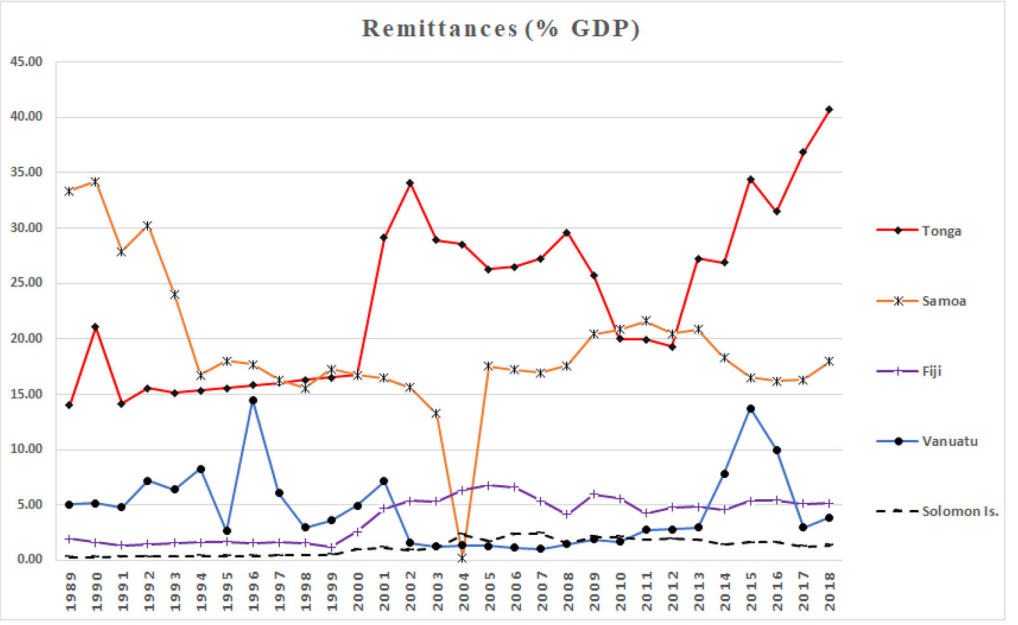

Figure 3. Remittances (% GDP).

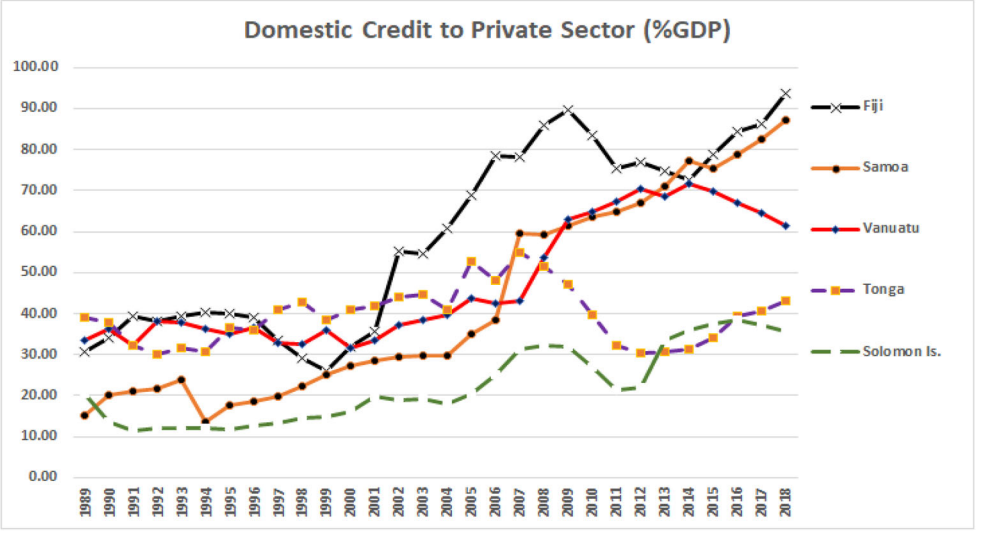

Figure 4. Domestic credit to private sector (% GDP).

3.3.2. Causality

To examine causality, we deploy the non-Granger causality method of Toda and Yamamoto (1995). The method does not place conditions on the order integration. Hence, the level variables entered in the VAR system can be of any arbitrary order. VAR analysis is useful especially when there is no clear or confirmed theoretical consensus or *a priori* empirical evidence on which way the causality between the variables should hold. Moreover, VARs are designed to alleviate the endogeneity problem,

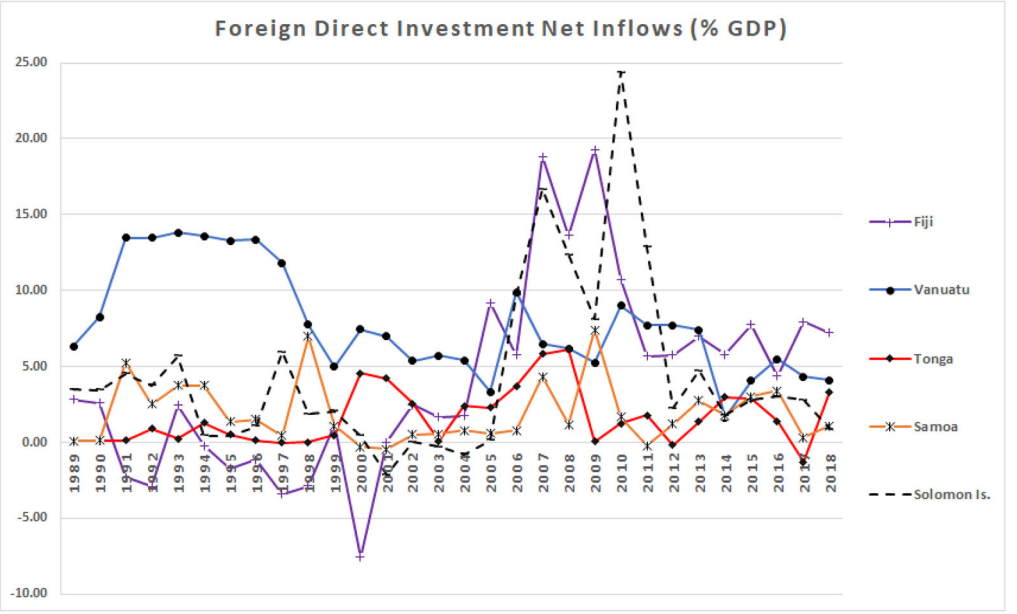

Figure 5. Foreign direct investment net inflows (% GDP).

because all variables in the VAR models are treated as potentially endogenous and then explicitly, the directional effects are ascertained (Antonakakis et al. 2019). The maximum lag lengths specified ($d_{\max}$) for the VAR system is the sum of the maximum order of integration for which the series is stationary, which is determined from the unit root tests, and the maximum lags from cointegration results, which is based on for example, the Akaike information criteria or some other formal criteria (c.f. Clarke and Mirza 2006). The stability of the causality results requires that the inverse roots (IR) of the auto-regressive polynomials are within the unit circle. Further, if necessary, $d_{\max} + 1$ lag of relevant variables or structural breaks may be used as exogenous input, to impose stability of the model and draw robust results. The degrees of freedom from the causality results should coincide with the maximum lag obtained from the cointegration results.[2] The following VAR models are specified:

$$\begin{aligned}\mathrm{GDPC}_t = {} & \gamma_0^I + \sum_{i=1}^{k} \gamma_{mi}^I \mathrm{GDPC}_{t-i} + \sum_{j=k+1}^{d_{\max}} \gamma_{2j}^I \mathrm{GDPC}_{t-j} + \sum_{i=1}^{k} \theta_{1i}^I \mathrm{VST}_{t-i} + \sum_{j=k+1}^{d_{\max}} \theta_{2j}^I \mathrm{VST}_{t-j} \\ & + \sum_{i=1}^{k} \phi_{1i}^I \mathrm{FDI}_{t-i} + \sum_{j=k+1}^{d_{\max}} \phi_{2j}^I \mathrm{FDI}_{t-j} + \sum_{i=1}^{k} \pi_{1i}^I \mathrm{CRD}_{t-i} + \sum_{j=k+1}^{d_{\max}} \pi_{2j}^I \mathrm{CRD}_{t-j} \\ & + \sum_{i=1}^{k} \mu_{1i}^I \mathrm{REM}_{t-i} + \sum_{j=k+1}^{d_{\max}} \mu_{2j}^I \mathrm{REM}_{t-j} + \varepsilon_{1t}\end{aligned} \tag{4}$$

$$\begin{aligned}\mathrm{VST}_t = \gamma_0^{II} &+ \sum_{i=1}^{k} \gamma_{1i}^{II}\mathrm{VST}_{t-i} + \sum_{j=k+1}^{d_{\max}} \gamma^{II}{}_{2j} VST_{t-j} + \sum_{i=1}^{k} \theta_{1i}^{II}\mathrm{GDPC}_{t-i} + \sum_{j=k+1}^{d_{\max}} \theta_{2j}^{II} GDPC_{t-j} \\ &+ \sum_{i=1}^{k} \phi_{1i}^{II} FDI_{t-i} + \sum_{j=k+1}^{d_{\max}} \phi_{2j}^{II} FDI_{t-j} + \sum_{i=1}^{k} \pi_{1i}^{II} CRD_{t-i} + \sum_{j=k+1}^{d_{\max}} \pi_{2j}^{II} CRD_{t-j} \\ &+ \sum_{i=1}^{k} \mu_{1i}^{II}\mathrm{REM}_{t-i} + \sum_{j=k+1}^{d_{\max}} \mu_{2j}^{II}\mathrm{REM}_{t-j} + \varepsilon_{2t}\end{aligned} \tag{5}$$

$$\begin{aligned}\mathrm{FDI}_t = \gamma_0^{III} &+ \sum_{i=1}^{k} \gamma_{1i}^{III}\mathrm{FDI}_{t-i} + \sum_{j=k+1}^{d_{\max}} \gamma_{2j}^{III}\mathrm{FDI}_{t-j} + \sum_{i=1}^{k} \theta_{1i}^{III}\mathrm{GDPC}_{t-i} + \sum_{j=k+1}^{d_{\max}} \theta_{2j}^{III}\mathrm{GDPC}_{t-j} \\ &+ \sum_{i=1}^{k} \phi_{1i}^{III}\mathrm{VST}_{t-i} + \sum_{j=k+1}^{d_{\max}} \phi_{2j}^{III}\mathrm{VST}_{t-j} + \sum_{i=1}^{k} \pi_{1i}^{III}\mathrm{CRD}_{t-i} + \sum_{j=k+1}^{d_{max}} \pi_{2j}^{III}\mathrm{CRD}_{t-j} \\ &+ \sum_{i=1}^{k} \mu_{1i}^{III}\mathrm{REM}_{t-i} + \sum_{j=k+1}^{d_{\max}} \mu_{2j}^{III}\mathrm{REM}_{t-j} + \varepsilon_{3t}\end{aligned} \tag{6}$$

$$\begin{aligned}\mathrm{CRD}_t = \gamma_0^{IV} &+ \sum_{i=1}^{k} \gamma_{1i}^{IV}\mathrm{CRD}_{t-i} + \sum_{j=k+1}^{d_{\max}} \gamma_{2j}^{IV}\mathrm{CRD}_{t-j} + \sum_{i=1}^{k} \theta_{1i}^{IV}\mathrm{GDPC}_{t-i} \\ &+ \sum_{j=k+1}^{d_{\max}} \theta_{2j}^{IV}\mathrm{GDPC}_{t-j} + \sum_{i=1}^{k} \phi_{1i}^{IV}\mathrm{VST}_{t-i} + \sum_{j=k+1}^{d_{\max}} \phi_{2j}^{IV}\mathrm{VST}_{t-j} + \sum_{i=1}^{k} \pi_{1i}^{IV}\mathrm{FDI}_{t-i} \\ &+ \sum_{j=k+1}^{d_{\max}} \pi_{2j}^{IV}\mathrm{FDI}_{t-j} + \sum_{i=1}^{k} \mu_{1i}^{IV}\mathrm{REM}_{t-i} + \sum_{j=k+1}^{d_{\max}} \mu_{2j}^{IV}\mathrm{REM}_{t-j} + \varepsilon_{4t}\end{aligned} \tag{7}$$

$$\begin{aligned}\mathrm{REM}_t = \gamma_0^{V} &+ \sum_{i=1}^{k} \gamma_{1i}^{V}\mathrm{REM}_{t-i} + \sum_{j=k+1}^{d_{\max}} \gamma_{2j}^{V}\mathrm{REM}_{t-j} + \sum_{i=1}^{k} \theta_{1i}^{V}\mathrm{GDPC}_{t-i} + \sum_{j=k+1}^{d_{\max}} \theta_{2j}^{V}\mathrm{GDPC}_{t-j} \\ &+ \sum_{i=1}^{k} \phi_{1i}^{V}\mathrm{VST}_{t-i} + \sum_{j=k+1}^{d_{\max}} \phi_{2j}^{V} VST_{t-j} + \sum_{i=1}^{k} \pi_{1i}^{V} FDI_{t-i} + \sum_{j=k+1}^{d_{\max}} \pi_{2j}^{V}\mathrm{FDI}_{t-j} \\ &+ \sum_{i=1}^{k} \mu_{1i}^{V}\mathrm{CRD}_{t-i} + \sum_{j=k+1}^{d_{\max}} \mu_{2j}^{V}\mathrm{CRD}_{t-j} + \varepsilon_{5t}\end{aligned} \tag{8}$$

The causality decisions are as follows. If $\theta_{1i}^{I} \neq 0\forall_i$, $\phi_{1i}^{I} \neq 0\forall i$, $\pi_{1i}^{I} \neq 0\forall i$ and $\mu_{1i}^{I} \neq 0\forall i$, then this implies that VST, FDI, CRD and REM Granger-cause GDPC (Equation (4)). If $\theta_{1i}^{II} \neq 0\forall_i$, $\phi_{1i}^{II} \neq 0\forall i$, $\pi_{1i}^{II} \neq 0\forall i$ and $\mu_{1i}^{II} \neq 0\forall i$, then this implies that GDPC, FDI, CRD and REM Granger-cause VST (Equation (5)). If $\theta_{1i}^{III} \neq 0\forall_i$, $\phi_{1i}^{III} \neq 0\forall i$, $\pi_{1i}^{III} / = 0\forall i$ and $\mu_{1i}^{III} \neq 0\forall i$, then this implies that GDPC, VST, CRD and REM Granger-cause FDI (Equation (6)). If $\theta_{1i}^{IV} \neq 0\forall_i$, $\phi_{1i}^{IV} \neq 0\forall i$, $\pi_{1i}^{IV} \neq 0\forall i$ and $\mu_{1i}^{IV} \neq 0\forall i$, then this implies that GDPC, VST, FDI and REM Granger-cause CRD (Equation (7)). Finally, if $\theta_{1i}^{V} \neq 0\forall_i$, $\phi_{1i}^{V} \neq 0\forall i$, $\pi_{1i}^{V} \neq 0\forall i$ and $\mu_{1i}^{V} \neq 0\forall i$, then this implies that GDPC, VST, FDI and CRD Granger-cause REM (Equation (8)).

4. Results

4.1. Unit root, structural breaks and cointegration

The unit root tests are given in Table 3. As noted, all the variables are at most I(1); hence, stationarity of the series is achieved in their first difference form. We test multiple breaks in the dependent variable for each country. The results are shown in Table 4 and indicate the following break points. For Fiji, 1982, 1989 and 2009; for Samoa, 1990, 1996, 2001 and 2009; for Tonga, 1988, 2002, 2007 and 2013; for Vanuatu, 1985, 1991, 1997, 2002, and 2008; and for Solomon Islands, no break was detected. These breaks are included in the initial cointegration analysis for each country and their level of statistical significance was noted. The statistically significant break periods are denoted by ** in Table 4; and in the final cointegration analysis, only the significant break period is included for the respective countries. These are as follows: 1982 and 2009 for Fiji, 1990 and 2001 for Samoa, and 2007 for Tonga. The country-specific cointegration results are reported in Table 5. From the results, we confirm the presence of long-run association for the five countries. The stability of each country's model parameters was confirmed using the CUSUM and CUSUMQ plots (Figures 6(a)–10(b)). Further, the diagnostic tests are presented in Table 6. As noted, in a few from the p values (below 10%), in a few cases, there are plausible biasness in the functional form (Fiji), heteroscedasticity (Samoa and Vanuatu), the serial correlation (Vanuatu). Arguably, the results could be due to certain features inherent in the data, and/or relatively small sample size. In any case, when we control for structural breaks and observe the CUSUM and CUSUMQ plots (Figures 6(a)–10(b)), it is clear that all the parameters in the model are stable over time.

4.2. Long run and short run

The long-run results are presented in Table 7. Interesting to note that the association between tourism measured by VST and economic growth is positive and significant at 1 percent level for the five countries. In terms of magnitude, the coefficient is the largest for Tonga (0.60), followed by Fiji (0.53), Samoa (0.49), Solomon Islands (0.29) and Vanuatu (0.21). Moreover, FDI is positive and significant for Fiji (0.06), Samoa (0.01), Solomon Islands (0.01) and Vanuatu (0.04), but negative and statistically insignificant for Tonga. Moreover, FDI is more conducive to growth in Fiji and Vanuatu than Samoa and Solomon Islands.

Table 3. Unit root test.

Variables	ADF		PP		KPSS	
	Level	First diff. (Δ)	Level	First diff. (Δ)	Level	First diff. (Δ)
Fiji						
GDPC	−0.349 [0]	−8.140 [0]***	−0.228 [1]	−8.133 [1]***	0.898 [5]	0.124 [1]***
VST	−1.832 [0]	−6.926 [0]***	−1.888 [2]	−6.926 [3]***	0.893 [5]	0.372 [3]**
FDI	−6.395 [0]***	−8.207 [1]***	−6.407 [2]***	−31.06 [23]***	0.122 [3]***	0.312 [29]***
CRD	−0.911 [0]	−6.034 [0]***	−0.930 [1]	−6.026 [1]***	0.884 [5]	0.060 [0]***
REM	−1.601[0]	−5.918 [0]***	−1.596 [2]	−5.883 [4]***	0.827 [5]	0.151 [2]***
Samoa						
GDPC	−0.562 [0]	−4.511 [0]***	−0.623 [2]	−4.528 [1]***	0.669 [5]*	0.114 [2]***
VST	−0.196 [0]	−5.671 [0]***	−0.187 [1]	−5.671 [1]***	0.731 [5]*	0.062 [1]***
FDI	−4.529 [0]***	−8.323 [0]***	−4.492 [3]***	−24.14 [34]***	0.177 [0]***	0.325 [29]***
CRD	−0.584 [0]	−7.123 [0]***	−0.519 [1]	−7.132 [1]***	0.714 [5]*	0.049 [2]***
REM	−4.932 [0]***	−9.613 [0]***	−4.949 [2]***	−23.09 [20]***	0.223 [3]***	0.443 [31]**
Solomon Is.						
GDPC	−2.157 [1]	−3.019 [0]**	−1.689 [3]	−3.019 [0]**	0.115 [4]***	0.099 [3]***
VST	−0.950 [0]	−5.414 [0]***	−0.918 [2]	−5.414 [1]***	0.421 [4]*	0.123 [1]***
FDI	−4.381 [0]***	−8.424 [0]***	−4.391 [2]***	−12.39 [8]***	0.128 [3]***	0.182 [10]***
CRD	−0.488 [0]	−3.776 [4]***	−0.686 [3]	−8.682 [27]***	0.633 [4]*	0.221 [4]***
REM	−1.545 [0]	−6.320 [0]***	−1.540 [4]***	−6.286 [4]***	0.576 [4]*	0.263 [4]***
Tonga						
GDPC	−1.121 [0]	−4.993 [0]***	−1.160 [5]	−4.948 [7]***	0.724 [5]*	0.129 [5]***
VST	−0.993 [0]	−5.805 [0]***	−1.090 [11]	−7.169 [16]***	0.726 [5]*	0.288 [16]***
FDI	−6.118 [0]***	−0.011 [7]	−6.119 [2]***	−11.57 [6]***	0.141 [2]***	0.500 [35]*
CRD	−3.165 [2]**	−5.193 [0]***	−2.072 [1]	−5.250 [2]***	0.440 [4]**	0.120 [2]***
REM	−2.446 [0]	−8.132 [0]***	−2.602 [2]***	−8.355 [5]***	0.390 [4]**	0.073 [4]***
Vanuatu						
GDPC	−2.969 [0]**	−4.003 [0]***	−2.930 [1]*	−3.732 [5]***	0.738 [4]*	0.141 [1]***
VST	0.208 [0]	−5.378 [0]***	0.485 [7]	−5.463 [7]***	0.701 [5]*	0.238 [7]***
FDI	−3.69 [0]***	−8.687 [0]	−3.749 [3]***	−10.22 [6]***	0.188 [4]***	0.155 [6]***
CRD	−0.383 [0]	−5.784 [0]***	−0.489 [3]	−5.825 [3]***	0.604 [5]**	0.155 [3]***
REM	−2.631 [0]*	−7.605 [0]***	−2.511 [2]***	−8.504 [10]***	0.365 [4]**	0.342 [25]***

Notes: All variables are in the natural log form. ADF and PP critical values are based on MacKinnon (1996) one-sided *p* values, KPSS critical values are Kwiatkowski-Phillips-Schmidt-Shin (Kwiatkowski et al. 1992, Table 1); ***, ** and * indicate stationarity at 1%, 5% and 10% levels, respectively. [] contains optimum lag length used for ADF tests and bandwidth for PP and KPSS test, respectively.
Source: Author's own estimation

Table 4. Break test.

Country	# of breaks	Year
Fiji•	3	1982⁂, 1989, 2009⁂
Samoa•	4	1990⁂, 1996, 2001⁂, 2009
Solomon Is.	0	–
Tonga•	4	1988, 2002, 2007⁂, 2013
Vanuatu	5	1985, 1991, 1997, 2002, 2008

Notes: The dependent variable is GDPC. • Both constant and trend were statistically significant and hence included in break identification. All breaks are based on 5% level of statistical significance; ⁂ indicates the particular break was significant in the preliminary estimations and hence was included in the final regressions. Bai and Perron (2003) critical values were used.
Source: Author's own estimation

The association between financial development and growth is negative for the five countries, although it is only significant for Solomon Islands and Tonga. This means that financial development in the latter two countries has a growth-retarding effect. This is plausible especially when the domestic credits from the financial sector do not filter into productive investment activities, or they are largely used for financing consumption-type activities. Lack of domestic investment opportunities could also

Table 5. ARDL Bounds tested on $\mathbf{GDPC} = \mathbf{f}.(\mathbf{VST}, \mathbf{FDI}, \mathbf{CRD}, \mathbf{RMT})$.

Country	F statistics	Critical value bounds	ARDL(p,q,r,s)
Fiji	5.61***	3.74–5.06	ARDL(2, 0, 2 ,2, 2)
Samoa	9.43***	3.74–5.06	ARDL(3, 3, 1, 2, 0)
Solomon Is.	9.21***	3.74–5.06	ARDL(1, 1, 0, 1, 0)
Tonga	3.62*	2.45–3.52	ARDL(1, 1, 0, 0, 3)
Vanuatu	6.24***	3.74–5.06	ARDL(2, 0, 2, 0, 0)

Notes: *** and * indicate cointegration at 1% and 10% levels, respectively. Critical bounds are from Pesaran, Shin, and Smith (2001).
Source: Author's own estimation

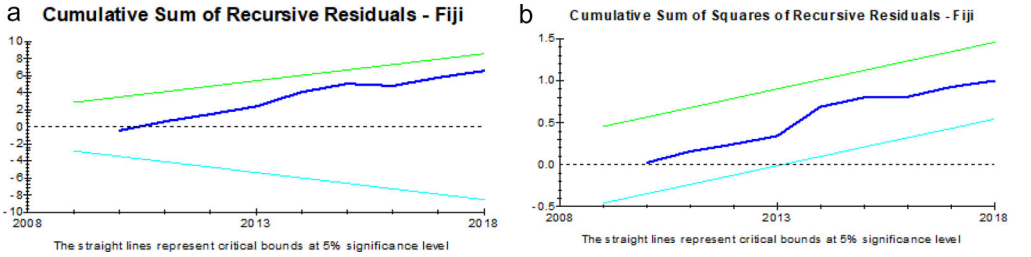

Figure 6. (a) Cumulative sum of recursive residuals – Fiji. (b) Cumulative sum of squares of recursive residuals – Fiji.

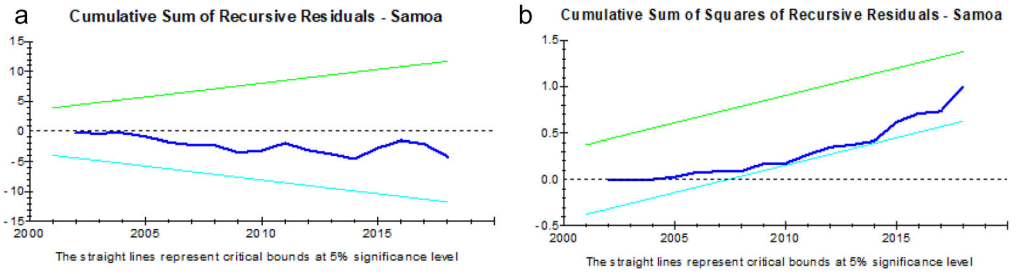

Figure 7. (a) Cumulative sum of recursive residuals – Samoa. (b) Cumulative sum of squares of recursive residuals – Samoa.

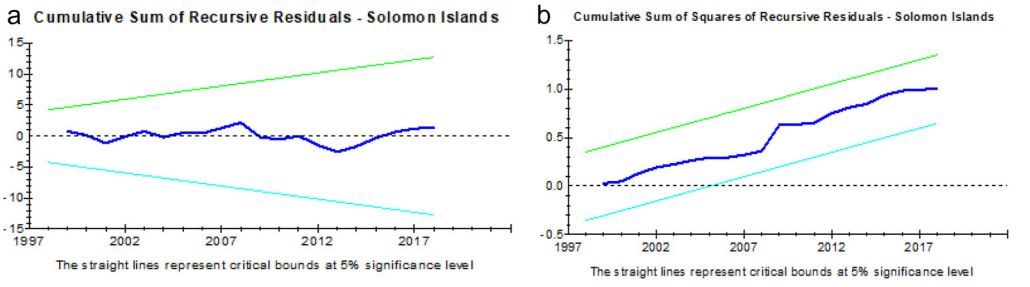

Figure 8. (a) Cumulative sum of recursive residuals – Solmon Islands. (b) Cumulative sum of squares of recursive residuals – Solmon Islands.

constraint the productive use of credit facilities. Unlike some earlier studies (Jayaraman and Chen, 2016; Jayaraman, Choong, and Kumar 2011, Jayaraman, Lau, and Ng 2018), we note a negative association between remittances and growth for Fiji (–0.10), Samoa (–0.01) and Tonga (–0.13). While remittances are negatively

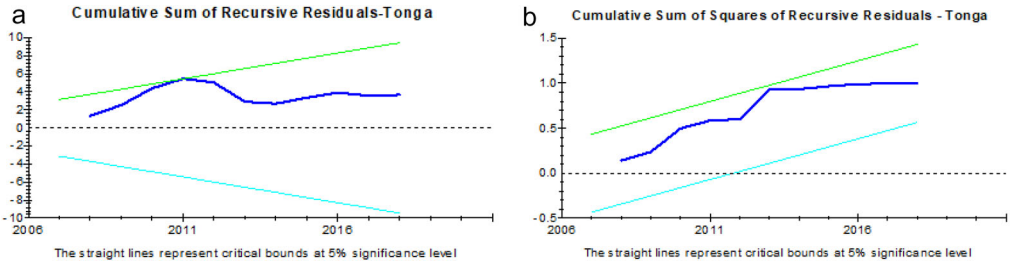

Figure 9. (a) Cumulative sum of recursive residuals – Tonga. (b) Cumulative sum of squares of recursive residuals – Tonga.

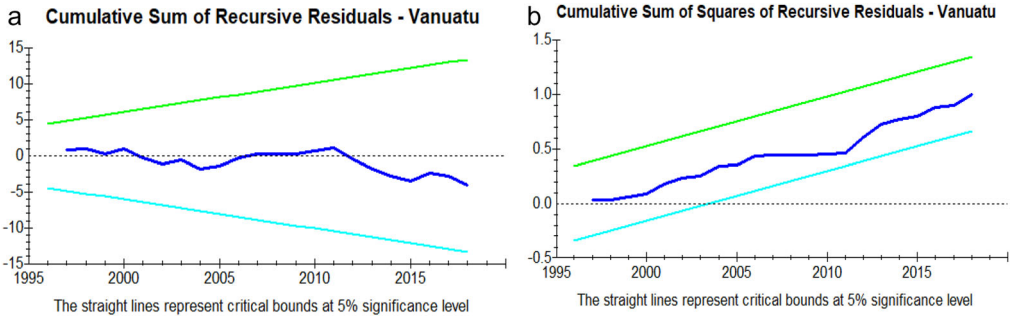

Figure 10. (a) Cumulative sum of recursive residuals – Vanuatu. (b) Cumulative sum of squares of recursive residuals – Vanuatu.

associated with economic growth for Solomon Islands and positively for Vanuatu, they are not statistically significant. The results indicate that remittances largely contribute to conspicuous consumption and to the moral hazard problem linked to remittances (Chami, Fullenkamp, and Jahjah 2005; Bettin and Zazzaro 2012) and hence do not add to productive activity in most of the PICs – a finding that resonates with an earlier study on Kiribati (c.f. Rao and Takirua 2010).

The structural breaks relevant to each country show mixed results. In case of Fiji, 1982 has relatively larger negative effect than the positive effect of 2009. The year 1982 signifies major political campaigns and election (Hagan 1987; Naidu 1992) and 2009 marks the period of major constitutional changes (Fraenkel et al. 2011) and devastating floods (Pratt 2013) in Fiji. Similarly, for Samoa, the year 1990 has a negative effect, whereas 2001 has a positive effect; for Tonga, in the year 1990 there was huge devastating effect of Cyclone Ofa (Crocombe et al. 1991), and in 2001 political stability was confirmed due to the re-election of the Prime Minister Tuila'epa Sailele Malielegaoi. For Tonga, year 2007 is negatively associated with growth. This period could relate to the riots in Tonga's capital Nuku'alofa in 2006, which resulted in declaring and extending the state of emergency up to 2007.[3]

The short-run results are presented in Table 8. The effect of lagged growth, which is the previous period's economic performance, has a significant positive effect on the current period's growth for Solomon Islands and Vanuatu, but a significant negative effect on Fiji's growth. The positive effects indicate the countries are progressing due to past performance, whereas the negative effect would imply that 'economic drag'

Table 6. Diagnostics test.

Serial Correlation[A]		Functional Form[B]		Normality[C]	Heteroscedasticity[D]	
Fiji						
$\chi^2(1) = 0.38$ [0.54]	$F(1, 31) = 0.25$ [0.62] *	$\chi^2(1) = 6.27$ [0.01] *	$F(1, 31) = 4.77$ [0.04] *	$\chi^2(2) = 0.65$ [0.72]	$\chi^2(1) = 1.95$ [0.16]	$F(1, 45) = 1.95$ [0.17]
Samoa						
$\chi^2(1) = 0.76$ [0.38]	$F(1, 17) = 0.39$ [0.54]	$\chi^2(1) = 5.00$ [0.03] *	$F(1, 17) = 2.93$ [0.11]	$\chi^2(2) = 0.42$ [0.81]	$\chi^2(1) = 3.92$ [0.05] *	$F(1, 32) = 4.17$ [0.05] *
Solomon Is.						
$\chi^2(1) = 1.60$ [0.21]	$F(1, 20) = 1.17$ [0.29]	$\chi^2(1) = 0.57$ [0.45]	$F(1, 20) = 0.40$ [0.53]	$\chi^2(2) = 1.05$ [0.59]	$\chi^2(1) = 0.13$ [0.72]	$F(1, 27) = 1.25$ [0.73]
Tonga						
$\chi^2(1) = 0.41$ [0.52]	$F(1, 22) = 0.27$ [0.61]	$\chi^2(1) = 0.00$ [0.96]	$F(1, 22) = 0.00$ [0.97]	$\chi^2(2) = 2.22$ [0.33]	$\chi^2(1) = 0.00$ [0.97]	$F(1, 32) = 0.00$ [0.97]
Vanuatu						
$\chi^2(1) = 8.08$ [0.00]*	$F(1, 25) = 7.55$[0.01]*	$\chi^2(1) = 0.26$ [0.61]	$F(1, 25) = 0.19$ [0.67]	$\chi^2(2) = 1.23$ [0.54]	$\chi^2(1) = 3.46$ [0.06] *	$F(1, 34) = 3.62$ [0.07] *

Notes: [A]Lagrange multiplier test of residual serial correlation; [B]Ramsey's RESET test using the square of the fitted values; [C]based on a test of skewness and kurtosis of residuals; and [D]based on the regression of squared residuals on squared fitted values. [ ] contains equivalent *p* values. * indicates plausible acceptance of null hypothesis of respective bias at 10% or less.

Source: Author's own estimation

Table 7. Long-run coefficients – dependent variable is GDPC.

Country	Fiji	Samoa	Solomon Is.	Tonga	Vanuatu
VST	0.533***	0.491***	0.285***	0.601***	0.237***
	(0.1556)	(0.1077)	(0.0424)	(0.0562)	(0.0567)
FDI	0.059**	0.013***	0.007**	−0.002	0.043**
	(0.0286)	(0.0035)	(0.0030)	(0.0030)	(0.0097)
CRD	−0.3058	−0.088	−0.206***	−0.159**	−0.108
	(0.2102)	(0.0516)	(0.0725)	(0.0765)	(0.0683)
REM	−0.095*	−0.007**	−0.049	−0.126**	0.006
	(0.0530)	(0.0040)	(0.0308)	(0.057)	(0.0081)
Constant	2.832**	2.735**	5.145***	2.838***	5.603***
	(1.2047)	(1.0349)	(0.2625)	(0.3872)	(0.3977)
DUM_1982	−0.422***	–	–	–	–
	(0.1155)				
DUM_1990	–	−0.112***	–	–	–
		(0.0134)			
DUM_2001	–	0.179***	–	–	–
		(0.0251)			
DUM_2007	–	–	–	−0.0970***	–
				(0.0310)	
DUM_2009	0.136***	–	–	–	–
	(0.0472)				

Notes: ***, ** and * indicates significance at 1%, 5% and 10% levels, respectively; (.) contains the standard errors; break years are denoted by DUM_year.
Source: Author's own estimation.

from past periods impedes the current period's growth. Tourism has a short-run positive effect on growth for Fiji (0.16), Tonga (0.10) and Vanuatu (0.19), and a delayed positive effect for Samoa (0.20). Notably, the short-run effect of tourism is relatively higher for Vanuatu and Fiji. However, for Solomon Islands, there is no indication of any short-run effects of tourism and hence a lower long-run positive effect.

FDI inflows are positive and significant for Samoa (0.007) and Solomon Islands (0.004), while mixed outcomes are noted for Fiji (–0.009) and Vanuatu (–0.021), where we note a positive but insignificant effect in the current period, and a significant negative effect from the previous (lagged one) period. Further, FDI is marginally negative for Tonga although it is statistically insignificant. Financial development and growth is positively associated for Fiji (0.160) and Samoa (0.092), and negatively for Tonga (–0.046). Moreover, the association is negative but insignificant for Solomon Islands and Vanuatu. Remittances inflow is negatively associated with growth for Samoa (–0.006). A positive lagged effect of remittances for Fiji (0.074) and Fiji and Tonga (0.047) are noted. For Solomon Islands and Vanuatu, remittance inflow is insignificant in the short run.

The association between the structural break periods and growth is similar to that of the long-run results, implying that a similar set of events highlighted earlier could influence the short-run growth and apparently have a flow-on effect in the long-run. Moreover, the error correction term, which indicates the speed of adjustment due to short-run deviations to the long-run equilibrium, satisfies the convergence condition $(-1 < ECM < 0)$ for the five countries. For Fiji, Samoa, Solomon Islands, Tonga and Vanuatu, about 31%, 80%, 54%, 29% and 69% of the previous period's errors are corrected in the current period, respectively.

Table 8. Short-run results – dependent variable is ΔGDPC.

Country	Fiji	Samoa	Solomon Is.	Tonga	Vanuatu
ΔGDPC$_{-1}$	−0.261*	0.252	0.054***	–	0.354***
	(0.1291)	(0.1860)	(0.0111)		(0.1149)
ΔGDPC$_{-2}$	–	−0.204	–	–	
		(0.1692)			
ΔVST	0.163***	0.122	–	0.095***	0.165***
	(0.0244)	(0.0961)		(0.0397)	(0.0610)
ΔVST$_{-1}$	–	−0.129	–	–	–
		(0.2075)			
ΔVST$_{-2}$	–	0.203**	–	–	–
		(0.0957)			
ΔFDI	0.002	0.007**	0.004**	−0.001	0.009
	(0.0020)	(0.0027)	(0.0016)	(0.0009)	(0.0086)
ΔFDI$_{-1}$	−0.009**	–	–	–	−0.021**
	(0.0034)				(0.0096)
ΔCRD	0.160**	0.092***	−0.010	−0.046*	−0.0747
	(0.0706)	(0.0228)	(0.0544)	(0.0258)	(0.0563)
ΔCRD$_{-1}$	0.089**	0.063***	–	–	–
	(0.0367)	(0.0214)			
ΔREM	−0.026	−0.006***	−0.027	−0.012	0.004
	(0.0193)	(0.0029)	(0.0179)	(0.0183)	(0.0061)
ΔREM$_{-1}$	0.074***	–	–	0.009	–
	(0.0249)			(0.0213)	
ΔREM$_{-2}$	–	–	–	0.047***	–
				(0.0113)	
ECM$_{-1}$	−0.306***	−0.801***	−0.540***	−0.286***	−0.694***
	(0.0870)	(0.1153)	(0.0862)	(0.0751)	(0.1117)
DUM_1982	−0.129***	–	–	–	–
	(0.019)				
DUM_1990	–	−0.089***	–	–	–
		(0.0110)			
DUM_2001	–	0.143***	–	–	–
		(0.0313)			
DUM_2007	–	–	–	−0.028*	–
				(0.0139)	
DUM_2009	0.042***	–	–	–	–
	(0.0146)				
Adj. R^2	0.41	0.64	0.65	0.38	0.86
DW-Stat.	2.09	2.03	1.59	1.78	2.55
LLC	104.30	93.17	61.72	91.77	87.97
AIC	89.3001	77.17	53.72	80.77	78.87
SBC	75.4239	64.96	48.25	72.37	71.25

Notes: ***, ** and * indicates significance at 1%, 5% and 10% levels, respectively; (.) contains the standard errors; Break years are denoted by DUM_year.
Source: Author's own estimation.

4.3. Causality

The causality results are presented in Table 9. The stability of the results based on the plots of inverse roots (IR) is confirmed (Figure 11). The results show that tourism causes economic growth for Fiji, Samoa and Solomon Islands (tourism-led growth), and a reverse causality (growth-led tourism) is noted for Vanuatu. For Tonga, a bidirectional causality implies that both tourism and economic growth are reinforcing each other, which underscores both the growth-driven tourism and tourism-led growth.

Interestingly, a unidirectional causality from tourism to FDI is noted for all the countries. This uniform outcome confirms that tourism precedes FDI, and hence, tourism development is necessary for expansion of FDI. Moreover, for Vanuatu,

Table 9. Granger causality.

Paired variables ($X \rightarrow Y$)	Fiji	Samoa	Solomon Is.	Tonga	Vanuatu
GDPC,VST	$VST \rightarrow GDPC$ (0.00)***	$VST \rightarrow GDPC$ (0.00)***	$VST \rightarrow GDPC$ (0.00)***	$VST \rightarrow GDPC$ (0.06)* $GDPC \rightarrow VST$ (0.00)***	$GDPC \rightarrow VST$ (0.05)**
GDPC, FDI	–	$FDI \rightarrow GDPC$ (0.061)*	–	–	–
GDPC, CRD	–	–	$GDPC \rightarrow CRD$ (0.01)***	$CRD \rightarrow GDPC$ (0.07)* $GDPC \rightarrow CRD$ (0.07)*	$GDPC \rightarrow CRD$ (0.07)*
GDPC, REM	–	$GDPC \rightarrow REM$ (0.03)**	–		–
VST, FDI	$VST \rightarrow FDI$ (0.00)***	$VST \rightarrow FDI$ (0.09)*	$VST \rightarrow FDI$ (0.03)**	$FDI \rightarrow VST$ (0.00)***	$VST \rightarrow FDI$ (0.06)*
VST, CRD	–		–	–	$VST \rightarrow CRD$ (0.00)***
VST, REM	–	$VST \rightarrow REM$ (0.05)**	$VST \rightarrow REM$ (0.081*	–	–
FDI, CRD	$FDI \rightarrow CRD$ (0.00)*** $CRD \rightarrow FDI$ (0.00)***	–	–	–	$CRD \rightarrow FDI$ (0.06)*
FDI, REM	–	$FDI \rightarrow REM$ (0.000)***	–	–	–
CRD, REM	$REM \rightarrow CRD$ (0.02)**	–	$REM \rightarrow CRD$ (0.00)***	$CRD \rightarrow REM$ (0.10)*	$REM \rightarrow CRD$ (0.08)*

Notes: '$X \rightarrow Y$' indicates X causing Y; ***,** and * indicate rejection of 'no-causality' or acceptance of causality at 1%, 5% and 10% levels, respectively; the degrees for each country is equal to the maximum of the lag lengths of the ARDL estimations based on AIC criteria. Toda and Yamamato (1995) procedure follows the VAR Granger Causality/Block Exogeneity Wald Tests; (.) contains *p* values.
Source: Author's own estimation

tourism causes financial development, and for Samoa and Solomon Islands, tourism causes remittances inflow. A bidirectional association between FDI and economic growth is noted for Fiji, which underscores the reinforcing relationship between them. For Samoa, FDI causes growth. Further, except for Samoa, we note that remittances cause financial development in all countries, which signifies among other things, the formal banking channel used for remittance transfers in these countries, and that remittances could support in short term the level of liquidity in the financial system.

5. Conclusion

From this study, we could derive that tourism has a uniform permanent positive association with economic growth for all countries under consideration. The statistical causality for Fiji, Samoa and Solomon Islands runs from tourism to value added (growth), the relationship for Tonga is bidirectional, and for Vanuatu, it runs in the reverse direction. For Fiji, Samoa, Solomon Islands and Tonga, it is clear that tourism sector is a necessary engine of growth. For Vanuatu and Tonga, while tourism has a permanent positive effect on its growth, it is necessary that the economy maintains a healthy level growth to benefit from tourism development. For example, according to the Pacific Islands Report (2017) Tonga is suffering from a shortage of high-quality

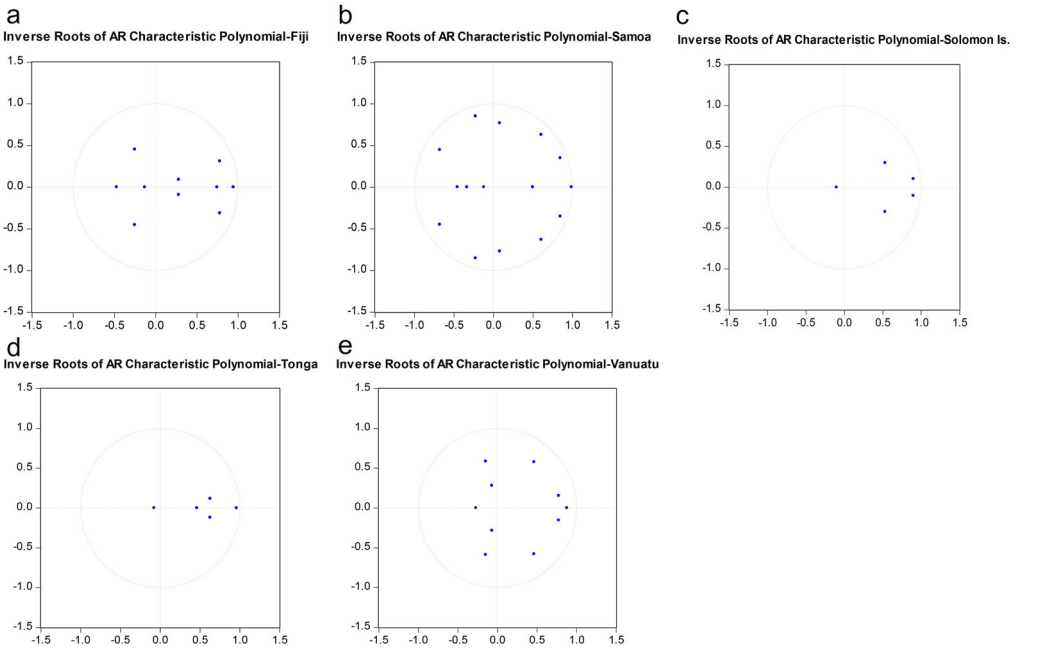

Figure 11. Plots of inverse roots. (a) Inverse roots of AR characteristic polynomial – Fiji. (b) Inverse roots of AR characteristic polynomial – Samoa. (c) Inverse roots of AR characteristic polynomial – Solomon Is. (d) Inverse roots of AR characteristic polynomial – Tonga. (e) Inverse roots of AR characteristic polynomial – Vanuatu.

accommodation and has difficulties to attract investments in this sector. A problem in Vanuatu is that around 30% of tourism revenues are spent for imported goods and service for normal operations (Scheyvens and Russell 2013).

Another important result of this study is that tourism attracts FDIs for all countries. This is an important result in terms of the inflow of foreign capital and technology necessary for economic advancement. As a recommendation from the view of the island countries, greenfield investments are more attractive than brownfield investments. Therefore, the respective governments should discriminate between brownfield and greenfield investments by incentivizing the latter, because greenfield investments lead to additional jobs, and may bring in new expertise and technology necessary for the advancement of tourism and other key sectors. The potential disadvantage of brownfield investments is that a bigger share of the value added may flow to foreign stakeholders. Apart from tourism and to some extent FDI inflows, these five countries' do not have realistic opportunities to induce sufficient economic growth.

The mostly negative relationship between financial development and remittances to growth leads to the interpretation that consumers in the respective countries generally utilize loans and remittances for consumptive purposes, which can probably be on imported consumption goods, and may lead to further imports in the future. As an example, the purchase of (second-hand) automobiles from abroad has such characteristics, because the spare parts needed in the future and the gasoline have to be imported. In any case, to ensure that financial resources are mainly diverted to productive activities and to cultivate a more desirable consumption behavior, it is worth

to investigate the consumption behavior due to financial resources such as remittances and domestic credits. One possible approach would be for the government to provide partial guarantees for business loans combined with consultancy services about business opportunities. This would make the loans cheaper and would incentivize setting up a business. Also, the role and effectiveness of secured transaction reforms is emphasized, especially placing resources to establish electronic registries for secured transactions.

The recent COVID-19 pandemic has brought serious economic challenges and major drags on the economic progress of countries that are heavily reliant on tourism sector. Although the article does not specifically study the extent of the damage from the global pandemic on the PICs, based on the significant contribution of tourism, it is clear that the decline in tourism has economy- and region-wide impacts. Therefore, it is incumbent on the governments of the small PICs to cautiously engage regional efforts to revive the tourism sector, with the possibility of exploring alternative and traditional sources of income.

The article shows that international tourism is the major source of growth, but the COVID-19 experience has proved that the dependence on tourism demand bears great risks in the long term. The latter is important if we consider both the negative impacts of event-driven reductions in the long-distance tourism, and the possible efforts of source countries to reduce the long-distance tourism to meet their climate change targets. Moreover, efforts to reduce CO2 emissions in source countries in order to meet the Paris agreement targets are expected to increase the fuel prices including the price of kerosene, consequently increasing the transport costs for tourists and even for exports and imports. Subsequently, the tourism demand will be negatively affected and that costs of the tourism industry in PICs will rise. Therefore, it is of high importance for PICs to improve their resilience from such economic shocks. Because of the fact that there is no adequate alternative for tourism in sight, PICs should focus on improving domestic production including agriculture, fisheries and forestry, and on promoting greater use of technology in various sectors including financial services with genuine efforts to reduce dependence on imports.

Knowledge sharing and best practices should be customized and operationalized in small PICs for sustainable growth. Thus, it recommended that PICs intensify regional cooperation to generate more scientific and technological knowledge as a basis to develop key sectors of the economy. A cooperative regional approach is expected to generate greater economies of scale and knowledge spillovers, which in turn will support the effective functioning of social welfare system, a healthy pool of human capital and a growing level of productivity. Moreover, at least in the short-to-medium term, it is expected that there will be a significant shift of resources including human capital from sectors such as tourism and aviation that have been massively affected by the pandemic. Therefore, training, upskilling and redeploying the labor force from these and related sectors to other sectors should be the priority of the government. Balancing these priorities against the available resources will become crucial for governments and private sectors, and hence, also their cooperation is necessary.

It is plausible that resources including external funds may be hard to come by as donor countries and regional partners grapple with their own economic depressions.

Hence, PICs should use the resources and funds at their disposal in a well-thought through approach. Good governance in financial and other resource management, and efficient use of the resources are crucial to sustain PICs through the pandemic. A well-functioning government institutions, a strong private–public partnership, and sound macro-economic policy are the broad levers to operate on.

The medium- to long-term growth strategies should be on improving manufacturing and services. Given the current developments, the borders will remain closed, and hence, reliance on tourism and new FDIs would in most parts not be forthcoming. Hence, the PICs need to explore strategies to internally generate and optimize resources. The effective deployment of technology in building and strengthening trade networks and relations, in improving education, and in delivery of services goods and services should be prioritized.

On one hand, our study highlights the importance of tourism and FDIs in the PICs, and on the other hand, it also indicates the problems that arises when shocks like the global pandemic hit these sources. Unfortunately, long-distance tourism is expected to suffer a setback as a consequence of efforts of the countries of origin to reduce CO_2 emissions. It is therefore wise not to overly rely on external sources of revenues but have vibrant domestic sectors and mobilize efforts to improve the economic self-reliance of the region. We do not necessarily wish to paint a gloomy picture; however, at best, PICs should take a protective stance and hence focus on internally strengthening the economy. Therefore, science and technology should be used as basis for almost all macro-economic, geopolitical and social policies to manage the current and upcoming economic challenges.

Notes

1. The only theoretical possibility would be to save part of the tourism revenue and to invest these savings on the international capital market, like the Oil fund of Norway is doing, but for developing PICs, this is a mere theoretical consideration because of the urgent needs.
2. For detailed procedure on implementation of the method, we refer to Giles (2011).
3. https://www.bbc.com/news/world-asia-pacific-16199671

Acknowledgment

The authors sincerely thank the Editor-in-Chief, Professor Saroja Selvanathan, and the anonymous reviewers of their comments and suggestions. Peter J. Stauvermann thanks the Changwon National University for financially supporting his contribution to the research for 2019-2021. The usual disclaimer applies.

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes on contributors

Ronald is associate Professor in the School of Accounting, Finance and Economics at the University of the South Pacific. Ronald teaches international finance, investment analysis and

financial risk management. His research interests include tourism economics and development finance in small island economies. Ronald's publications have appeared in journals like *Applied Economics*, *Tourism Economics, Tourism Analysis, Tourism Management, Tourism Management Perspectives, Journal of Pension Economics and Finance,* and others.

Peter is Professor of Economics in the Department of Global Business & Economics, at the Changwon National University, South Korea. He holds a PhD in Economics from the University of Dortmund, Germany. Peter teaches mathematical economics, microeconomics and macroeconomics. Peter's publications have appeared in journals like *Applied Economics*, *Tourism Economics, Tourism Analysis, Tourism Management, Tourism Management Perspectives, Journal of Pension Economics and Finance,* and others.

ORCID

Ronald Ravinesh Kumar http://orcid.org/0000-0001-9658-4896
Peter Josef Stauvermann http://orcid.org/0000-0001-7011-2209

References

Adams, R. H., Jr., and J. Page. 2005. "Do International Migration and Remittances Reduce Poverty in Developing Countries?" *World Development* 33 (10): 1645–1669. doi:10.1016/j.worlddev.2005.05.004.

Algieri, B. 2006. "International Tourism Specialisation of Small Countries." *International Journal of Tourism Research* 8 (1): 1–12. doi:10.1002/jtr.543.

Antonakakis, N., M. Dragouni, B. Eeckels, and G. Filis. 2019. "The Tourism and Economic Growth Enigma: Examining an Ambiguous Relationship through Multiple Prisms." *Journal of Travel Research* 58 (1): 3–24. doi:10.1177/0047287517744671.

Bai, J., and P. Perron. 2003. "Critical Values for Multiple Structural Change Tests." *The Econometrics Journal* 6 (1): 72–78. doi:10.1111/1368-423X.00102.

Barrowclough, D. 2007. "Foreign Investment in Tourism and Small Island Developing States." *Tourism Economics* 13 (4): 615–638. doi:10.5367/000000007782696122.

Bettin, G., and A. Zazzaro. 2012. "Remittances and Financial Development: Substitutes or Complements in Economic Growth." *Bulletin of Economic Research* 64 (4): 509–536. doi:10.1111/j.1467-8586.2011.00398.x.

Bojanic, D. C., and M. Lo. 2016. "A Comparison of the Moderating Effect of Tourism Reliance on the Economic Development for Islands and Other Countries." *Tourism Management* 53: 207–214. doi:10.1016/j.tourman.2015.10.006.

Brown, R. P. 1997. "Estimating Remittance Functions for Pacific Island Migrants." *World Development* 25 (4): 613–626. doi:10.1016/S0305-750X(96)00122-2.

Brown, R. P., and D. A. Ahlburg. 1999. "Remittances in the South Pacific." *International Journal of Social Economics* 26 (1/2/3): 325–344. doi:10.1108/03068299910229721.

Buch, C. M., and A. Kuckulenz. 2010. "Worker Remittances and Capital Flows to Developing Countries." *International Migration* 48 (5): 89–117. doi:10.1111/j.1468-2435.2009.00543.x.

Cao, S., and S. J. Kang. 2020. "Personal Remittances and Financial Development for Economic Growth in Economic Transition Countries." *International Economic Journal* 34 (3): 472. doi:10.1080/10168737.2020.1765187.

Cárdenas-García, P. J., M. Sánchez-Rivero, and J. I. Pulido-Fernández. 2015. "Does Tourism Growth Influence Economic Development?" *Journal of Travel Research* 54 (2): 206–221. doi:10.1177/0047287513514297.

Cazachevici, A., T. Havranek, and R. Horvath. 2020. "Remittances and Growth: A Meta-Analysis." *World Development* 134: 105021. doi:10.1016/j.worlddev.2020.105021.

Chami, R., C. Fullenkamp, and I. Jahjah. 2005. "Are Immigrant Remittance Flows a Source of Capital for Development." *International Monetary Fund Staff Papers* 52 (1): 55–81.

Chand, S. A., R. R. Kumar, and P. J. Stauvermann. 2021. "Determinants of Bank Stability in a Small Island Economy: A Study of Fiji." *Accounting Research Journal* 34 (1): 22–42. doi:10.1108/ARJ-06-2020-0140.

Chen, H., and T. Jayaraman. 2016. "Role of Financial Sector in the Remittances-Growth Nexus in Fiji." *Remittances Review* 1 (1): 17–36. doi:10.33182/rr.v1i1.441.

Clarke, J. A., and S. Mirza. 2006. "A Comparison of Some Common Methods for Detecting Granger Noncausality." *Journal of Statistical Computation and Simulation* 76 (3): 207–231. doi:10.1080/10629360500107741.

Cooray, A. 2012a. "Migrant Remittances, Financial Sector Development and the Government Ownership of Banks: Evidence from a Group of non-OECD Economies." *Journal of International Financial Markets, Institutions and Money* 22 (4): 936–957. doi:10.1016/j.intfin.2012.05.006.

Cooray, A. 2012b. "The Impact of Migrant Remittances on Economic Growth: Evidence from South Asia." *Review of International Economics* 20 (5): 985–998. doi:10.1111/roie.12008.

Crocombe, M., R. Crocombe, B. LeGalley, S. Levine, I. Maiava, M. Rapaport, and R. J. Walker. 1991. "Polynesia in Review: Issues and Events, 1 July 1989 to 30 June 1990." *The Contemporary Pacific* 3 (1): 191.

Craigwell, R., and W. Moore. 2008. "Foreign Direct Investment and Tourism in SIDS: Evidence from Panel Causality Tests." *Tourism Analysis* 13 (4): 427–432.

Deonanan, R., B. Ramkissoon, D. Ramkissoon, and R. Hosein. 2020. "Disentangling the Relationship between Remittances and Financial Development: Evidence from Jamaica." *International Review of Applied Economics* 34 (2): 193–216. doi:10.1080/02692171.2019.1685954.

Dickey, D. A., and W. A. Fuller. 1979. "Distribution of the Estimators for Autoregressive Time Series with a Unit Root." *Journal of the American Statistical Association* 74 (366a): 427–431.

Endo, K. 2006. "Foreign direct investment in tourism—flows and volumes." *Tourism Management* 27(4): 600–614. doi.10.1016/j.tourman.2005.02.004

Fraenkel, J., D. Chappell, M. S. Widjojo, S. Kantha, G. L. Nanau, and H. van Trease. 2011. "Melanesia in Review: Issues and Events, 2009." *The Contemporary Pacific* 22 (2): 416–476.

Gani, A. 1999. "Foreign Direct Investment in Fiji." *Pacific Economic Bulletin* 14 (1): 87–92.

Giles, D. 2011. "Econometrics beat: Dave Giles' Blog - A resource for econometrics students and practitioners." https://davegiles.blogspot.com/2011/04/testing-for-granger-causality.html

Giuliano, P., and M. Ruiz-Arranz. 2009. "Remittances, Financial Development, and Growth." *Journal of Development Economics* 90 (1): 144–152. doi:10.1016/j.jdeveco.2008.10.005.

Gupta, S., C. A. Pattillo, and S. Wagh. 2009. "Effect of Remittances on Poverty and Financial Development in Sub-Saharan Africa." *World Development* 37 (1): 104–115. doi:10.1016/j.worlddev.2008.05.007.

Hagan, S. 1987. "Race, Politics, and the Coup in Fiji." *Bulletin of Concerned Asian Scholars* 19 (4): 2–18. doi:10.1080/14672715.1987.10409790.

Harrison, D., and B. Prasad. 2013. "The Contribution of Tourism to the Development of Fiji and Other Pacific Island Countries." In *Handbook of Tourism Economics: Analysis, New Applications and Case Studies*, edited by C. A. Tisdell, 741–761. New Jersey: World Scientific.

Jayaraman, T. K., and B. Singh. 2007. Foreign direct investment and employment creation in Pacific Island countries: An empirical study of Fiji (No. 35). ARTNeT Working Paper Series. https://www.econstor.eu/bitstream/10419/178393/1/awp-35.pdf

Jayaraman, T. K., H. Chen, and M. Bhatt. 2014. "Contribution of Foreign Direct Investment to the Tourism Sector in Fiji: An Empirical Study." *Tourism Economics* 20 (6): 1357–1362. doi:10.5367/te.2013.0358.

Jayaraman, T. K., C. K. Choong, and R. R. Kumar. 2011. "Financial Sector Development and Remittances in Pacific Island Economies: How Do They Help the World's Two Most Recipient-Dependent Countries?" *Perspectives on Global Development and Technology* 10 (3–4): 386–405. doi:10.1163/156914911X610376.

Jayaraman, T. K., L. S. Lau, and C. F. Ng. 2018. "Role of Financial Sector Development as a Contingent Factor in the Remittances and Growth Nexus: A Panel Study of Pacific Island Countries." *Remittances Review* 3 (1): 51–74. doi:10.33182/rr.v3i1.426.

Jimenez, E. V., and R. P. Brown. 2013. "How Responsive Are Remittances to Recipients' Welfare? Evidence from Fiji." *International Migration* 51 (1): e179–e201. doi:10.1111/j.1468-2435.2012.00764.x.

Kumar, R. R., V. Naidu and R. Kumar. 2011. "Exploring the nexus between trade, visitor arrivals, remittances and income in the Pacific: a study of Vanuatu." *Acta Universitatis Danubius OEconomica* 7 (4): 199–218. http://www.journals.univdanubius.ro/index.php/oeconomica/article/viewFile/1020/919

Kumar, R. R. 2013. "Remittances and Economic Growth: A Study of Guyana." *Economic Systems* 37 (3): 462–472. doi:10.1016/j.ecosys.2013.01.001.

Kumar, R. R. 2014. "Exploring the Nexus between Tourism, Remittances and Growth in Kenya." *Quality & Quantity* 48 (3): 1573–1588. doi:10.1007/s11135-013-9853-1.

Kumar, R. R., P. J. Stauvermann, and A. Samitas. 2016. "The Effects of ICT* on Output per Worker: A Study of the Chinese Economy." *Telecommunications Policy* 40 (2–3): 102–115. doi:10.1016/j.telpol.2015.06.004.

Kumar, R. R., P. J. Stauvermann, A. Patel, N. Kumar, and S. Prasad. 2016. "Exploring the Nexus between Tourism and Output in Cook Islands: An ARDL Bounds Approach." *Social Indicators Research* 128 (3): 1085–1101. doi:10.1007/s11205-015-1070-y.

Kumar, R. R., P. J. Stauvermann, A. Patel, and S. S. Prasad. 2018. "Determinants of Non-Performing Loans in Banking Sector in Small Developing Island States: A Study of Fiji." *Accounting Research Journal* 31 (2): 192–213. doi:10.1108/ARJ-06-2015-0077.

Kwiatkowski, D., P. C. Phillips, P. Schmidt, and Y. Shin. 1992. "Testing the Null Hypothesis of Stationarity against the Alternative of a Unit Root." *Journal of Econometrics* 54 (1–3): 159–178. doi:10.1016/0304-4076(92)90104-Y.

Lucas, R. E. 1988. "On the Mechanics of Economic Development." *Journal of Monetary Economics* 22 (1): 3–42. doi:10.1016/0304-3932(88)90168-7.

MacKinnon, J. G. 1996. "Numerical Distribution Functions for Unit Root and Cointegration Tests." *Journal of Applied Econometrics* 11 (6): 601–618. doi:10.1002/(SICI)1099-1255(199611)11:6<601::AID-JAE417>3.0.CO;2-T.

Makun, K. K. 2018. "Imports, Remittances, Direct Foreign Investment and Economic Growth in Republic of the Fiji Islands: An Empirical Analysis Using ARDL Approach." *Kasetsart Journal of Social Sciences* 39 (3): 439–447. doi:10.1016/j.kjss.2017.07.002.

Mundaca, B. G. 2009. "Remittances, Financial Market Development, and Economic Growth: The Case of Latin America and the Caribbean." *Review of Development Economics* 13 (2): 288–303. doi:10.1111/j.1467-9361.2008.00487.x.

Naidu, V. 1992. "Fiji: Ethnicity and the post-Colonial State." In *Internal Conflict and Governance*, edited by K. Rupesinghe, 81–102. London: Palgrave Macmillan.

Narayan, P. K., S. Narayan, A. Prasad, and B. C. Prasad. 2010. "Tourism and Economic Growth: A Panel Data Analysis for Pacific Island Countries." *Tourism Economics* 16 (1): 169–183. doi:10.5367/000000010790872006.

Pablo-Romero, M. D. P. and J. A. Molina. 2013. "Tourism and economic growth: A review of empirical literature." *Tourism Management Perspectives* 8: 28–41. doi.10.1016/j.tmp.2013.05.006

Pacific Islands Report. 2017. "Tonga Tourism Industry Having Problems Attracting Investment, 01/31/2017." Accessed 12 May 2021. http://www.pireport.org/articles/2017/01/31/tonga-tourism-industry-having-problems-attracting-investment

Pesaran, M. H., Y. Shin, and R. J. Smith. 2001. "Bounds Testing Approaches to the Analysis of Level Relationships." *Journal of Applied Econometrics* 16 (3): 289–326. doi:10.1002/jae.616.

Phillips, P. C., and P. Perron. 1988. "Testing for a Unit Root in Time Series Regression." *Biometrika* 75 (2): 335–346. doi:10.1093/biomet/75.2.335.

Pratt, S. 2013. "Assessing the Economy-Wide Impacts of Natural Disasters: The Economic Impact of the 2009 Fiji Floods." *Journal of Pacific Studies* 33 (2): 6–21.

Rao, B. B., and T. B. Takirua. 2010. "The Effects of Exports, Aid and Remittances on Output: The Case of Kiribati." *Applied Economics* 42 (11): 1387–1396.
Rao, B. B., and G. M. Hassan. 2012a. "An Analysis of the Determinants of the Long-Run Growth Rate of Bangladesh." *Applied Economics* 44 (5): 565–580. doi:10.1080/00036846.2010.510466.
Rao, B. B., and G. M. Hassan. 2012b. "Are the Direct and Indirect Growth Effects of Remittances Significant?" *The World Economy* 35 (3): 351–372. doi:10.1111/j.1467-9701.2011.01399.x.
Ravinthirakumaran, K., E. A. Selvanathan, S. Selvanathan, and T. Singh. 2019. "Tourism and Foreign Direct Investment Inflows in Sri Lanka." *South Asia Economic Journal* 20 (2): 248–273. doi:10.1177/1391561419858475.
Read, R. 2008. "Foreign Direct Investment in Small Island Developing States." *Journal of International Development* 20 (4): 502–525. doi:10.1002/jid.1477.
Romer, P. M. 1987. "Growth Based on Increasing Returns Due to Specialization." *American Economic Review* 77 (2): 56–62.
Romer, P. M. 1990. "Endogenous Technological Change." *Journal of Political Economy* 98 (5, Part 2): S71–S102. doi:10.1086/261725.
Scheyvens, R., and M. Russell. 2013. "Sharing the Riches of Tourism in Vanuatu, Massey University, School of People, Environment & Planning, New Zealand." Accessed 12 May 2021. https://www.mfat.govt.nz/assets/Uploads/Sharing-the-riches-of-tourism-in-Vanuatu.pdf
Schubert, S. F., J. G. Brida, and W. A. Risso. 2011. "The Impacts of International Tourism Demand on Economic Growth of Small Economies Dependent on Tourism." *Tourism Management* 32 (2): 377–385. doi:10.1016/j.tourman.2010.03.007.
Seetanah, B. 2011. "Assessing the Dynamic Economic Impact of Tourism for Island Economies." *Annals of Tourism Research* 38 (1): 291–308. doi:10.1016/j.annals.2010.08.009.
Seetanah, B., and S. Fauzel. 2019. "An Empirical Analysis of the Impact of Foreign Direct Investment on Tourism Development: The Mauritian Case." *Tourism Analysis* 24 (4): 517–529. doi:10.3727/108354219X15652651367514.
Selvanathan, S.,. E. A. Selvanathan, and B. Viswanathan. 2012. "Causality between Foreign Direct Investment and Tourism: empirical Evidence from India." *Tourism Analysis* 17 (1): 91–98. doi:10.3727/108354212X13330406124296.
Shahzad, S. J. H., M. Shahbaz, R. Ferrer and R. R. Kumar. 2017. "Tourism-led growth hypothesis in the top ten tourist destinations: New evidence using the quantile-on-quantile approach." *Tourism Management*, 60: 223–232. doi:10.1016/j.tourman.2016.12.006
Sokhanvar, A. 2019. "Does Foreign Direct Investment Accelerate Tourism and Economic Growth within Europe?" *Tourism Management Perspectives* 29: 86–96. doi:10.1016/j.tmp.2018.10.005.
Sokhanvar, A., S. Çiftçioğlu, and E. Javid. 2018. "Another Look at Tourism-Economic Development Nexus." *Tourism Management Perspectives* 26: 97–106. doi:10.1016/j.tmp.2018.03.002.
Solow, R. M. 1956. "A Contribution to the Theory of Economic Growth." The *Quarterly Journal of Economics* 70 (1): 65–94. doi:10.2307/1884513.
Stauvermann, P. J., and R. R. Kumar. 2016. "Economics of Tourism & Growth for Small Island Countries." *Tourism Management* 55: 272–275. doi:10.1016/j.tourman.2016.02.020.
Stauvermann, P. J., and R. R. Kumar. 2017. "Productivity Growth and Income in the Tourism Sector: Role of Tourism Demand and Human Capital Investment." *Tourism Management* 61: 426–433. doi:10.1016/j.tourman.2017.03.006.
Tang, S., E. A. Selvanathan, and S. Selvanathan. 2007. "The Relationship between Foreign Direct Investment and Tourism: empirical Evidence from China." *Tourism Economics* 13 (1): 25–39. doi:10.5367/000000007779784498.
Taylor, J. E. 2001. "Tourism to the Cook Islands: Retrospective and Prospective." *Cornell Hotel and Restaurant Administration Quarterly* 42 (2): 70–81. doi:10.1177/0010880401422007.
Wang, M. 2009. "Manufacturing FDI and Economic Growth: evidence from Asian Economies." *Applied Economics* 41 (8): 991–1002. doi:10.1080/00036840601019059.
World Bank. 2019. *World Development Indicators Database*. World Bank, Washington, D.C.