

Bosedede Ngozi Adeleye / Hammed Oluwaseyi Musbahu /  
Hauwah K. K. Abdulkareem / Asma Kanwal

# Growth-Led Tourism and the Role of Exchange Rate: Empirical Evidence from Sri Lanka

## Abstract

We re-visit the growth-led tourism hypothesis to examine the role of the exchange rate in the nexus. Using yearly data on Sri Lanka from 1995 to 2018, preliminary tests reveal a long-run association between tourism receipts, economic growth, and the official exchange rate. Consistent robustness results from a battery of econometric techniques validate that the connection holds autonomously and interactively. Conclusions drawn from the linear models suggest that a percentage change in economic growth increases tourism by 0.8% to 1.2%. Likewise, the exchange rate boosts tourism by 0.006% to 0.008%, on average, *ceteris paribus*. For the most part, the interaction of the exchange rate with economic growth upholds the "growth-led tourism" hypothesis. We also find that the results hold across the conditional distribution of tourism. Additional evidence from the margin plot reveals that the effect of economic growth on tourism is positive as the Sri Lankan *Rupee* depreciates. The upward trend of the plot within the 95% confidence interval shows that currency depreciation enhances the impact of economic growth on tourism. These are novel contributions to the literature as it suggests that currency depreciation in Sri Lanka is pro-tourism. Policy recommendations are discussed.

*Keywords:* exchange rate, tourism, economic growth, Sri Lanka

## 1. Introduction

Since the civil air industry emerged in the late 1950s, tourism has been regarded as the fastest growing and most profitable industry globally. This year's International Tourism Day agenda, "A Billion Traveller; a Billion Opportunities," emphasizes the potential to transform a billion travellers. According to the United Nations and the World Tourism Organization, international tourists arriving globally in 2019 increased from 850 million to 1,435 million in 2018, accounting for 6% to 7% of the workforce and per cent of the global GDP. Furthermore, the development of the service industry, especially the growth of tourism, is closely linked to economic transformation in many service-based countries worldwide. As a result, the impact of the tourism and service sectors across the country's economy has the potential to cause spill-over effects (Kouchi et al., 2018; Giampiccoli et al., 2020; Aliyev et al., 2020; Brščić et al., 2020; Pata, 2021; Ngo & Vu., 2020; Bella et al., 2021). Furthermore, the impact of tourism on economic development is recognized, given the process of capitalization generated by current revenue and the flow of costs in the industry as a result of international tourist tourism (Esposti & Listorti, 2018).

---

**Bosedede Ngozi Adeleye**, PhD, Corresponding Author, Department of Accountancy, Finance and Economics, University of Lincoln, United Kingdom; Lincoln International Business School, University of Lincoln, United Kingdom; Centre for Economic Policy and Development Research (CEPDeR), Covenant University, Nigeria; ORCID ID: <https://orcid.org/0000-0002-1274-714X>; e-mail: [NAdeleye@lincoln.ac.uk](mailto:NAdeleye@lincoln.ac.uk); [ngozi725@gmail.com](mailto:ngozi725@gmail.com); Website: <https://cruncheconometrics.com>

**Hammed Oluwaseyi Musbahu**, PhD, Department of Economics, University of Tasmania, Australia; University of Economics, Ho Chi Minh City, Vietnam; Department of Agriculture and Fisheries, Queensland Government, Australia; ORCID ID: <https://orcid.org/0000-0003-2605-857X>; e-mail: [mizbauhameed2010@gmail.com](mailto:mizbauhameed2010@gmail.com)

**Hauwah K. K. Abdulkareem**, PhD, Department of Economics and Development Studies, Kwara State University, Malete, Nigeria; ORCID ID: <https://orcid.org/0000-0003-1300-4126>; e-mail: [abdulkareem.hauwah@gmail.com](mailto:abdulkareem.hauwah@gmail.com)

**Asma Kanwal**, PhD, University of Management and Technology, Lahore, Pakistan; ORCID ID: <https://orcid.org/0000-0002-8317-6794>; e-mail: [asma.kanwal@umt.edu.pk](mailto:asma.kanwal@umt.edu.pk)

The tourism sector has become an important engine of economic growth. It promotes the growth and development of the national economy through increased exports providing 40% of all exports, which is a prominent feature of international trade (Aburumman, 2020). The tourism industry contributes to economic growth in various ways. First, tourism is a form of the internal exchange rate in which foreign tourists consume the product of a domestic market that allows the country to pay for the primary raw materials and raw materials needed in the manufacturing process (Adeleye et al., 2022a). Second, it encourages governments and businesses to invest in new infrastructure and business areas, allowing local companies to compete with other resorts. Third, it is an essential factor in the transfer of knowledge, the promotion of learning, and the raising of funds. It has also become a priority for general development in several countries. (Andriotis, 2002; Schubert et al., 2011). Fourth, it adds to job creation and rising revenue. Finally, it may result in the effective use of the economy of scale in national enterprises.

The exchange rate measures a national currency compared to a basket of significant foreign currencies (Dornbusch, 1997). As a commodity, the tourism industry appears in global markets and generates foreign exchange (Adeleye et al., 2022b). When the national currency is reduced compared to other currencies, domestic tourism increases because travel to international tourist destinations becomes more expensive (Dogru et al., 2019). The depreciation of the national currency ultimately improves the balance of world trade (Işık et al., 2020). The J-curve hypothesis represents a growing effect of depreciation or a decrease in the tourism trade balance (Dogru et al., 2019). In general, a reduction in the actual exchange rate indicates an adverse change in trade balance and vice versa (Webster et al., 2007). It is an indicator that favours business tourism and improves network performance by reducing international trade costs and promoting international trade and trade openness (Chaisumpunsakul & Pholphirul, 2018). International trade aids the promotion of consumer attention and awareness of the product in a country, enticing travellers to that country (Kulendran & Wilson, 2000).

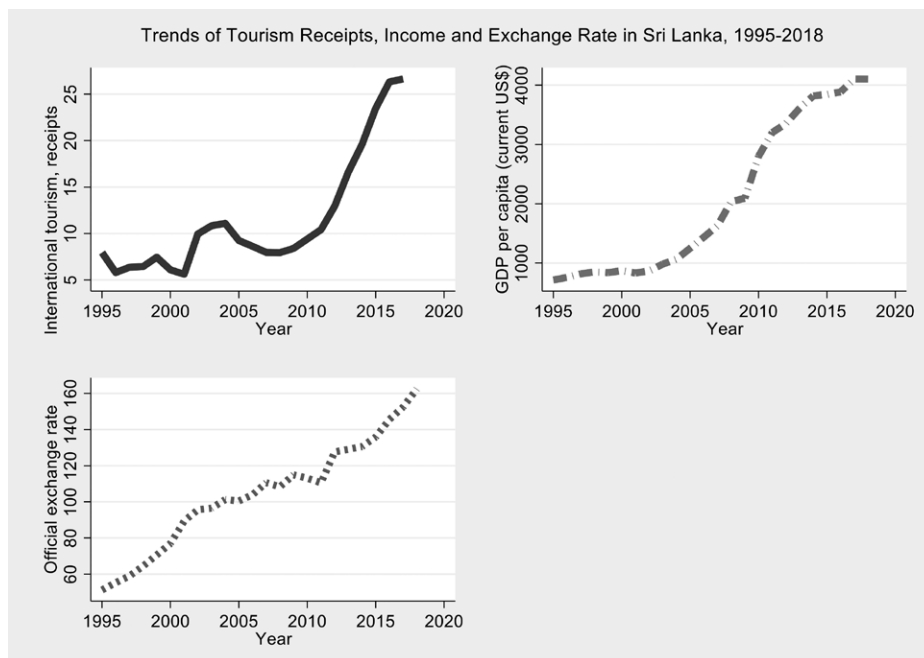
The literature on export-led growth focuses on the benefits of keeping export prices high enough to entice people to switch resources in their production. This traditionally indicates an increase in accessible output for export. Using the real exchange rate to promote the transition of agricultural commodities to increased productivity increases national income as conditions favour increased production over agriculture. Foreign trade profits from tourism development can import larger goods required for producing goods and services, leading to economic growth (McKinnon, 1964). The benefits of foreign exchange and tourist consumption can affect the balance of trade, production, and employment and can be an essential source of income for the global economy (Balaguer & Cantavella-Jorda, 2002). It attracts foreign direct investment (FDI) that supports sustainable economic growth (Sethi et al., 2019a, b) since high or low exchange rates have the potential to influence international tourist decisions and contribute to economic growth.

The focus on Sri Lanka is germane. Over the past three decades, the number of international visitors to Sri Lanka has grown significantly. 1980 there were 321,780 guests, and by 2014, that number had risen to 1524,153. During that time, official travel receipts increased from US\$ 110.70 million (current dollars) to US\$ 2.43 billion (current dollars). According to the World Economic Forum's index of most tourist-friendly countries, Sri Lanka has been ranked 63rd out of 141 countries<sup>1</sup>. After private remittances, textiles, and exports, tourism was ranked third in size and the fastest-growing sector in Sri Lanka, and it is the 20th most significant source of foreign exchange. Many problems have plagued the tourism industry in Sri Lanka; it is essential to investigate the link between tourism economic growth and the level of trade. It is also necessary to find out how the tourism industry affects economic growth and the exchange rate. Figure 1 shows the trend of tourism receipts, per capita GDP, and exchange change from 1995 to 2019. All the variables exhibit an upward movement for most of the study period, but tourism receipts are somewhat inconsistent with swings from 1995 to about 2005. Hence, this study attempts to interrogate the growth-led-tourism nexus and determine

<sup>1</sup>Sri Lanka ranked 63rd in Tourism Index (adaderana.lk)

whether the relationship holds when the exchange rate<sup>2</sup> is accounted for. That is, does the exchange rate tilt the dynamics in Sri Lanka? This is the first study to engage such analysis for a developing economy like Sri Lanka. This brings to the fore the justification for this study and the cavity to be filled.

**Figure 1**  
*Trend of tourism receipts, economic growth and official exchange rate in Sri Lanka, 1995 to 2018*



The following criteria are used for examination: yearly time series data from 1995 to 2018 comprising tourism expenditures, per capita GDP (a proxy for economic growth), official exchange rate and a set of control variables. A range of econometrics techniques is deployed to ensure the robustness of the results. The Bayer and Hanck (2013) cointegration test is first used to ascertain if the variables co-exist in the long run, after which cointegration techniques of fully modified ordinary least squares (FMOLS) developed by Phillips and Hansen (1990) and the Canonical cointegration techniques are deployed to determine the long-run estimates. Next, the instrumental variable technique nested within the generalized method of moments (IV-GMM) (Baum, Schaffer, & Stillman, 2003, 2007b, 2007a) is used to control for possible endogeneity of the tourism variable. Lastly, the method of moments quantile regression developed by Machado and Santos (2019) is used if the dependent variable has a non-normal distribution. This empirical approach makes the study novel and holistic, ensuring a critical examination of its core arguments. The rest of the paper is structured as follows: Section 2 discusses the literature; Section 3 outlines the data and empirical model; Section 4 discusses the results, and Section 5 concludes.

## 2. Literature review

### 2.1. Tourism and economic growth

The tourism-economic growth nexus has been a subject of extensive debate in the extant literature, particularly with the discovery of tourism's productive and economic potential, which led to the development of the tourism-led growth hypothesis (TLGH) (Balaguer & Cantavella-Jordá, 2002). This argument implies

<sup>2</sup> In this paper, the exchange rate is expressed as the local currency per the Sri Lankan Rupee. An increase in the exchange rate indicates the appreciation of the Sri Lankan Rupee against the foreign currency.

that tourism positively influences and accelerates economic growth through other externalities (Danish & Wang, 2018). Studies such as Liu and Wu (2019) that have found a unidirectional relationship running from tourism to economic growth belong to this strand of literature. Examining the transmission mechanism between tourism productivity and economic development in Spain, Liu and Wu (2019) incorporate the new growth theory into the Bayesian dynamic stochastic general equilibrium analysis, the results of which show that tourism boosts not only economic growth but also has spill-over effects on other areas of the economy. Other studies that confirm the TLGH include Cárdenas-García et al. (2013), particularly in developed economies, Lee and Brahmasrene (2013) in European Union, Panahi et al. (2015) in Turkey, Paramati et al. (2016) for both developed and developing countries and Danish and Wang (2018) in BRICS economies. However, this represents only one of the four prominent positions of the tourism-growth nexus in the empirical literature.

The second strand of the literature proposes a growth-led tourism hypothesis (GLTH) arising from a unidirectional causal nexus from economic growth to tourism which conflicts with the predictions of the TLGH. This is the finding of Bouzahzah and El-Menyari's (2013) study of tourism activity on economic growth in Tunisia and Morocco from 1980 to 2010. This also follows the study of Oh (2005) in Korea and Katircioglu (2009a) in Turkey. The latter, however, contradicts Panahi et al. (2015), which was also conducted in Turkey. The third argument in the extant literature is which supports a bidirectional relationship between tourism and economic growth which is the feedback hypothesis. Ridderstaat et al. (2014) in Aruba and Dogru and Bulut (2017) in seven European countries support this assertion. Finally, the last strand of literature is of the position that no causal relationship exists between tourism and economic growth, leading to a neutrality hypothesis as revealed by the empirical studies of Singh et al. (2010) in Bahamas, Barbados and Jamaica and Ekanayake and Aubrey (2012) in developing countries.

A position revealed by the literature review that does not fit into any identified strands is those studies that find mixed results. That combines two or more tourism-growth strands in the same study context. For example, in Romania, Badulescu et al. (2020) revealed that GLTH exists between GDP per capita and international tourism in the long run, while TLGH exists in the short run. Also, Gao et al. (2019) analyzed the relationship between tourism development, CO<sub>2</sub> emissions, energy consumption and economic growth in 18 Mediterranean countries using data from 1995 to 2010. The cointegrating polynomial regression results exhibited a bidirectional relationship between tourism development and GDP for the Northern Mediterranean. In contrast, a unidirectional causality from tourism to GDP was revealed for the South of the Mediterranean.

Similarly, Aslan (2014) showed that while a bidirectional relationship was found for Portugal, a unidirectional relationship from economic growth to tourism was discovered for Tunisia, Bulgaria, Spain, Cyprus, Greece, Italy and Croatia and no causal relationship for Egypt and Malta. This study is similar to Chou's study of 10 transition economies by Chou (2013), which reveals a mixed finding comprising all four significant strands of the tourism-growth relationship. In the paper, Slovenia, Bulgaria and Romania exhibited the neutral causal hypothesis, with Slovakia, Cyprus and Latvia showing a growth led tourism hypothesis. The TLGH was, however, revealed for Poland and the Czech Republic, while Hungary and Estonia supported a bidirectional causal nexus. Chen and Chiou-wei (2009) also found a combination of TLGH in Taiwan and GLTH in South Korea in their study of the two Asian countries using the EGARCH-M model.

## 2.2. Tourism and exchange rate

The relationship between tourism and exchange rate may appear obvious. One would expect an exchange rate depreciation to make tourism less expensive and boost inbound tourism and vice versa, *ceteris paribus*. However, analyzing the relationship between exchange rates and tourism has been the focus of many studies, with no consensus in the literature regarding the exact nature of the association. Employing the dynamic common correlated effects (DCCE), Chaudhry et al. (2021) examined the effect of the environment, real

exchange rate and institutions on East-Asia and Pacific region tourism. The results reveal that the real exchange rate, among other variables, positively affects tourism. The extent to which fluctuations in exchange rates exert an asymmetric effect on the demand for tourism in ten European countries was investigated by Irandoust (2019). The hidden cointegration test and a likelihood-based panel model were adopted to support a long-run relationship between exchange rates and tourism demand. This led to the conclusion that exchange rate appreciation and depreciation have varied impacts on tourism demand regarding size and sign. Similarly, the findings of Sharma and Pal (2019) also show the asymmetric response of tourism demand to exchange rate fluctuations in India using the nonlinear autoregressive distributed lag model. This follows the findings of Akadiri and Akadiri (2019), whose study also provide an empirical basis for the exchange rate-induced tourism hypothesis in 16 tourism island states with data from 1995-2016.

Karimi et al. (2018) employed a nonlinear estimation technique to analyze quarterly data from 2000-2017 to examine the asymmetric effects of exchange rates and tourists' income on tourism in Malaysia. The results show that exchange rate appreciation and depreciation significantly affect tourism in the long run. This result contradicts Meo et al. (2018), who found a positive long-run asymmetric impact of the exchange rate on Pakistan's tourism demand. However, the result of Naidu (2017) is two folds as the real effective exchange rate is indicated to wield a negative effect in the long run but a positive impact in the short run in Singapore. The conclusions of Akay et al. (2017) differ as they established a positive long-run relationship between the exchange rate and tourism trade balance in Turkey with no statistically significant short-run effect. Finally, in Tang et al. (2016), the tourism-exchange rate relationship was explored using the copula-based-GARCH models. Findings from the analysis show that exchange rate fluctuations do not significantly affect tourism as measured by inbound demand for tourism. In contrast, Stauvermann et al. (2016) discovered a positive relationship between tourism and the exchange rate in the short and long run in Sri Lanka.

Chi (2015) focused on examining the short and long-run effects of the exchange rate on the United States (US) tourism imports and exports. Using data from 1960-2011, the paper finds a negative relationship between the exchange rate and tourism, with exchange rate appreciation leading to a deterioration in the tourism balance of the US. This sharply contrasts with Dincer et al. (2015), who found neither the long-run association nor Granger causality between real effective exchange rate and tourism incomes in Turkey. This is attributed to the fact that local markets and conditions determine revenues from tourism. Finally, Falk (2014) examined the effect of the Swiss franc exchange rate on international tourism in the Swiss Alps using median regression models. Findings show the currency's appreciation, both in absolute and nominal terms, negatively impacts tourism.

### 3. Data and methodology

#### 3.1. Variables and justifications

The Sustainable Development Goals (SDGs) (<https://sdgs.un.org/goals>) 8, 12, and 17 of the United Nations 2019 serve as the basis for the choice of variables used in this study with yearly data from 1995 to 2018, which are sourced from World Development Indicators of World Bank (2020). The dependent variable, tourism receipt, relates to SDG 8.9 and 12, which aim to "devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products by 2030". The main explanatory variables are real GDP per capita (PC), the proxy for economic growth and SDG 8 sets out to "promote sustained, inclusive and sustainable economic growth". The moderating variable is the official exchange rate (OXR) which is closely linked to SDG 8 as the exchange rate policy of developing economies must be guided by sustainable strategies to achieve rapid and inclusive pro-poor economic growth while enhancing international affordability and tourism activities. The study controls for labour participation (LAB), net inflows, foreign direct investment (FDI), and domestic credit (DC). SDG 8 sets out to "...enhance full

and productive employment and decent work for all," which allows the engagement of the unemployed teeming population for job creation and high-level productivity. Foreign direct investment (FDI): SDG 17 pioneers "a vision improved and more equitable trade, as well as coordinated investment initiatives to promote sustainable development across borders". The tourism sector requires vast capital and infrastructural outlay, and this goal encourages the transfer of investments and expertise from developing to less developed economies and across borders. Domestic credit (DC): making finance available to those initially excluded is one of the targets of SDG 17. This will spur financial deepening, which creates avenues for investment and aggregate consumption that engenders economic growth. Therefore, we expect that these explanatory and control variables will be a positive impact on economic growth. Table 1 describes the variables and the expected *a priori* signs.

**Table 1**  
**Variables and expectations**

| Variables | Description   | Expected signs |
|-----------|---|----------------|
| TRPT      | International tourism, receipts (% of total exports)                      | N/A            |
| PC        | GDP per capita (current US\$)   | +              |
| OXR       | Official exchange rate (LCU per US\$, period average)                     | +              |
| LAB       | Labour force participation rate, total (% of total population ages 15-64) | +              |
| FDI       | Foreign direct investment, net inflows (BoP, current US\$)                | +              |
| DC        | Domestic credit to the private sector (% of GDP)                          | +              |

### 3.2. Empirical models

We address the study objectives by drawing on the theoretical exposé on the growth-led tourism (GLT) conjecture. To control for heteroscedasticity and possible outliers and to establish elasticity relationships, all the variables, except the exchange rate, are transformed into their natural logarithms. The double-log elasticity model, which probes growth-led tourism, addresses the hypothesis that economic growth and exchange rate individually impact tourism expressed as:

$$\ln TRPT_t = \alpha + \varphi_1 \ln PC_t + \varphi_2 OXR_t + \beta \mathbf{X}'_t + e_t \quad [1]$$

where,  $\ln$  = natural logarithm;  $\alpha$  = constant term;  $\varphi_i$ ,  $\beta$  = partial slope coefficients;  $TRPT$  = tourism receipts;  $PC$  = real per capita GDP (proxy for economic growth);  $\mathbf{X}'_t$  = vector of control variables ( $LAB$ ,  $PC$ , and  $DC$ ) in natural logarithms;  $e_t$  = the general error term. The main argument of this paper is that the relationship between economic growth and tourism is not linear but nonlinear through the influence of the exchange rate. The conjecture is that the impact of economic growth on tourism is conditioned on the exchange rate level. To this end, Equation [1] is augmented to include an interaction term of economic growth and exchange rate. The model is specified as follows:

$$\ln TRPT_t = \gamma + \eta_1 \ln PC_t + \eta_2 OXR_t + \eta_3 (\ln PC_t * OXR_t) + \omega \mathbf{Z}'_t + v_t \quad [2]$$

The variables, parameters and symbols are analogous to those specified in Equation [1]. To evaluate the marginal effect of economic growth on tourism, this study adopts the analytical procedures of Anser et al. (2021), where  $\eta_3$  is the sign of the coefficient of the interaction term, which gauges if the interaction of economic growth and exchange rate enhances or distorts tourism? We, therefore, evaluate this marginal effect at the mean, minimum and maximum values of the exchange rate as indicated in Equation [3]:

$$\frac{\partial \ln TRPT}{\partial \ln PC} = \eta_1 + \eta_3 OXR \quad [3]$$

### 3.3. Estimation approach

Preliminary estimations of Equation [1] begin by examining the unit root properties of the variables using the conventional augmented Dickey and Fuller (1979), subsequently, "ADF" and Phillips and Perron (1988), later "PP" unit root tests after which the long-run association among the variables is ascertained using the more recent Bayer and Hanck (2013) cointegration test. If a cointegration relationship exists, estimating the long-run coefficients becomes relevant. To this end, the fully modified ordinary least squares (FMOLS) proposed by Phillips and Hansen (1990) are deployed. The technique uses kernel estimators of the nuisance parameters that affect the asymptotic distribution of the OLS estimator. It achieves asymptotic efficiency by modifying the least squares to account for serial correlation effects and tests for the endogeneity in the regressors resulting from cointegrating relationships. As a further robustness check, the Canonical cointegration method is used to confirm if the results are sustained.

Furthermore, if economic growth is endogenous, that is, correlated with the error term such that the outcomes are biased and may yield wrong inferences, the instrumental variables techniques proposed by Phillips and Hansen (1990) and recently nested within the generalized method of moments (GMM) framework by Baum et al. (2003, 2007b, 2007a) is deployed. Finally, suppose the dependent does not follow a normal distribution such that the impact of *PC* and *OXR* and other control variables change along the conditional distribution of *TRPT*. In that case, deploying a suitable technique model in this scenario becomes pertinent. This is where the moment's quantile regression (MM-QR) approach developed by Machado and Santos (2019) becomes appropriate. The technique permits the estimation of the impact of economic growth and exchange rate at different points (quantiles) of tourism receipts. We consider three quantiles (25th, 50th, and 75th). Thus, modifying Equation [1] and following Machado and Santos (2019) and Anser et al. (2021), the conditional quantile  $Q_{TRPT}(\tau|\mathbf{X})$  estimation of the location-scale variant model takes the following general specification:

$$Q_{TRPT}(\tau|\mathbf{X}_t) = (\alpha_i + \delta_i q_i) + \mathbf{X}'_t \beta + \mathbf{R}'_t \gamma q(\tau) \quad [4]$$

where Equation [4] is assumed to be a linear model:  $\mathbf{X}'_{it}$  is a vector of all explanatory variables used in the study;  $Q_{TRPT}(\tau|\mathbf{X}_{it})$  represents the quantile distribution of the dependent variable conditional on the location of explanatory variables;  $\alpha_i(\tau) = \alpha_i + \delta_i q(\tau)$  is the scalar coefficient of the quantile- $\tau$  fixed effect for individual  $i$ , or the distributional effect at  $\tau$ ;  $\mathbf{R}'$  is a  $k$ -vector of known differentiable (with probability 1) transformations of the components of  $\mathbf{X}$  with element  $l$  where  $l=1, \dots, k$ ;  $q(\tau)$  is the " $\tau$ -th" quantile derived from the following optimization function:

$$\min_q \sum_i \sum_t \rho_\tau(\hat{K}_{it} - (\hat{\delta}_i + \mathbf{R}'_{it} \hat{\gamma}) q) \quad [5]$$

Such that,  $\rho_\tau(A) = (\tau-1)AI\{A \leq 0\} + \tau AI\{A > 0\}$  represents the check-function.

## 4. Results and interpretations

This section presents the empirical findings of our proposed models, as explained in section 3.2 of our study. Equation [1] shows the outcome of the effect of the exchange rate and economic growth with other relevant covariates on tourism. At the same time, Equation [2] incorporates the interaction of economic growth with the exchange rate on tourism.

### 4.1. Correlation and descriptive statistics

Table 2 discusses our estimates for summary statistics and pairwise correlation. The summary statistics of the variables explained the individual properties of the variables. The standard deviation value shows that tourism and foreign direct investment have the most spread-out distribution of the dataset, which intuitively implies

higher volatility. In addition, the marked disparity between the minimum and maximum values of tourism and foreign direct investment corroborates the extent of dispersion of these variables. Similarly, tourism and foreign direct investment have the highest mean value over time, while domestic credit to investors and labour participation rate exhibit a relatively low average over time. The pairwise correlation, which shows the strength of the relationship between the variables, confirmed that tourism is positive and significantly related to per capita income, exchange rate, foreign direct investment, and domestic credit to the private sector. However, the relationship between tourism and labour participation rate is negative, contradicting our *a priori* expectation. In addition, our result shows no multicollinearity problem among our variables, as none of the variables has a correlation coefficient higher than the threshold of 10.

**Table 2**  
*Summary statistics and pairwise correlation*

| Variable                     | TRPT      | PC        | OXR       | LAB       | FDI      | DC     |
|------------------------------|-----------|-----------|-----------|-----------|----------|--------|
| Observations                 | 23        | 24        | 24        | 24        | 24       | 22     |
| Mean                         | 1.39E+09  | 2073.166  | 104.412   | 59.438    | 5.52E+08 | 32.387 |
| Std. dev.                    | 1.46E+09  | 1312.391  | 30.682    | 1.522     | 4.17E+08 | 4.646  |
| Minimum                      | 2.82E+08  | 714.233   | 51.252    | 56.801    | 5.60E+07 | 25.516 |
| Maximum                      | 5.08E+09  | 4104.631  | 162.465   | 63.411    | 1.61E+09 | 45.368 |
| <b>Pairwise correlations</b> |           |           |           |           |          |        |
| (1) lnTRPT                   | 1.000     |           |           |           |          |        |
| (2) lnPC                     | 0.932***  | 1.000     |           |           |          |        |
| (3) OXR                      | 0.929***  | 0.916***  | 1.000     |           |          |        |
| (4) lnLAB                    | -0.762*** | -0.787*** | -0.734*** | 1.000     |          |        |
| (5) lnFDI                    | 0.822**   | 0.907**   | 0.872***  | -0.676*** | 1.000    |        |
| (6) lnDC                     | 0.741***  | 0.545***  | 0.596***  | -0.551*** | 0.493**  | 1.000  |

Note. ln = Natural logarithm; PC = GDP per capita; TRPT = Tourism receipts; OXR = Official exchange rate; LAB = Labour force; FDI = Foreign direct investment net inflows (BoP, current); DC = Domestic credit; Example: 1.39E+09 = 1,390,000,000.00.  
\*\*\* p<0.01. \*\* p<0.05. \* p<0.1.

## 4.2. Unit root test and cointegration results

Table 3 shows that all variables are not stationary at level but become stationary after first differencing, as confirmed by the ADF and PP unit root tests. Sequel to the affirmation that our variables are only static after the first difference, we test if there is a long-run co-movement among the variables. Given this, we employed the recently developed Bayer and Hanck (2013) combined cointegration test due to its superior merits of combining various cointegration tests to provide joint statistics that test the null of cointegration. The findings from our study revealed that the test statistic of 71.23 (see lower panel of Table 3) is significant at the 1% level. Hence, the null hypothesis of no cointegration is rejected. This implies that there is a long-run relationship among the variables.

**Table 3**  
*Unit root tests*

| Variables | PP     |           |          | ADF    |           |          |
|-----------|--------|-----------|----------|--------|-----------|----------|
|           | Level  | 1st Diff. | Decision | Level  | 1st Diff. | Decision |
| lnTRPT    | 1.077  | -4.497*** | I(1)     | 0.507  | -2.627*   | I(1)     |
| lnPC      | -0.196 | -3.315*** | I(1)     | -0.398 | -3.373**  | I(1)     |
| OXR       | 0.11   | -4.945*** | I(1)     | 0.035  | -3.466*** | I(1)     |
| lnLAB     | -1.098 | -5.752*** | I(1)     | -0.710 | -3.737*** | I(1)     |
| lnFDI     | -1.969 | -4.857*** | I(1)     | -1.314 | -7.007*** | I(1)     |
| lnDC      | -0.869 | -3.507    | I(1)     | -1.302 | -3.512*** | I(1)     |

*Cointegration Hypotheses:*

Bayer-Hanck Test (EG-J-Ba-Bo-): 71.23\*\*\*

Note. ln = Natural logarithm; PC = GDP per capita; TRPT = Tourism receipts; OXR = Official exchange rate; LAB = Labour force; FDI = Foreign direct investment net inflows (BoP, current); DC = Domestic credit; Bayer-Hanck (2009) 5% critical values = 19.888; EG = Engle-Granger; J = Johansen; Ba = Banerjee; Bo = Boswijk.  
\*\*\* p<0.01. \*\* p<0.05. \* p<0.1.



### 4.3 FMOLS and canonical cointegration results

The study employs the FMOLS and canonical cointegration (CCR) to ascertain the magnitude of the cointegration among the variables under review. The result from Table 4 Equation [1] revealed that per capita income significantly increases tourism receipt at the 1% significance level. This implies that tourists are more attracted to a destination country with a good economy, lending credence to the growth-led tourism hypothesis. In other words, a 1%-point increase in economic growth increases tourism receipt by 0.81% to 1.16% on average, *ceteris paribus*. This finding aligns with earlier studies (Wamboye et al., 2020; Nunkoo et al., 2020; Haller et al., 2020; Anser et al., 2021).

Similarly, the exchange rate significantly increases tourism receipts at the 5% significance level. This result also conforms to previous findings (Ergen & Yavuz, 2017; Meo et al., 2018); Chi, 2020; Athari et al., 2020; Boskurt et al., 2021). This intuitively implies that the increase in of Sri Lankan Rupee to the US dollar (depreciation) will increase the demand for tourism, increasing the tourism receipt. Furthermore, the labour participation rate significantly increases tourism receipt at a 1% level. In other words, other things being equal, a 1% increase in labour will increase tourism receipts by 4.38 to 4.47% on average. This is expected as an increase in employment necessitates an increase in income which will spur the demand for tourism and, eventually, increase tourism receipt (Ruiters & Charteris, 2020; Lopez, 2019).

Moreover, domestic credit to the private sector significantly increases tourism at the conventional significance level. Other things remaining constant, a 1% increase in domestic credit will increase tourism receipts by 1.4 to 2.3% on average. This finding is in consonance with (Katircioglu et al., 2017; Shahbaz et al., 2017; Adeleye et al., 2021). This implies that a well-developed financial system will spur tourism demand and increase tourism receipt. In contrast to our a priori expectation, FDI significantly reduces tourism receipt at the conventional significance level. This negates our a priori expectations and some previous empirical evidence, such as (Gholipour & Al-Mulali, 2012; Fauzel, 2021). The negative effect of FDI on tourism may be attributed to the fact that Sri Lanka, as a developing country, has a low FDI in tourism as most of their FDI inflow is concentrated in other economic activities, which can help them overcome economic challenges such as poverty. In Equation [2], the interaction effect of economic growth with the exchange rate was found to have significantly increased tourism receipt. In other words, a prosperous economy with a weak exchange rate is bound to attract high tourist demand, resulting in a high tourism receipt. This is a novel finding in the literature on the exchange rate-tourism nexus.

**Table 4**  
*Long-run cointegration results (Dep Var: lnTRPT)*

| Variables                 | FMOLS        |         |              |         | Canonical Cointegration |         |              |         |
|---------------------------|--------------|---------|--------------|---------|-------------------------|---------|--------------|---------|
|                           | Equation [1] |         | Equation [2] |         | Equation [1]            |         | Equation [2] |         |
|                           | Coefficient  | t-Stat  | Coefficient  | t-Stat  | Coefficient             | t-Stat  | Coefficient  | t-Stat  |
| lnPC                      | 1.167***     | (7.79)  | -0.029       | (-0.07) | 0.818**                 | (2.60)  | -0.871       | (-0.87) |
| OXR                       | 0.006**      | 2.50    | -0.052**     | (-2.57) | 0.008*                  | (1.92)  | -0.071*      | (-1.77) |
| lnLAB                     | 4.474**      | (2.37)  | 4.388**      | (2.46)  | -0.817465               | (-0.17) | -0.693       | (-0.15) |
| lnFDI                     | -0.340***    | (-3.76) | -0.242**     | (-2.55) | -0.166431               | (-0.93) | -0.024       | (-0.13) |
| lnDC                      | 2.364***     | (9.50)  | 1.682***     | (5.43)  | 2.196***                | (4.46)  | 1.418**      | (2.30)  |
| lnPC*OXR                  |              |         | 0.009**      | (2.86)  |                         |         | 0.012*       | (1.95)  |
| Net Effects (Mean OXR)    |              |         | 0.94         |         |                         |         | 12.53        |         |
| Net Effects (Minimum OXR) |              |         | 0.46         |         |                         |         | 6.15         |         |
| Net Effects (Maximum OXR) |              |         | 1.46         |         |                         |         | 19.50        |         |
| Constant                  | -8.421       | (-1.01) | 0.441*       | (0.06)  | 12.782                  | (0.66)  | 23.389       | (1.16)  |
| Observations              | 21           |         | 21           |         | 21                      |         | 21           |         |
| R-squared                 | 0.952        |         | 0.960        |         | 0.952                   |         | 0.958        |         |

Note. ln = Natural logarithm; PC = GDP per capita; TRPT = Tourism receipts; OXR = Official exchange rate; LAB = Labour force; FDI = Foreign direct investment net inflows (BoP, current); DC = Domestic credit; Long-run covariance estimate (Pre-whitening with lags = 1, Bartlett kernel).

\*\*\* p<0.01. \*\* p<0.05. \* p<0.1.

#### 4.5. IV-GMM and IV-2SLS results

A lot of controversies have trailed the relationship between tourism and growth. The growth-led tourism (GLT) theorists posit that economic growth spurs tourism (Badulescu et al., 2020; Fauzel, 2021), while other findings opined that tourism-induced growth (Cannonier & Burke, 2019; Calero & Turner, 2019; Fonseca & Sánchez Rivero, 2020; Khan et al., 2020; Tu & Zhang, 2020; Chen et al., 2021; Scarlett, 2021) and some found bidirectional causality between the variables (Aspergis, 2012; Ridderstaat et al., 2014; Dogru & Bulut, 2017). Thus, we can safely conclude that economic growth may be endogenous, and the need to employ a method that controls for endogeneity is justified. The result from Table 5 explains the findings from IV-GMM and IV-2SLS estimates which are robust to endogeneity problems. There is a relative harmony in the outcome of the two instrumental regressions regarding the statistical significance and sign orientation. In our Equation 1 (Linear model), per capita income significantly increases the tourism receipt at a 1 % level. In other words, economic growth will increase tourism receipt by 0.94 to 0.96% on average, ceteris paribus. This finding is like the outcome of our long-run estimates.

Furthermore, the exchange rate significantly increases tourism receipts. This implies that exchange rate depreciation spurs tourism demand (Chi, 2015; Athari et al., 2020). Moreover, labour participation significantly increases tourism receipt at the conventional significance level. This implies that income-generating employment provides the necessary financial needs of the tourist. This corroborates our long run finding and is in line with previous evidence. Coupled with the above, FDI significantly reduces tourism receipt at the conventional significance level. A similar result was also found in our long-run estimates. This might be attributed to the low FDI inflow into the tourism sector. In addition, domestic credit to the private sector significantly increases tourism receipt. Other things remain constant; a 1% increase in domestic credit to the private sector raises tourism receipts by 1.88% to 1.97 % on average. This result is like our long-run finding, which has also been confirmed by previous studies (Katircioglu et al., 2017; Shahbaz et al., 2017). The lower panel of Table 5 revealed that the interaction of per capita GDP with the exchange rate is positive and statistically significant at a 1% level. In other words, a buoyant economy with a weak currency will likely make high tourism revenue. This is like our result from the long-run estimate. Similarly, the exchange rate statistically reduces tourism receipt in the nonlinear model, corroborating our long-run estimates findings suggesting a possible asymmetric relationship between exchange rate and tourism.

**Table 5**  
*Instrumental variables results (Dep Var: lnTRPT)*

| Variables                 | IV-GMM (Linear) |         | IV-2SLS (Linear) |         |
|---------------------------|-----------------|---------|------------------|---------|
|                           | Coefficient     | t-Stat  | Coefficient      | t-Stat  |
| lnPC                      | 0.940***        | (3.99)  | 0.963***         | (4.37)  |
| OXR                       | 0.011***        | (3.19)  | 0.008**          | (2.21)  |
| lnLAB                     | 3.067*          | (1.91)  | 1.75             | (0.64)  |
| lnFDI                     | -0.27           | (-1.4)  | -0.218*          | (-1.65) |
| lnDC                      | 1.970***        | (11.32) | 1.884***         | (5.23)  |
| Constant                  | -1.544          | (-0.27) | 3.265            | (0.27)  |
| Observations              | 21              |         | 21               |         |
| R-squared                 | 0.955           |         | 0.958            |         |
| GMM (endog) pvalue        | 0.1334          |         |                  |         |
| Durbin (endog) pvalue     |                 |         | 0.6332           |         |
| Wu-Hausman (endog) pvalue |                 |         | 0.7011           |         |
| Wald Statistic            | 2192.226***     |         |                  |         |

**Table 5 (continued)**

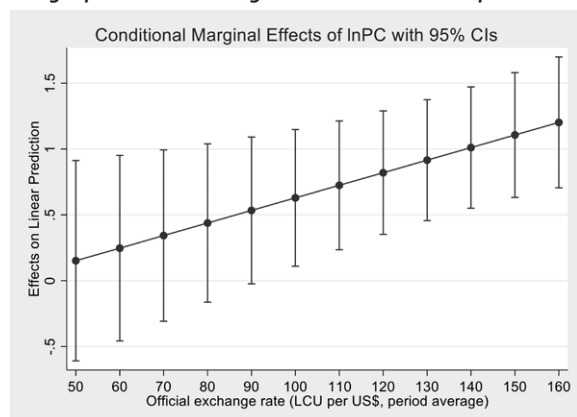
| Variables                 | IV-GMM (Nonlinear) |         | IV-2SLS (Nonlinear) |         |
|---------------------------|--------------------|---------|---------------------|---------|
|                           | Coefficient        | t-Stat  | Coefficient         | t-Stat  |
| lnPC                      | -3.372***          | (-7.68) | -2.706***           | (-3.59) |
| OXR                       | -0.338***          | (-9.74) | -0.291***           | (-5.37) |
| lnPC*OXR                  | 0.043***           | (10.21) | 0.038***            | (5.59)  |
| lnLAB                     | 6.784***           | (7.29)  | 7.292***            | (2.97)  |
| lnFDI                     | -0.234***          | (-7.35) | -0.297***           | (-2.62) |
| lnDC                      | 1.086***           | (12.87) | 1.236***            | (4.88)  |
| Net Effects (Mean OXR)    | 1.12               |         | 1.26                |         |
| Net Effects (Minimum OXR) | -1.17              |         | -0.76               |         |
| Net Effects (Maximum OXR) | 3.61               |         | 3.47                |         |
| Constant                  | 20.334***          | (4.08)  | 13.645              | (1.23)  |
| Observations              | 15                 |         | 15                  |         |
| R-squared                 | 0.989              |         | 0.989               |         |
| GMM (endog) pvalue        | 0.0758             |         |                     |         |
| Durbin (endog) pvalue     |                    |         | 0.1606              |         |
| Wu-Hausman (endog) pvalue |                    |         | 0.338               |         |
| Wald Statistic            | 1394.581***        |         |                     |         |

Note. ln = Natural logarithm; PC = GDP per capita; TRPT = Tourism receipts; OXR = Official exchange rate; LAB = Labour force; FDI = Foreign direct investment net inflows (BoP, current); DC = Domestic credit.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

To support the analytical evidence in Tables 4 and 5, we plot the marginal effect of economic growth on tourism receipts. Recall that the marginal impact informs how the outcome variable responds to changes in the explanatory variable and provides a reasonable estimate of the change in the dependent variable observed due to a difference in the independent variables. For continuous variables, the marginal effect measures the instantaneous rate of change. As shown in Figure 2, the margin plot reveals some informative tourism behaviour to economic growth at different exchange rate points. For example, from Table 2, the range of exchange rate is between 51.25 and 162.47, split across an interval of 10; the marginal effect of economic growth on tourism conditioned on the values of exchange rate indicates that the impact of economic growth on tourism improves as the Sri Lankan Rupee depreciates.

**Figure 2**  
Margin plot of economic growth on tourism receipts in Sri Lanka, 1995-2018



The upward trend in the plot within the 95% confidence interval shows that currency depreciation enhances the impact of economic growth on tourism. Though the effect is not statistically significant between the 50 to 80 band, the product is positive and statistically from the 90 bands and upwards to the rest of the horizon of

the exchange rate. This plot supports the econometric results obtained in Tables 4 and 5, where the positive effect of the exchange rate on the tourism-growth nexus is evident at the maximum exchange rate (depreciation) values. This is a significant contribution to the literature as it suggests that (1) currency depreciation in Sri Lanka is pro-tourism and (2) the growth-led tourism hypothesis is sustained.

#### 4.6. Method of moments quantile results

Considering dispersion in some of our variables of concern, as evidenced in the vast disparity between their minimum and maximum values, we employed the method of moments quantile regression (MM-QR) to examine the distributional and heterogeneous effects across quantiles. The result from Table 6 revealed that, per capita GDP significantly increase tourism receipt across all quantiles. Moreover, the scale of its positive effect significantly reduces in magnitude across the conditional distribution of tourism receipts. In other words, as an economy grows, it attracts more tourists, which in turn increases the tourism revenue. Furthermore, the exchange rate significantly increases tourism receipt across all quantiles, albeit the scale of its positive effect rises in magnitude with less statistical significance. In other words, tourism receipt is high when the exchange rate is very weak. Finally, while labour does not significantly affect tourism receipt, it exhibits a higher negative dispersion across quantiles.

Similarly, domestic credit to the private sector significantly increases tourism receipt across all quantiles. The negative insignificance scale indicates that the positive effect reduces as tourism receipt rises even though the reduction is less significant. FDI reduces tourism receipt across all quantiles even though the decline is more pronounced when tourism receipt is low. Although, the negative impact of FDI dissipates as tourism receipt increases. Moreover, Table 6 (nonlinear estimates) shows that the interaction of per capita GDP and the exchange rate is positive and statistically significant at the 5% level at the median and higher quantile distribution of tourism receipts. This implies that the simultaneity of a good economy and a weak exchange rate is highly imperative, especially if a country wants to maintain a moderate or high tourism receipt. This finding lends credence to our previous results.

**Table 6**  
*Method of moments quantile analysis results (Dep Var: lnTRPT)*

| Variables                    | Location             | Scale                 | Q = 0.25             | Q = 0.50             | Q = 0.75             | Location             | Scale                | Q = 0.25            | Q = 0.50             | Q = 0.75             |
|------------------------------|----------------------|-----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|---------------------|----------------------|----------------------|
|                              | [1]                  | [2]                   | [3]                  | [4]                  | [5]                  | [6]                  | [7]                  | [8]                 | [9]                  | [10]                 |
| lnPC                         | 0.973***<br>(4.780)  | -0.309***<br>(-3.010) | 1.254***<br>(5.366)  | 0.952***<br>(4.146)  | 0.676**<br>(2.313)   | -0.326<br>(-0.486)   | -0.545<br>(-1.456)   | 0.206<br>(0.279)    | -0.451<br>(-0.628)   | -0.842<br>(-0.958)   |
| OXR                          | 0.00817**<br>(2.271) | 0.00206<br>(1.138)    | 0.00629*<br>(1.702)  | 0.00831**<br>(2.262) | 0.0102**<br>(2.295)  | -0.0548*<br>(-1.787) | -0.00919<br>(-0.535) | -0.0459<br>(-1.439) | -0.0570*<br>(-1.784) | -0.0636*<br>(-1.670) |
| lnLAB                        | 1.913<br>(0.864)     | -2.033*<br>(-1.820)   | 3.761<br>(1.597)     | 1.777<br>(0.760)     | -0.0434<br>(-0.0152) | 2.436<br>(1.275)     | -1.706<br>(-1.597)   | 4.101*<br>(1.918)   | 2.042<br>(0.989)     | 0.819<br>(0.322)     |
| lnFDI                        | -0.218<br>(-1.530)   | 0.150**<br>(2.079)    | -0.354**<br>(-2.300) | -0.208<br>(-1.364)   | -0.0742<br>(-0.394)  | -0.114<br>(-0.811)   | 0.0763<br>(0.973)    | -0.188<br>(-1.261)  | -0.0962<br>(-0.651)  | -0.0414<br>(-0.233)  |
| lnDC                         | 1.883***<br>(7.526)  | -0.0128<br>(-0.102)   | 1.895***<br>(7.501)  | 1.883***<br>(7.465)  | 1.871***<br>(6.233)  | 1.278***<br>(2.906)  | -0.246<br>(-1.001)   | 1.518***<br>(3.246) | 1.221***<br>(2.637)  | 1.044*<br>(1.874)    |
| lnPC*OXR                     |                      |                       |                      |                      |                      | 0.00955**<br>(2.130) | 0.00199<br>(0.796)   | 0.00760<br>(1.613)  | 0.0100**<br>(2.133)  | 0.0114**<br>(2.036)  |
| Net Effects<br>(Mean OXR)    |                      |                       |                      |                      |                      | 1.04                 | 0                    | 0                   | 1.04                 | 1.15                 |
| Net Effects<br>(Minimum OXR) |                      |                       |                      |                      |                      | 0.51                 | 0                    | 0                   | 0.51                 | 0.56                 |
| Net Effects<br>(Maximum OXR) |                      |                       |                      |                      |                      | 1.62                 | 0                    | 0                   | 1.62                 | 1.79                 |
| Constant                     | 2.531<br>(0.296)     | 7.610*<br>(1.765)     | -4.386<br>(-0.484)   | 3.043<br>(0.338)     | 9.858<br>(0.896)     | 9.129<br>(0.895)     | 9.879*<br>(1.733)    | -0.509<br>(-0.0441) | 11.41<br>(1.029)     | 18.49<br>(1.348)     |
| Observations                 | 22                   | 22                    | 22                   | 22                   | 22                   | 22                   | 22                   | 22                  | 22                   | 22                   |

Note. z-statistics in parentheses; ln = Natural logarithm; PC = GDP per capita; TRPT = Tourism receipts; OXR = Official exchange rate; LAB = Labour force; FDI = Foreign direct investment net inflows (BoP, current); DC = Domestic credit.  
\*\*\* p<0.01. \*\* p<0.05. \* p<0.1.

## 5. Conclusion and policy implications

In the quest to achieve the 2030 sustainable development goal (SDG 8.9) "promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all" and (SDG 12) "ensure sustainable consumption and production pattern", the implementation of policies to promote sustainable tourism that creates job and promote local culture and products becomes an essential strategy to achieving these goals. Consequently, exchange rate stabilization has been seen as one of the most important macroeconomic policy instruments for fostering sustainable economic growth and promoting tourism inflow, as it serves as an essential determinant influencing the decision of migrants regarding their tourism destination. Against this backdrop, our study examines the effect of exchange rate and economic growth on tourism receipt in Sri Lanka, employing a battery of econometrics techniques for annual data spanning from 1995 to 2018. The preliminary long-run assessment from the FMOLS and CCR estimates revealed a long-run relationship between tourism receipt, official exchange rate and economic growth. Further empirical findings from the IV-GMM and IV-2SLS instrumental variables techniques, which are robust to the likely endogeneity problem, have shown that economic growth significantly increases tourism receipt. This intuitively implies that a prosperous economy is expected to attract foreign tourists. This outcome validates the growth led tourism hypothesis. In addition, an exchange rate also has a positive and significant effect on tourism receipts, indicating that a weak currency attracts international tourists, which in turn increases tourism receipts. Thus, the depreciation of the Sri Lankan rupee will make domestic items cheaper for international tourists, increasing tourist inflow.

Moreover, the interaction of exchange rate with economic growth revealed that a prosperous economy with a weak exchange rate is bound to attract high tourist demand leading to high tourist receipt. That is, currency depreciation in Sri Lanka strengthens economic growth towards promoting sustainable tourism. As a result of the non-normality of some of our variables, we further employed the method of moment quantile regression (MM-QR), which not only explains the heterogeneous effect of the explanatory variables across the conditional distribution of tourism receipt but is also robust to non-normality of the variables. The findings from the MM-QR further confirm our findings from the instrumental variable regressions.

Based on the findings of this study, we, therefore, recommend that the Sri Lankan Government and policymakers should: (1) Provide a sound and efficient financial system which does not only provide adequate funding for promoting the tourism sector but also ensure easy accessibility to aid foreign tourist's transaction. This is in line with the submission of Shi et al. (2020) that financial inclusion and development enable tourism enterprises and entrepreneurs to access formal finance and strengthen their required capital for tourism investment. (2) Set up a human capital development programme that enhances the skills and expertise of labour to promote sustainable economic growth and attractive tourism service through value-added service delivery. Wang, Ayres & Huyton (2009) noted that a lack of competent staff will cripple the industry's ability to meet the expectation of quality service that promotes tourism. (3) Initiate investment incentive policies for the tourism sector, which will reduce the operating cost and investment outlay and provide security for the investment of tourist investors, as posited by Jenkins (1982). (4) Initiate a well-managed exchange rate devaluation that increases tourism flow and economic growth and mitigates price stability, as suggested by Tung (2019). (5) Proper implementation of macroeconomic policies which steer the country's economy towards prosperity and improvement in R&D and advertisement will attract international tourism (Katircioglu, 2009b). For further studies and subject to data availability, the role of institutional quality in the growth-led tourism conjecture may be undertaken.

## References

Aburumman, A.A. (2020). COVID-19 impact and survival strategy in business tourism market: The example of the UAE MICE industry. *Humanities and social sciences communications*, 7(1), Article 141. <https://doi.org/10.1057/s41599-020-00630-8>

- Adeleye, B.N., Ogede, J.S., Rabbani, M.R., Adam, L.S., & Mazhar, M. (2022a). Moderation analysis of exchange rate, tourism and economic growth in Asia. *PLoS ONE* 17(12), Article e0279937. <https://doi.org/10.1371/journal.pone.0279937>
- Adeleye, B.N., Adam, L.S., Ahmad, P., & Ola-David, O. (2022b). Investigating tourism and exchange rate dynamics on economic growth in Sri-Lanka. *Journal of Policy Research in Tourism, Leisure and Events*. <https://doi.org/10.1080/19407963.2022.2130343>
- Adeleye, B.N., Ola-David, O., Jamal, A., & Sankaran, A. (2021). Moderation analysis on tourism–growth–emissions nexus in South Asia. *Journal of Policy Research in Tourism, Leisure and Events*, 14(1), 47-62. <https://doi.org/10.1080/19407963.2021.2017728>
- Akadiri, S.S., & Akadiri, A.C. (2019). Examining The causal relationship between tourism, exchange rate, and economic growth in tourism island states: Evidence from second-generation panel. *International Journal of Hospitality and Tourism Administration*, 22(3), 235–250. <https://doi.org/10.1080/15256480.2019.1598912>
- Akay, G.H., Cifter, A., & Teke, O. (2017). Turkish tourism, exchange rates and income. *Tourism Economics*, 23(1), 66–77. <https://doi.org/10.5367/te.2015.0497>
- Aliyev, K., & Ahmadova, N. (2020). Testing tourism-led economic growth and economic-driven tourism growth hypotheses. *Tourism: An international Interdisciplinary Journal*, 68(1), 43-57. <https://doi.org/10.37741/T.68.1.4>
- Andriotis, K. (2002). Scale of hospitality firms and local economic development — Evidence from Crete. *Tourism Management*, 23(4), 333-341. [https://doi.org/10.1016/S0261-5177\(01\)00094-2](https://doi.org/10.1016/S0261-5177(01)00094-2)
- Anser, M.K., Adeleye, B.N., Tabash, M.I., & Tiwari, A.K. (2021). Services trade–ICT–tourism nexus in selected Asian countries: New evidence from panel data techniques. *Current Issues in Tourism*, 25(15), 2388-2403. <https://doi.org/10.1080/13683500.2021.1965554>
- Aslan, A. (2014). Tourism development and economic growth in the Mediterranean countries: Evidence from panel Granger causality tests. *Current Issues in Tourism*, 17(4), 37–41. <https://doi.org/10.1080/13683500.2013.768607>
- Aspergis, N. (2012). Tourism and growth in the Caribbean – Evidence from a panel error correction model. *Tourism Economics*, 18(2), 449–456. <https://doi.org/10.5367/te.2012.0119>
- Athari, S.A., Alola, U.V., Ghasemi, M., & Alola, A.A. (2020). The (un)sticky role of exchange and inflation rate in tourism development: Insight from the low and high political risk destinations. *Current Issues in Tourism*, 24(12), 1670-1685. <https://doi.org/10.1080/13683500.2020.1798893>
- Badulescu, A., Badulescu, D., Simut, R., & Dzitac, S. (2020). Tourism – Economic growth nexus. The case of Romania. *Technological and Economic Development of Economy*, 26(4), 867–884. <https://doi.org/10.3846/tede.2020.12532>
- Balaguer, J., & Cantavella-jordá, M. (2002). Tourism as a long-run economic growth factor: The Spanish case. *Applied Economics*, 34(7), 877-884. <https://doi.org/10.1080/00036840110058923>
- Baum, C.F., Schaffer, M.E., & Stillman, S. (2003). Instrumental variables and GMM: Estimation and testing. *The Stata Journal*, 3(1), 1–31. <https://doi.org/10.1177/1536867X0300300101>
- Baum, C.F., Schaffer, M.E., & Stillman, S. (2007). Enhanced routines for instrumental variables/generalized method of moments estimation and testing. *The Stata Journal*, 7(4), 465–506. <https://doi.org/10.1177/1536867X0800700402>
- Baum C.F., Schaffer M.E., & Stillman S. (2007b). *IVREG2: Stata module for extended instrumental variables/2SLS and GMM estimation*. Boston College Department of Economics, Statistical Software Components, S425401. <https://ideas.repec.org/c/boc/bocode/s425401.html>
- Bayer, C., & Hanck, C. (2009). *BAYERHANCK: Stata module to compute test for non-cointegration*. Boston College Department of Economics, Statistical Software Components, S457061. <https://ideas.repec.org/c/boc/bocode/s457061.html>
- Bayer, C., & Hanck, C. (2013). Combining non-cointegration tests. *Journal of Time Series Analysis*, 34, 83-95. <https://doi.org/10.1111/j.1467-9892.2012.00814.x>
- Bella, G., & Massidda, C. (2021). The trade-off between tourism and pollution for Japanese economic growth. *Tourism: An international Interdisciplinary Journal*, 69(3), 381-394. <https://doi.org/10.37741/T.69.3.4>
- Boskurt, K., Tekin, H.A., & Ergün, Z.C. (2021). An investigation of demand and exchange rate shocks in the tourism sector. *Applied Economic Analysis*, 29(86), 171-188. <https://doi.org/10.1108/AEA-05-2020-0051>

- Bouzahzah, M., & El-Menyari, Y. (2013). International tourism and economic growth : The case of Morocco and Tunisia. *The Journal of North African Studies*, 18(4), 592-607. <https://doi.org/10.1080/13629387.2013.836321>
- Brščić, K., Prats Planaguma, L., Raschi, A., Marchi, V.D., Šugar, T., Lovrečić, K., & Poljuha, D. (2020). Can indicators for sustainable tourism improve tourism planning in the coastal destinations? *Tourism: An international Interdisciplinary Journal*, 68(2), 144-155. <https://doi.org/10.37741/T.68.2.3>
- Calero, C., & Turner, L.W. (2019). Regional economic development and tourism: A literature review to highlight future directions for regional tourism research. *Tourism Economics*, 26(1), 3-26. <https://doi.org/10.1177/1354816619881244>
- Cannonier, C. & Burke, M.G. (2019). The economic growth impact of tourism in small island developing states - Evidence from the Caribbean. *Tourism economics*, 25(1), 85-108. <https://doi.org/10.1177/1354816618792792>
- Cárdenas-García, P.J., Sánchez-Rivero, M., & Pulido-Fernández, J.I. (2015). Does tourism growth influence economic development? *Journal of Travel Research*, 54(2), 206–221. <https://doi.org/10.1177/0047287513514297>
- Chaisumpunsakul, W., & Pholphirul, P. (2018). Does international trade promote international tourism demand? Evidence from Thailand's trading partners. *Kasetsart Journal of Social Sciences*, 39(3), 393-400. <https://doi.org/10.1016/j.kjss.2017.06.007>
- Chaudhry, I.S., Nazar, R., Ali, S., Meo, M.S. & Faheem, M. (2021). Impact of environmental quality, real exchange rate and institutional performance on tourism receipts in East-Asia and Pacific region. *Current Issues in Tourism*, 25(4), 611-631. <https://doi.org/10.1080/13683500.2021.1894101>
- Chen, J., Cui, F., Balezentis, T., Streimikiene, D., & Jin, H. (2021). What drives international tourism development in the Belt and Road Initiative? *Journal of Destination Marketing & Management*, 19, Article 100544. <https://doi.org/10.1016/j.jdmm.2020.100544>
- Chen, C., & Chiou-wei, S.Z. (2009). Tourism expansion, tourism uncertainty and economic growth: New evidence from Taiwan and Korea. *Tourism Management*, 30(6), 812–818. <https://doi.org/10.1016/j.tourman.2008.12.013>
- Chi, J. (2020). The impact of third-country exchange rate risk on international air travel flows: The case of Korean outbound tourism demand. *Transport Policy*, 89, 66-78. <https://doi.org/10.1016/j.tranpol.2020.01.012>
- Chi, J. (2015). Dynamic impacts of income and the exchange rate on US tourism, 1960-2011. *Tourism Economics*, 21(5), 1047–1060. <https://doi.org/10.5367/te.2014.0399>
- Chou, M.C. (2013). Does tourism development promote economic growth in transition countries ? A panel data analysis. *Economic Modelling*, 33, 226–232. <https://doi.org/10.1016/j.econmod.2013.04.024>
- Danish, & Wang, Z. (2018). Dynamic relationship between tourism , economic growth , and environmental quality. *Journal of Sustainable Tourism*, 26(11), 1928-1943. <https://doi.org/10.1080/09669582.2018.1526293>
- Dickey, D.A., & Fuller, W.A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American Statistical Association*, 74(366), 427–431. <https://doi.org/10.2307/2286348>
- Dincer, M.Z., Dincer, F.I., & Ustaoglu, M. (2015). Reel effective exchange rate volatilities impact on tourism sector in Turkey: An empirical analysis of 2003-2014. *Procedia Economics and Finance*, 23, 1000–1008. [https://doi.org/10.1016/s2212-5671\(15\)00352-4](https://doi.org/10.1016/s2212-5671(15)00352-4)
- Dogru, T., & Bulut, U. (2017). Is tourism an engine for economic recovery ? Theory and empirical evidence. *Tourism Management*, 67, 425-434. <https://doi.org/10.1016/j.tourman.2017.06.014>
- Dogru, T., Isik, C., & Sirakaya-Turk, E. (2019). The balance of trade and exchange rates: Theory and contemporary evidence from tourism. *Tourism Management*, 74, 12-23. <https://doi.org/10.1016/j.tourman.2019.01.014>
- Dornbusch, R. (1997). The folly, the crashed, and beyond: Economic policies and crises. In E. Sebastian, M. Naim, & R.L. Bartley (Eds.), *Mexico 1994: Anatomy of an emerging-market crash* (pp. 125-140). Carnegie Endowment For International Peace. The folly, the crash, and beyond : economic policies and the crisis - EconBiz
- Ekanayake, E.M., & Aubrey, E.L. (2012). Tourism development and economic growth in developing countries. *The International Journal of Business and Finance Research*, 6(1), 595–613. <https://doi.org/10.1163/221190002x00409>
- Ergen, E., & Yavuz, E. (2017). Empirical analysis of the relationship between tourist flows and exchange rate volatility: ARDL method. *International Journal of Economics and Innovation*, 3(1), 35-46. <https://doi.org/10.18111/9789284416899>

- Esposti, R., & Listorti, G. (2018). Price transmission in the Swiss wheat market: Does sophisticated border protection make the difference? *The International Trade Journal*, 32(2), 209-238. <https://doi.org/10.1080/08853908.2017.1345668>
- Falk, M. (2014). The sensitivity of winter tourism to exchange rate changes: Evidence for the Swiss Alps. *Tourism and Hospitality Research*, 13(2), 101-112. <https://doi.org/10.1177/1467358413519262>
- Fauzel, S. (2021). FDI and tourism futures: A dynamic investigation for a panel of small island economies. *Journal of Tourism Futures*, 7(1), 98-110. <https://doi.org/10.1108/JTF-05-2018-0026>
- Fonseca, N., & Sánchez Rivero, M. (2020). Granger causality between tourism and income: A meta-regression analysis. *Journal of Travel Research*, 59(4), 642-660. <https://doi.org/10.1177/0047287519851189>
- Gao, J., Xu, W., & Zhang, L. (2019). Hypothesis: Evidence from the Mediterranean region. *Empirical Economics*, 60, 1507-1529. <https://doi.org/10.1007/s00181-019-01787-1>
- Gholipour, H.F., & Al-Mulali, U. (2012). The interaction between tourism and FDI in real estate in OECD countries. *Current Issues in Tourism*, 17, 105-113. <https://doi.org/10.1080/13683500.2012.733359>
- Giampiccoli, A., Mtapuri, O., & Dłużewska, A.M. (2020). Investigating the intersection between sustainable tourism and community-based tourism. *Tourism: An international Interdisciplinary Journal*, 68(4), 415-433. <https://doi.org/10.37741/T.68.4.4>
- Haller, A.-P., Butnaru, G.I., Hârșan, G.-D.T., & Ștefănică, M. (2020). The relationship between tourism and economic growth in the EU-28. Is there a tendency towards convergence? *Economic Research-Ekonomska Istraživanja*, 34(1), 1121-1145. <https://doi.org/10.1080/1331677x.2020.1819852>
- Irاندoust, M. (2019). On the relation between exchange rates and tourism demand: A nonlinear and asymmetric analysis. *Journal of Economic Asymmetries*, 20, Article e00123. <https://doi.org/10.1016/j.jeca.2019.e00123>
- Işık, C., Sirakaya-Turk, E., & Ongan, S. (2020). Testing the efficacy of the economic policy uncertainty index on tourism demand in USMCA: Theory and evidence. *Tourism Economics*, 26(8), 1344-1357. <https://doi.org/10.1177/1354816619888346>
- Jenkins, C. (1982). The use of investment incentives for tourism projects in developing countries. *Journal of Tourism Management*, 3(2), 91-97. [https://doi.org/10.1016/0261-5177\(82\)90004-8](https://doi.org/10.1016/0261-5177(82)90004-8)
- Karimi, M.S., Khan, A.A., & Karamelikli, H. (2018). Asymmetric effects of real exchange rate on inbound tourist arrivals in Malaysia: An analysis of price rigidity. *International Journal of Tourism Research*, 21(2), 156-164. <https://doi.org/10.1002/jtr.2249>
- Katircioglu, S.T. (2009a). Revisiting the tourism-led-growth hypothesis for Turkey using the bounds test and Johansen approach for cointegration. *Tourism Management*, 30(1), 17-20. <https://doi.org/10.1016/j.tourman.2008.04.004>
- Katircioglu, S. (2009b). Tourism, trade and growth: The case of Cyprus. *Applied Economics*, 41(21), 2741-2750. <https://doi.org/10.1080/00036840701335512>
- Katircioglu, S., Katircioğlu, S. & Altınay, M. (2017). Interaction between tourism and financial sector development: Evidence from Turkey. *The Service Industries Journal*, 38(9-10), 519-542. <https://doi.org/10.1080/02642069.2017.1406479>
- Khan, A., Bibi, S., Ardito, L., Lyu, J., Hayat, H., & Arif, A. (2020). Revisiting the dynamics of tourism, economic growth, and environmental pollutants in the emerging economies - Sustainable tourism policy implications. *Sustainability*, 12(6), Article 2533. <https://doi.org/10.3390/su12062533>
- Kouchi, A.N., Nezhad, M.Z., & Kiani, P. (2018). A study of the relationship between the growth in the number of Hajj pilgrims and economic growth in Saudi Arabia. *Journal of Hospitality and Tourism Management*, 36, 103-107. <https://doi.org/10.1016/j.jhtm.2016.01.008>
- Kulendran, N., & Wilson, K. (2000). Is there a relationship between international trade and international travel? *Applied Economics*, 32(8), 1001-1009. <https://doi.org/10.1080/000368400322057>
- Lee, J.W., & Brahmasrene, T. (2013). Investigating the influence of tourism on economic growth and carbon emissions: Evidence from panel analysis of the European Union. *Tourism Management*, 38, 69-76. <https://doi.org/10.1016/j.tourman.2013.02.016>
- Liu, A., & Wu, D.C. (2019). Tourism productivity and economic growth. *Annals of Tourism Research*, 76, 253-265. <https://doi.org/10.1016/j.annals.2019.04.005>



- Lopez, F.S. (2019). Unemployment and growth in the tourism sector in Mexico: Revisiting the growth-rate version of Okun's law. *Economies*, 7(83), Article 83. <https://doi.org/10.3390/economies7030083>
- Machado, J.A.F., & Santos, S.J.M.C. (2019). Quantiles via moments. *Journal of Econometrics*, 213(1), 145-173. <https://doi.org/10.1016/j.jeconom.2019.04.009>
- McKinnon, R.I. (1964). Foreign exchange constraints in economic development and efficient aid allocation. *The Economic Journal*, 74(294), 388-409. <https://doi.org/10.2307/2228486>
- Meo, M.S., Chowdhury, M.A.F., Shaikh, G.M., Ali, M., & Masood Sheikh, S. (2018). Asymmetric impact of oil prices, exchange rate, and inflation on tourism demand in Pakistan: New evidence from nonlinear ARDL. *Asia Pacific Journal of Tourism Research*, 23(4), 408-422. <https://doi.org/10.1080/10941665.2018.1445652>
- Naidu, S. (2017). Exploring the dynamic effects of urbanization and real effective exchange rate on tourism output of Singapore. *Tourism Analysis*, 22(2), 185-200. <https://doi.org/10.3727/108354217X14888192562320>
- Nunkoo, R., Seetanah, B., Jaffur, Z.R.K., Moraghen, P.G.W., & Sannasse, R.V. (2020). Tourism and economic growth: A meta-regression analysis. *Journal of Travel Research*, 59(3), 404-423. <https://doi.org/10.1177/0047287519844833>
- Ngo, V.M., & Vu, H.M. (2020). Customer agility and firm performance in the tourism industry. *Tourism: An international Interdisciplinary Journal*, 68(1), 68-82. <https://doi.org/10.37741/T.68.1.6>
- Oh, C. (2005). The contribution of tourism development to economic growth in the Korean economy. *Tourism Management*, 26, 39-44. <https://doi.org/10.1016/j.tourman.2003.09.014>
- Panahi, H., Mamipour, S., & Nazari, K. (2015). Anatolia: An International Journal of Tourism and Hospitality Research Tourism and economic growth: A time-varying parameter approach. *Anatolia: An International Journal of Tourism and Hospitality Research*, 26(2), 173-185. <https://doi.org/10.1080/13032917.2014.914043>
- Paramati, S.R., Alam, S., & Chen, C. (2016). The effects of tourism on economic growth and CO 2 emissions: A comparison between developed and developing economies. *Journal of Travel Research*, 56(6), 712-724. <https://doi.org/10.1177/0047287516667848>
- Pata, U.K. (2021). Tourism and economic growth in G10 countries: Evidence from an asymmetric panel causality test. *Tourism: An international Interdisciplinary Journal*, 69(1), 112-126. <https://doi.org/10.37741/T.69.1.8>
- Phillips, P.C.B., & Hansen, B.E. (1990). Statistical inference in instrumental variables regression with I(1) Processes. *Review of Economic Studies*, 57, 99-125. <https://doi.org/10.2307/2297545>
- Phillips, P.C.B. & Perron, P. (1988). Testing for a unit root in time series regression. *Biometrika*, 75(2), 335-346. <https://doi.org/10.2307/2336182>
- Ridderstaat, J., Croes, R., & Nijkamp, P. (2014). Tourism and long-run economic growth in Aruba. *International Journal of Tourism Research*, 16(5), 472-487. <https://doi.org/10.1002/jtr.1941>
- Ruiters, M., & Charteris, A. (2020). Gender equality in labour force participation, economic growth and development in South Africa. *Development Southern Africa*, 37(6), 997-1011. <https://doi.org/10.1080/0376835x.2020.1772042>
- Scarlett, H. G. (2021). Tourism recovery and the economic impact: A panel assessment. *Research in Globalization*, 3, Article 100044. <https://doi.org/10.1016/j.resglo.2021.100044>
- Schubert, S.F., Brida, J.G., & Risso, W.A. (2011). The impacts of international tourism demand on economic growth of small economies dependent on tourism. *Tourism Management*, 32(2), 377-385. <https://doi.org/10.1016/j.tourman.2010.03.007>
- Sethi N., Bhujabal P., Das A., & Sucharita S. (2019a). Foreign aid and growth nexus: Empirical evidence from India and Sri Lanka. *Economic Analysis and Policy*, 64, 1-12. <https://doi.org/10.1016/j.eap.2019.07.002>
- Sethi N., Bhujabal P., Sahoo M., & Sucharita S. (2019b). Does foreign aid act as an instrument of economic growth in India and Sri Lanka? *Journal Ekonomi Malaysia (JEM)*, 53(2), 3-19. <http://dx.doi.org/10.17576/JEM-2019-5302-1>
- Shahbaz, M., Kumar, R.R., Ivanov, S. & Loganathan, N. (2017). The nexus between tourism demand and output per capita with the relative importance of trade openness and financial development: A study of Malaysia. *Tourism Economics*, 23(1), 168-186. <https://doi.org/10.5367/te.2015.0505>
- Sharma, C., & Pal, D. (2019). Exchange rate volatility and tourism demand in India: Unraveling the asymmetric relationship. *Journal of Travel Research*, 59(7), 1282-1297. <https://doi.org/10.1177/0047287519878516>

- Shi, Y., Swamy, V. & Paramati, S.R. (2020). Does financial inclusion promote tourism development in advanced and emerging economies? *Applied Economics Letters*, 28(6), 451-458. <https://doi.org/10.1080/13504851.2020.1761521>
- Singh, D.R., Wright, A.S., Hayle, C., & Craigwell, R. (2010). Is the tourism-led growth thesis valid? The case of the Bahamas, Barbados, and Jamaica. *Tourism Analysis*, 15(4), 435-445. <https://doi.org/10.3727/108354210X12864727453223>
- Stauvermann, P.J., Kumar, R.R., Shahzad, S.J.H., & Kumar, N.N. (2016). Effect of tourism on economic growth of Sri Lanka: Accounting for capital per worker, exchange rate and structural breaks. *Economic Change and Restructuring*, 51(1), 49-68. <https://doi.org/10.1007/s10644-016-9198-6>
- Tang, J., Sriboonchitta, S., Ramos, V., & Wong, W.K. (2016). Modelling dependence between tourism demand and exchange rate using the copula-based GARCH model. *Current Issues in Tourism*, 19(9), 876-894. <https://doi.org/10.1080/13683500.2014.932336>
- Tu, J., & Zhang, D. (2020). Does tourism promote economic growth in Chinese ethnic minority areas? A nonlinear perspective. *Journal of Destination Marketing & Management*, 18, Article 100473. <https://doi.org/10.1016/j.jdmm.2020.100473>
- Tung, L.T. (2019). Does exchange rate affect tourism arrivals? Evidence in an emerging tourist market. *Journal of management science letter*, 9, 1141-1152. <https://doi.org/10.5267/j.msl.2019.5.001>
- United Nations and World Tourism Organization. (n.d.). *About us*. <https://www.unwto.org/about-us>
- Wamboye, E.F., Nyaronga, P.J. & Sergi, B.S. (2020). What are the determinants of international tourism in Tanzania?. *World Development Perspectives*, Article 100175. <https://doi.org/10.1016/j.wdp.2020.100175>
- Wang, J., Ayres, H., & Huyton, J. (2009). Job ready graduates: A tourism industry perspective. *Journal of Hospitality and Tourism*, 6, 60-72. <https://doi.org/10.1375/jhtm.16.1.62>
- Webster, A., Fletcher, J., Hardwick, P., & Morakabati, Y. (2007). Tourism and empirical applications of international trade theory: A multi-country analysis. *Tourism Economics*, 13(4), 657-674. <https://doi.org/10.5367/000000007782696041>
- World Bank. (2020). *World development indicators*. <https://data.worldbank.org/data-catalog/world-development-indicators>

Submitted: March 30, 2022

Revised: January 14, 2023

Accepted: April 12, 2023