




## Resource transmission from financial development to tourism growth: Evidence from selected South Asian countries

 **Foqoruddin Al Kabir**<sup>1+</sup>

 **Estiaque Bari**<sup>2</sup>

<sup>1</sup>Centre for Policy Dialogue, Bangladesh.

Email: [foqoruddin.al@gmail.com](mailto:foqoruddin.al@gmail.com)

<sup>2</sup>Department of Economics, East West University, Bangladesh.

Email: [estiaque@ewubd.edu](mailto:estiaque@ewubd.edu)



(+ Corresponding author)

### ABSTRACT

#### Article History

Received: 27 April 2023

Revised: 15 June 2023

Accepted: 23 June 2023

Published: 5 July 2023

#### Keywords

Dynamic simulation

Financial development

LM bootstrap

PDOLS

Tourism growth

Transmission mechanism.

Tourism has become one of the fastest-growing industries in South Asia, contributing to a variety of development goals such as income generation, poverty reduction, employment, foreign currency earnings, and better living standards. On the other hand, financial development (FD) accelerates the growth of developing sectors by providing necessary access to finance. Therefore, this study explores the mechanism of resource transmission from FD to the tourism industry in selected South Asian countries, India, Bhutan, Bangladesh, Sri Lanka, and Nepal. The second-generation cross-section augmented unit root tests CIPS and CADF confirm the stationarity property of the variables. LM bootstrap and Durbin-Hausman cointegration tests find the long-run association among the variables. The D-H panel causality test reveals bi-directional causality between financial development and the tourism industry. The long-run cointegrating factor for financial development is found to be positive (1.03, 1.25, and 0.89 respectively) and significant in the PDOLS, PMG-ARDL, and Cup-FMOLS estimations. The results indicate that financial development enhances the tourism industry development supporting tourism-led growth hypothesis. The study also recommends policy measures that will help to shape the policy implication for this region.

**Contribution/Originality:** To our knowledge, no study examined the transmission mechanism from Financial Development (FD) to the tourism industry in South Asia (SA). Therefore, this study conducts an empirical exercise to assess the impact of FD on the tourism industry in selected SA countries.

## 1. INTRODUCTION

Tourism has been an emerging industry in South Asia (SA) for its significant contribution in five development objectives such as income generation, employment, poverty eradication, foreign earnings, and high standard of living (Amin, Al Kabir, Nihad, & Khan, 2020). For example, the growth of the travel and tourism industry in Asia-Pacific has increased rapidly in 2019. The travel and tourism sector contributed US\$3061 billion (USD) to the region's Gross Domestic Products (GDP) in 2019 with a growth rate of 7.4%, the highest in the world for the corresponding year. Additionally, the industry has added 185.1 million new jobs. (World Travel and Tourism Council (WTTC), 2021). The tourism industry also contributes to poverty alleviation by providing employment opportunities for unprivileged citizens. A number of studies have assessed the effect of tourism on poverty reduction through numerous income-generating channels for low-income groups of people (Llorca-Rodríguez, Casas-Jurado, & García-Fernández, 2017; Rogerson & Saarinen, 2018; Truong, 2018). Foreign direct investment (FDI) plays an indispensable role in the tourism industry in facilitating capital investment. Hence, the tourism industry attracts a

substantial quantity of FDI due to its multidimensional characteristics and profitable opportunity since it requires a large amount of capital for business operation (Amin, Kabir, & Khan, 2020; Siddiquee & Rahman, 2021).

On the other hand, FD fosters economic growth by providing required financing for enterprises. It also contributes to economic progress by mobilising capital, enhancing financial innovation, and distributing resources effectively to various sectors and businesses (Durusu-Ciftci, Ispir, & Yetkiner, 2017; Matei, 2020; Mohieldin, Hussein, & Rostom, 2019). Hence, FD facilitates the growth in priority sectors and their contribution to the economy. Additionally, FD promotes innovation in the business and manufacturing industry, which results in increased efficiency (Comin & Nanda, 2019; Zagorchev, Vasconcellos, & Bae, 2011). In many cases, FD connects investors to entrepreneurs, and thus it helps the efficient allocation of resources. Like other sectors and industries, FD may affect the tourism industry positively as the industry is a composite of multiple service industries that require a large amount of financing for their business operations. SA has been a center of attraction for tourists because of its geographical and natural location. In recent days, the region has experienced an increase in the number of tourist arrival as well as increased earnings from international tourism. In 2010, there were 9.18 million foreign tourists visiting South Africa; this figure rose to 19.38 million in 2015 and 26.26 million in 2019. (see [Annex Figure A1](#)). Besides, the percentage of international tourism exports increased to 6.44 per cent in 2019 which was 4.56 per cent in 2012 ([World Development Indicators, 2020](#)).

On the contrary, a gradual increase in the percentage of domestic credit to the private sector (DCPS) (proxy variable for FD) has been observed. For instance, the percentage of DCPS in 1995 was 22.83 per cent which increased to 46.55 per cent in 2010 and 47.24 per cent in 2019 ([Figure 1](#)). It is observed that both revenues from the tourism industry and FD have been growing over time in the region<sup>1</sup>. Empirical evidence also shows that there is an underlying relationship between the tourism industry and FD in a number of countries ([Cannonier & Burke, 2017](#); [Musakwa & Odhiambo, 2022](#)). Among others, [Khan, Yaseen, and Ali \(2019\)](#) analyse the relationship between greenhouse gas (GHG) emissions and commerce, tourism, the FD index, energy use, and renewable energy (RE) using data from 34 high-income nations. The study explores a one-directional causality directing from FD to tourism in America. However, [Cannonier and Burke \(2017\)](#) find a positive effect of tourism on FD in Caribbean countries where tourism contributes significantly to foreign earnings as the single largest source. [Katircioglu, Katircioglu, and Altinay \(2017\)](#) find evidence that the tourism industry in Turkey has primarily been influenced by the financial market. [Ohlan \(2017\)](#) considers the significance of FD and finds that tourism and economic growth variables are associated in the long run.

Empirically examining the relationship between FD and the tourism industry will be crucial for future policy formulation in the region's FD and tourism industries, given the importance of the tourism industry to the development of South Asian countries, where FD serves as a catalyst for developing industries. While several studies have assessed the impact of tourism growth on FD ([Cannonier & Burke, 2017](#); [Kumar & Kumar, 2013](#); [Shahbaz, Benkraiem, Miloudi, & Tiwari, 2019](#); [Yenişehirlioğlu & Bayat, 2019](#)) only a few recent studies have specifically studied the role of FD in tourism growth, and the studies were mostly based on the paired Granger causality test for a specific country ([Katircioglu et al., 2017](#); [Liao et al., 2018](#); [Shahbaz et al., 2019](#)). Neither the transmission mechanism from FD to the tourism industry in SA nations nor the impacts of FD on the tourism industry have been the subject of research. As a result, the purpose of this study is to conduct an empirical analysis of the impact of FD on the tourism industry in five selected South Asian nations, namely Nepal, India, Bangladesh, Bhutan, and Sri Lanka.

Panel data for a selection of South Asian nations from 1995 to 2019 is used to carry out the research. The empirical results demonstrate that the relevant variables (international tourism arrival, GDP per capita, and DCPS) are stationary and cointegrated over the long run using the cross-sectional augmented unit root test and second-

---

<sup>1</sup> Following [Guru and Yadav \(2019\)](#) we have used domestic credit to financial sector for measuring the financial development.

generation cross-sectional augmented cointegration tests. In addition, the empirical analysis demonstrates a unidirectional causal relationship between FD and the tourism industry in the selected countries. The estimations of cointegrating factors indicate that FD contributes to tourism expansion over the long term. This document also makes policy recommendations for the tourism industry in the designated SA countries, based on the findings.

The remainder of the paper is structured as follows. Sections 2 and 3 discuss the relevant literature and the analysis's concise methodology, respectively. The fourth section analyses the results, while the fifth section concludes with policy recommendations and the scope of future research.

## 2. LITERATURE REVIEW

The section will discuss the theoretical underpinnings of the model that will be used to analyse the impact of FD on the tourism industry. The study will also discuss a brief literature review on panel studies and country-specific studies.

### 2.1. Theoretical Background

The tourism industry is a composite of multiple service industries such as accommodation, transportation, banking, culinary, and so on. Hence, the tourism industry is inextricably connected to a number of factors including the tourist's income, banking facilities, relative pricing, tourism infrastructure, development of host countries, safety, distance etc. (Khalifa, 2020; Nikraftar & Hosseini, 2016; Yi, Yuan, & Yoo, 2020). Among other aspects, FD is regarded to have a significant effect on tourism destination selection because FD in a country helps smooth transaction facilities for businesses and facilitates the business environment (Kar & Özşahin, 2016).

From the demand-side and theoretical viewpoint, financial development in the host country boosts tourism primarily by enabling tourists to use banking and financial services while on vacation (Tsauroi, 2018). From the supply side analysis, FD increases prospects for tourism businesses through credit access, investment, and stock market which helps in the development of additional tourism goods and services (Fauzel & Seetana, 2023; Liao et al., 2018). FD also helps attract FDI in the host countries (Amin et al., 2020). Therefore, the host countries are benefitted from the diffusion of technology, managerial skill, the experience of business best practices and branding and global marketing and distribution networks (Fauzel & Seetana, 2023). The overall theoretical background is illustrated by the following Figure 1.

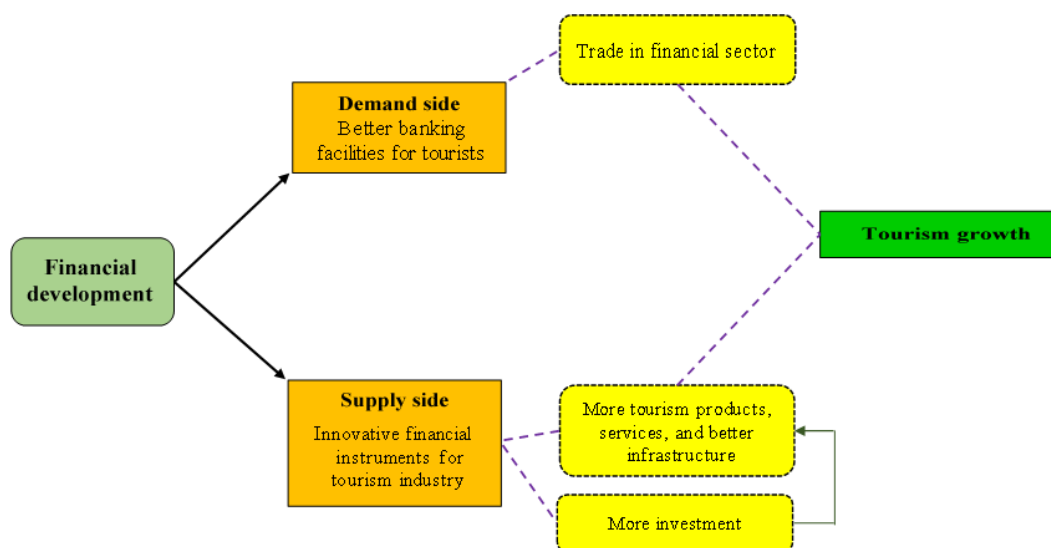


Figure 1. Caption: Resource transmission from financial development to tourism growth. Source: Fauzel and Seetana (2023).

## 2.2. Literature Review on Panel Studies

Khanna and Sharma (2021) examine the influence of bank service development and stock market development on the demand for tourism products using annual data from 1995 to 2018 for 207 countries. The study reveals that FD has a positive effect on tourism proxy variables. Despite the fact that the increase in the number of tourist arrivals is greater than the increase in tourism expenditure, the study reveals that the sensitivity of tourism demand to FD differs based on the income level of visitors.

Khan et al. (2019) examine the connection between GHG emissions, tourism, FD index, energy consumption, RE, and trade by using the data of 34 high-income countries for the period from 1995 to 2017. The study finds that FD causes tourism in the long run by analysing the data for America. However, Usman, Yaseen, Kousar, and Makhdum (2021) find that tourism causes FD in developed countries and FD causes tourism in emerging economies. The study uses a panel causality test and Pool Mean Group Auto Regressive Distributed Lag (PMG-ARDL) estimation to conduct the study by using the panel data of 52 countries from 1995 to 2017.

Cannonier and Burke (2017) analyse the data from 1980 to 2013 for 14 Caribbean countries by using the system generalised method of moments and limited information maximum likelihood estimation techniques. The study reveals that, on average, tourism has a positive and substantial effect on several indicators of FD.

Using the panel ARDL cointegration test for BRICS countries, Rasool, Maqbool, and Tarique (2021) find, that the tourism industry, FD, and economic development are associated over the long term. The study also reveals that FD causes tourism development in the BRICS nations uniformly. The study does not, however, estimate the effect of FD on the tourism industry. Haller, Ionela Butnaru, Tacu Hârşan, and Ştefănică (2021) analyse data for 28 EU nations from 2012 to 2018 and assess economic convergence in terms of the amount of money generated by the tourism sector. The conclusion of the study is that economic convergence occurred incrementally and was driven by tourism-related extrinsic variables. León-Gómez, Ruiz-Palomo, Fernández-Gámez, and García-Revilla (2021) and Shakouri, Yazdi, Nategian, and Shikhrezaei (2017) examine the relationship between tourism and economic growth, while Hsueh, Hu, and Tu (2013) evaluate the relationship between economic growth and foreign direct investment in Asian nations.

## 2.3. Literature Review on Specific Countries

Ohlan (2017) analyses the tourism-driven development in India from 1960 to 2014, concentrating on the relative importance of FD. Using the newly devised Bayer and Hanck (2013) cointegration test, the study concludes that all variables used in this study are co-integrated over the long term. The findings of the study indicate that inbound tourism contributes to India's long-term and short-term economic development.

Musakwa and Odhiambo (2022) analyse the causal relationship between the tourism industry and FD for South Africa using data from 1995 to 2017. Granger causality tests based on the ECM were used together with the ARDL bounds testing method to analyse the relationship. When broad money is used as a proxy variable, the results demonstrate significant unidirectional causation between tourism expansion and FD. However, when domestic credit provided by the financial sector and market capitalisation of domestic listed enterprises are utilised as proxy variables, a bidirectional correlation is found in the short run and a unidirectional causality in the long run.

Katircioglu et al. (2017) analyse the data from 1960 to 2015 using the bounds test co-integration method and the conditional error correction model (CECM). The findings suggest that tourism expansion and foreign direct investment in Turkey have a long-term, mutually supportive relationship. Işık, Kasimati, and Ongan (2017) examine the dynamic causal relationships between international trade, economic growth, foreign direct investment, tourism expenditure, and CO<sub>2</sub> emissions in Greece from 1970 to 2014. The Zivot-Andrews unit root tests, the VECM ARDL model, and ARDL are utilised in this study. In the long term, the results reveal a co-integrating association between the variables.

Shahbaz, Kumar, Ivanov, and Loganathan (2017) examine the relationship between tourism and economic growth in Malaysia using quarterly data from 1975 to 2013. The augmented Solow production function, the ARDL test, and the structural break test are utilised in this study. Cointegration and Granger causality analyses a bidirectional causal relationship between tourism and per capita GDP, foreign direct investment, trade openness, tourism demand, and tourism. To this date, however, no study has been conducted to evaluate the impact of FD on the tourism industry in SA countries.

### 3. METHODOLOGY

Following Ohlan (2017) the study has considered the following model where ITRA is used as a proxy variable for tourism development, DCPS is used for financial development, and GDPP is used for the measurement of income. The description of the concerned variables are presented in Table 1. The regression function is described in Equation 1 where international tourism is a dependent variable. Domestic credit to the private sector and GDP per capita are used as independent variables. Equation 2 represents the cointegrating regression with coefficients. In Equation 2,  $\beta_1$  and  $\beta_2$  represent the elasticities in long-run of the variables. For the analysis, the study uses the annual data based on the availability of World Development Indicator (WDI) ranging from 1995 to 2019.

$$ITRA_{it} = f(DCPS_{it}^{\beta_1}, GDPP_{it}^{\beta_2}) \tag{1}$$

$$\ln ITRA_{it} = \beta_0 + \beta_1 \ln DCPS_{it} + \beta_2 \ln GDPP_{it} + u_{it} \tag{2}$$

Table 1. Explanation of variables.

| Variable | Description                               |
|----------|---|
| LNITRA   | International tourism, number of arrivals |
| LNDCPS   | Domestic credit to private sector         |
| LNGDPP   | GDP per capita                            |

Note: Data are collected from World Development Indicators (2020). All the data were transformed into logarithmic form before analysis.

#### 3.1. Cross-Sectional Dependency (CD) and Test of Homogeneity

It is crucial to double-check these variables prior to the study's analysis and methodology design because Cross-sectional Dependency (CD) and heterogeneity in panel data can result in inaccurate conclusions. The study employs Pesaran (2004) CD<sup>2</sup> test to ascertain the existence of cross-sectional dependence. To assure robustness, the study also employs Breusch-Pagan LM and Pesaran Scaled LM cross-section dependence. Pesaran and Yamagata (2008) test for slope homogeneity is used to determine slope homogeneity.

#### 3.2. Testing for Multicollinearity with Variance Inflation Factors (VIF)

Multicollinearity is identified as a problem for high intercorrelations or inter-association among the independent variables. Thus, this type of problem creates commotion in the data and the statistical intuition may not be reliable. Hence, it is necessary to check the multicollinearity with the variance inflation factor or (VIF) (Gunst & Webster, 1975). Multicollinearity may also be determined with the aid of tolerance and its reciprocal, known as variance inflation factor (VIF).

#### 3.3. CADF and CIPS Unit Root Tests

Pesaran (2007) developed the Cross-sectional Augmented Dickey Fuller (CADF) and Cross-sectional Im, Pesaran, Shin (CIPS) which are being used to examine the stationarity of the variables. The tests contain an assumption of cross-sectional dependency. Therefore, the information provided by these experiments about the stationary properties is reliable. The procedures of CADF and CIPS tests are similarly identical, with the distinction that CIPS utilises the CADF test's cross-sectional average.

### 3.4. Panel Cointegration Tests

This study uses the Durbin-Hausman panel cointegration test to produce stronger findings than other traditional panel cointegration tests. This cointegration test accounts for CD and heterogeneity in the model. In addition, the Durbin-Hausman panel cointegration test does not require previous knowledge regarding the sequence of integration of variables (Westerlund, 2008).

McCoskey and Kao (1998) LM test with a bootstrap application was presented by Westerlund and Edgerton (2007) to circumvent this issue of the poor estimation of the empirical distribution which was identified by Westerlund (2005) and Westerlund (2006) by using Monte Carlo simulation with the asymptotic distribution.

### 3.5. Methodology for Estimating Cointegrating Factors

Kao and Chiang (2001) extended the Panel Dynamic Ordinary Least Square (DOLS) for estimating the cointegrating factors in the model. The following expression in Equation 3 represents the estimation technique which yields result for estimation.

$$Y_{it} = \beta_i X_{it} + \sum_{j=-q}^q \vartheta_{ij} \Delta X_{it+j} \delta'_{li} D'_{li} + \varepsilon_{it} \quad (3)$$

The PMG panel ARDL model is then employed to investigate the interactions between variables in a heterogeneous panel setting where CD is a concern. This test provides a more accurate long-run estimate of the variables than conventional panel estimators by holding the long-run parameters constant across countries while permitting the short-run parameters to vary (Pesaran, Shin, & Smith, 1999). Bai, Kao, and Ng (2009) established the continuously updated Fully Modified Ordinary Least Square (Cup-FMOLS) Estimator. The proposed Cup-FMOLS enhances the cross-sectional dependence assumption. In addition, bias is corrected across iterations.

### 3.6. Dumitrescu-Hurlin (D-H) Panel Granger Causality Test

After establishing cointegration relationships and assessing long-run elasticities, the Dumitrescu-Hurlin panel causality test is used to examine the relationship between the model's variables. Permitting parameter coefficients to vary across cross-sections can generate more robust results in the presence of cross-dependence in a relatively small panel data set (Dumitrescu & Hurlin, 2012).

## 4. RESULT ANALYSIS

To examine the transmission mechanism from FD to tourism growth for the selected SA countries, the study considers data for five countries namely India, Nepal, Bangladesh, Bhutan, and Sri Lanka. Table 2 summarises the variables' statistics. The Jarque-Bera test establishes the series' normal distribution.

Table 2. Summary statistics of the variables.

| Statistics   | LNITRA | LNDPCS   | LNGDPP  |
|--------------|--------|----------|---------|
| Mean         | 5.61   | 1.52     | 3.09    |
| Median       | 5.63   | 1.52     | 3.04    |
| Maximum      | 7.25   | 1.89     | 3.63    |
| Minimum      | 3.68   | 0.84     | 2.69    |
| Std. dev.    | 0.83   | 0.21     | 0.25    |
| Skewness     | -0.45  | -1.02    | 0.38    |
| Kurtosis     | 3.19   | 4.24     | 2.07    |
| Jarque-Bera  | 4.39*  | 29.87*** | 7.43*** |
| Observations | 125    | 125      | 125     |

Note: The logarithmic transformation is carried out before analysis. The Jarque-Bera test examines the normal distribution of the series. \*\*\* and \* refer to significant levels at 1 and 10 per cent.

The prevalence of multicollinearity among independent variables diminishes the confidence of statistical conclusions based on intuition. Thus, in order to get a valid statistical explanation, it is required to test for multicollinearity or correlations between independent variables. As shown in Table 3, the tolerance values for the

independent variables show that there is no multicollinearity among the variables as VIF values are less than 5 and tolerance values are less than 0.2. This allows us to proceed with the given data and test the variables' stationarity.

Table 3. Multicollinearity analysis.

| Variable | Statistical value |      |
|----------|-------------------|------|
|          | Tolerance         | VIF  |
| LNDCPS   | 0.92              | 1.09 |
| LNGDPP   | 0.92              | 1.09 |

Note: Dependent variable is international tourism receipt.

Prior to doing the unit root test, the CD and slope homogeneity tests are performed. Generally, panel data is known to be dependent on cross-sectional criteria. As a result, the standard unit root test lacks the necessary confidence to accurately infer the statistics. As a result, the study uses the CD test (Table 4) to determine the cross-sectional dependence of the variables.

Table 4. Cross-sectional dependency tests.

| Tests                    | LNITRA    | LNDCPS    | LNGDPP    |
|--------------------------|-----------|-----------|-----------|
| Breusch-Pagan LM         | 127.15*** | 167.54*** | 245.44*** |
| Pesaran scaled LM        | 26.19***  | 35.23***  | 52.65***  |
| Bias-corrected scaled LM | 26.09***  | 35.12***  | 52.54***  |
| Pesaran CD               | 8.52***   | 12.67***  | 15.67***  |

Note: \*\*\* refer to significance levels at 10 per cent. The null hypothesis of the test is defined as no cross-section dependence in residuals and the alternative hypothesis is defined as cross-section dependence in residuals.

In addition, the slope homogeneity test (Table 5) verifies that the model's variables are extremely heterogeneous. Mensah et al. (2019) found that the standard unit root test is inapplicable because it does not take into account cross-sectional and heterogeneity issues, which provides inconsistent results. Consequently, the study employs unit root tests of the second generation, such as CIPS and CADF.

Table 5. Pesaran-Yamagata test.

| Test       | Statistics | P-value |
|------------|------------|---------|
| Delta      | 12.28      | 0.00    |
| Delta adj. | 13.39      | 0.00    |

Note: The test defines the null hypothesis as that slope coefficients are homogenous against the alternative hypothesis of heterogeneous slopes of coefficients given the cross-sectional dependence.

After performing the slope homogeneity test, the study applied robust panel unit root tests of the second generation, such as CIPS and CADF (Table 6). The tests performed in intercept and trend confirmed that the variables included in the model are stationary at I (1). This enables the investigation to move on to the cointegration test to ascertain the variables' long-term associations.

Table 6. Unit root tests for variables.

| CIPS     |           |                     |                  |                     |
|----------|-----------|---------------------|------------------|---------------------|
| Variable | Level     |                     | First difference |                     |
|          | Intercept | Intercept and trend | Intercept        | Intercept and trend |
| LNITRA   | -2.02     | -1.97               | -3.35***         | -3.27***            |
| LNDCPS   | -1.43     | -1.73               | -4.01***         | -4.24***            |
| LNGDPP   | -0.91     | -1.06               | -3.67***         | -4.36***            |
| CADF     |           |                     |                  |                     |
| Variable | Level     |                     | First difference |                     |
|          | Intercept | Intercept and trend | Intercept        | Intercept and trend |
| LNITRA   | -1.76     | -1.49               | -2.82***         | -2.71               |
| LNDCPS   | -1.81     | -1.81               | -3.13***         | -3.49***            |
| LNGDPP   | -0.67     | -0.81               | -2.49***         | -3.45**             |

Note: \*\*\*, \*\* refer to significance levels at 99, 95 per cent respectively.

Using second-generation panel cointegration tests, the long-run association between the variables in the selected regression model was determined. Table 7 demonstrates that both the LM bootstrap and Durbin-Hausman tests validate the long-term association between the variables. Since cointegration is observed among the variables, the coefficient of the cointegrating factors is then estimated.

**Table 7. Results of panel cointegration test.**

| LM-bootstrap |                    | Durbin-Hausman |          |
|--------------|--------------------|----------------|----------|
| Constant     | Constant and trend | DH_group       | DH_panel |
| 4.44         | 4.56               | 4.42***        | 9.70***  |

**Note:** The bootstrap test is run using 2000 replication and the test is developed by Westerlund and Edgerton (2007). \*\*\* refer to significance levels at 99 per cent respectively. The null hypothesis is defined as the existence of cointegration against the alternative hypothesis of no cointegration.

For the estimation of long-run cointegrating factors, we use PDOLS, PMG-ARDL, and FMOLS tests. The results of the estimation are given in Table 8. The long-run DCPS and GDPP coefficients are found positive and significant by the estimation. The estimation result reveals that the cointegrating factors for DCPS are 1.03, 1.25, and 0.89 in PDOLS, PMG-ARDL, and FMOLS tests respectively. It further infers that a 1 per cent increase in DCPS will increase the ITRA by 1.03 per cent, 1.25 per cent, and 0.89 per cent in PDOLS, PMG-ARDL, and Cup-FMOLS tests respectively. The cointegrating factors for GDPP are found to be 1.21, 1.48, and 1.05 in PDOLS, PMG-ARDL, and Cup-FMOLS tests respectively which are also positive and significant.

The findings of the estimation of cointegration factors indicate that financial sector development in SA will facilitate the tourism industry. Existing literature also suggests that the development of the financial sector will facilitate the tourism industry by introducing new financial products for the consumers (Fauzel & Seetanaah, 2023; Khanna & Sharma, 2021).

**Table 8. Result of estimating cointegration factors.**

| Variable | PDOLS   | PMG-ARDL | Cup-FMOLS |
|----------|---------|----------|-----------|
| LNDPCS   | 1.03**  | 1.25***  | 0.89*     |
| LNGDPP   | 1.21*** | 1.48***  | 1.05***   |

**Note:** \*\*\*, \*\* and \* refer to significant level at 1, 5 and 10 per cent respectively.

Furthermore, the study employed Dynamic ARDL (DARDL) simulation to examine the counterfactual changes in regressors. Using the DARDL simulation, we studied the influence of counterfactual shocks in DCPS and GDPP on ITRA. In the long run, the positive shock to DCPS amplifies the ITRA. However, a negative shock to DCPS has negligible immediate effect but considerably reduces ITRA over time. Both shocks are probably going to stick around in the long run, possibly even after  $t=50$  (Figure 2). In the long term, a negative shock would reduce ITRA at a slower rate than a positive shock would increase ITRA on DCPS because the change in anticipated value of a negative shock is less than the change in predicted value of a positive shock.

Table 9 represents the D-H panel causality test result. The D-H causality test demonstrates that DCPS causes ITRA considering a long period of time but not vice versa. Additionally, the causality test demonstrates that GDPP causes DCPS in a unidirectional manner. However, the result finds a bidirectional causality between GDPP and LNITRA.

The study concludes by analysing the causality test, that FD boosts tourist earnings in host countries. The reason for the increasing tourist revenue is that FD helps in the development of new financial products and the strategic allocation of investment in the tourism industry. As a result, the increased revenue generated by the tourism industry adds to the GDP (Hossain & Wadood, 2020; Sokhanvar, Çiftçioğlu, & Javid, 2018; Vita & Kyaw, 2016). Such growth in GDP also benefits the tourism sector indirectly via FD. The causality mechanism is shown in Figure 3.



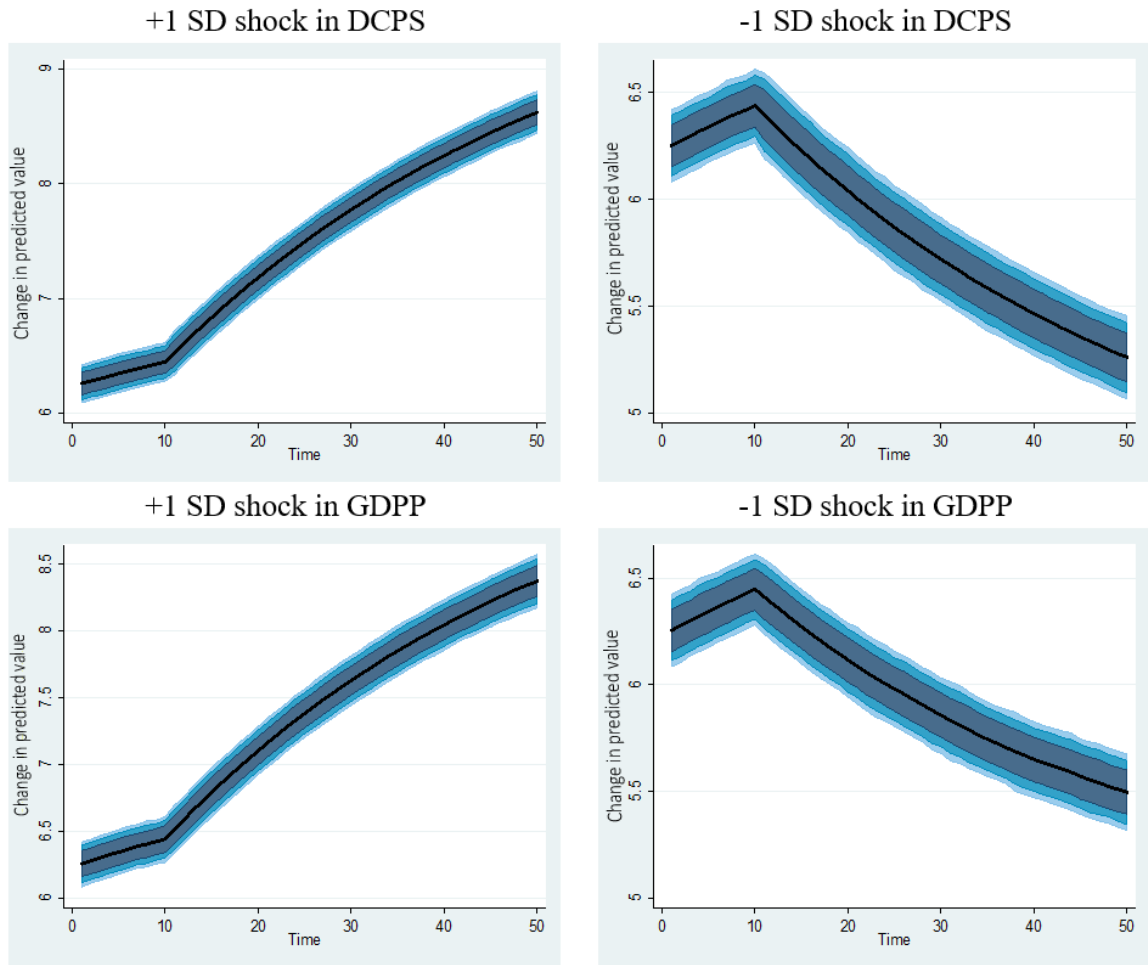


Figure 2. Effects of international tourism arrival due to counterfactual changes in regressors.

Table 9. D-H panel granger causality test.

| Null hypothesis | W-statistic |
|-----------------|-------------|
| LNDCPS → LNITRA | 8.56***     |
| LNITRA → LNDCPS | 4.82        |
| LNGDPP → LNITRA | 15.86***    |
| LNITRA → LNGDPP | 9.27***     |
| LNGDPP → LNDCPS | 14.84***    |
| LNDCPS → LNGDPP | 5.55        |

Note: \*\*\*refer significant level at 10 per cent respectively.

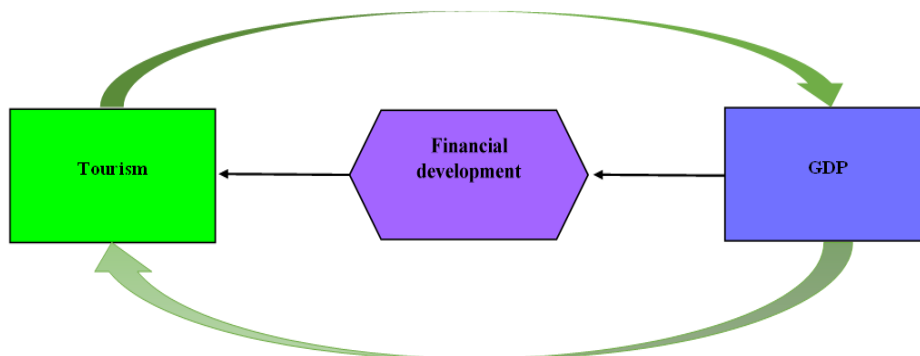


Figure 3. Findings from the causality analysis.

## 5. CONCLUSION WITH POLICY RECOMMENDATION

Tourism has been considered a key industry in SA because of its contribution to five developmental goals, including income generation, employment creation, poverty eradication, foreign earnings, and a high standard of life (Amin et al., 2020). On the other side, FD promotes economic growth by providing necessary capital for businesses. Additionally, it advances the economy by mobilizing money, fostering innovation, and efficiently allocating resources to numerous sectors and enterprises (Durusu-Ciftci et al., 2017; Matei, 2020; Mohieldin et al., 2019). Given the contribution of tourism to the development of South Asian countries (Dangi & Petrick, 2021; Fahimi, Saint Akadiri, Seraj, & Akadiri, 2018; Manzoor, Wei, Asif, Haq, & Rehman, 2019) where financial development acts as a catalyst for developing industries (Nasir, Huynh, & Tram, 2019; Ouyang & Li, 2018; Zhu, Asimakopoulos, & Kim, 2020) empirical investigation on the relationship between FD and tourism will be crucial for long-term policy formulation in the region's FD and tourism industry.

While a number of studies have investigated the impact of tourism growth on FD, only a few have examined the role of FD in tourism growth. In light of this, we have examined the role of FD tourism growth in this study. The estimations of cointegrating factors indicate that a 1 per cent increase in DCPS will increase tourist arrivals by 1.03 per cent in the PDOLS test, 1.25 per cent in the PMG-ARDL test, and 0.89 per cent points in the Cup-FMOLS test.

The findings of our study suggest that the expansion of regional integration could serve as a viable strategy for promoting the tourism industry's potential. This could be achieved by facilitating the availability of diverse financial products on both the demand and supply sides. As such, we recommend the implementation of this approach. Additionally, innovation in universal financial instruments and tourism products should be promoted to increase the region's tourism revenue. In future scopes, the study can be illustrated by conducting a comparative analysis of different countries such as lower middle-income countries (LMICs) and high-income countries (HIC) highlighting the differences for the effect of financial development on tourism earnings with intuitive analysis.

**Funding:** This study received no specific financial support.

**Data Availability Statement:** The corresponding author can provide the supporting data of this study upon a reasonable request.

**Competing Interests:** The authors declare that they have no competing interests.

**Authors' Contributions:** The concept and data analysis, F.A.K.; generating ideas, editing and writing, E.B. Both authors have read and agreed to the published version of the manuscript.

## REFERENCES

- Amin, S., Al Kabir, F., Nihad, A., & Khan, F. (2020). An empirical investigation between foreign direct investment (FDI) and tourism in Bangladesh. *Journal of Tourism Management Research*, 7(1), 110-121. <https://doi.org/10.18488/journal.31.2020.71.110.121>
- Amin, S. B., Kabir, F. A., & Khan, F. (2020). Tourism and energy nexus in selected South Asian countries: A panel study. *Current Issues in Tourism*, 23(16), 1963-1967. <https://doi.org/10.1080/13683500.2019.1638354>
- Bai, J., Kao, C., & Ng, S. (2009). Panel cointegration with global stochastic trends. *Journal of Econometrics*, 149(1), 82-99. <https://doi.org/10.1016/j.jeconom.2008.10.012>
- Bayer, C., & Hanck, C. (2013). Combining non-cointegration tests. *Journal of Time Series Analysis*, 34(1), 83-95. <https://doi.org/10.1111/j.1467-9892.2012.00814.x>
- Cannonier, C., & Burke, M. G. (2017). Tourism and financial development in small states: Evidence from Caribbean countries. *Tourism Economics*, 23(6), 1369-1377. <https://doi.org/10.1177/1354816617689870>
- Comin, D., & Nanda, R. (2019). Financial development and technology diffusion. *IMF Economic Review*, 67(2), 395-419. <https://doi.org/10.1057/s41308-019-00078-0>

- Dangi, T. B., & Petrick, J. F. (2021). Augmenting the role of tourism governance in addressing destination justice, ethics, and equity for sustainable community-based tourism. *Tourism and Hospitality*, 2(1), 15-42. <https://doi.org/10.3390/tourhosp2010002>
- Dumitrescu, E.-I., & Hurlin, C. (2012). Testing for Granger non-causality in heterogeneous panels. *Economic Modelling*, 29(4), 1450-1460. <https://doi.org/10.1016/j.econmod.2012.02.014>
- Durusu-Ciftci, D., Ispir, M. S., & Yetkiner, H. (2017). Financial development and economic growth: Some theory and more evidence. *Journal of Policy Modeling*, 39(2), 290-306. <https://doi.org/10.1016/j.jpolmod.2016.08.001>
- Fahimi, A., Saint Akadiri, S., Seraj, M., & Akadiri, A. C. (2018). Testing the role of tourism and human capital development in economic growth. A panel causality study of micro states. *Tourism Management Perspectives*, 28, 62-70. <https://doi.org/10.1016/j.tmp.2018.08.004>
- Fauzel, S., & Seetanah, B. (2023). Does financial development spur tourism growth? A dynamic time series analysis for the case of an SIDS. *Journal of Policy Research in Tourism, Leisure and Events*, 15(1), 52-68. <https://doi.org/10.1080/19407963.2021.1919128>
- Gunst, R., & Webster, J. (1975). Regression analysis and problems of multicollinearity. *Communications in Statistics-Theory and Methods*, 4(3), 277-292. <https://doi.org/10.1080/03610927308827246>
- Guru, B. K., & Yadav, I. S. (2019). Financial development and economic growth: Panel evidence from BRICS. *Journal of Economics, Finance and Administrative Science*, 24(47), 113-126. <https://doi.org/10.1108/jefas-12-2017-0125>
- Haller, A.-P., Ionela Butnaru, G., Tacu Hârşan, G.-D., & Ştefănică, M. (2021). 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>
- Hossain, B., & Wadood, S. N. (2020). Potential unexplored? Tourism and economic growth of Bangladesh. *Journal of Tourismology*, 6(1), 63-77. <https://doi.org/10.26650/jot.2020.6.1.0031>
- Hsueh, S.-J., Hu, Y.-H., & Tu, C.-H. (2013). Economic growth and financial development in Asian countries: A bootstrap panel Granger causality analysis. *Economic Modelling*, 32, 294-301. <https://doi.org/10.1016/j.econmod.2013.02.027>
- Işik, C., Kasımatı, E., & Ongan, S. (2017). Analyzing the causalities between economic growth, financial development, international trade, tourism expenditure and/on the CO2 emissions in Greece. *Energy Sources, Part B: Economics, Planning, and Policy*, 12(7), 665-673. <http://dx.doi.org/10.1080/15567249.2016.1263251>
- Kao, C., & Chiang, M. H. (2001). On the estimation and inference of a cointegrated regression in panel data. In *Nonstationary panels, panel cointegration, and dynamic panels*. In (Vol. 15, pp. 179-222). Bingley: Emerald Group Publishing Limited.
- Kar, M., & Özşahin, Ş. (2016). Role of financial development on entrepreneurship in the emerging market economies. *Eskişehir Osmangazi Üniversitesi İİBF Dergisi*, 11(3), 131-152.
- Katircioglu, S., Katircioğlu, S., & Altınay, M. (2017). Interactions between energy consumption and imports: Empirical evidence from Turkey. *Journal of Comparative Asian Development*, 16(2), 161-178. <https://doi.org/10.1080/15339114.2017.1319285>
- Khalifa, G. S. (2020). Factors affecting tourism organization competitiveness: Implications for the Egyptian tourism industry. *African Journal of Hospitality, Tourism and Leisure*, 9(3), 116-130. <https://doi.org/10.46222/ajhtl.19770720-8>
- Khan, M. T. I., Yaseen, M. R., & Ali, Q. (2019). Nexus between financial development, tourism, renewable energy, and greenhouse gas emission in high-income countries: A continent-wise analysis. *Energy Economics*, 83, 293-310. <https://doi.org/10.1016/j.eneco.2019.07.018>
- Khanna, R., & Sharma, C. (2021). Does financial development raise tourism demand? A cross-country panel evidence. *Journal of Hospitality & Tourism Research*. <https://doi.org/10.1177/10963480211060789>
- Kumar, R. R., & Kumar, R. (2013). Exploring the developments in urbanisation, aid dependency, sectoral shifts and services sector expansion in Fiji: A modern growth perspective. *Global Business and Economics Review*, 15(4), 371-395. <https://doi.org/10.1504/gber.2013.056648>

- León-Gómez, A., Ruiz-Palomo, D., Fernández-Gámez, M. A., & García-Revilla, M. R. (2021). Sustainable tourism development and economic growth: Bibliometric review and analysis. *Sustainability*, 13(4), 2270. <https://doi.org/10.3390/su13042270>
- Liao, K.-C., Yue, M.-Y., Sun, S.-W., Xue, H.-B., Liu, W., Tsai, S.-B., & Wang, J.-T. (2018). An evaluation of coupling coordination between tourism and finance. *Sustainability*, 10(7), 2320. <https://doi.org/10.3390/su10072320>
- Llorca-Rodríguez, C. M., Casas-Jurado, A. C., & García-Fernández, R. M. (2017). Tourism and poverty alleviation: An empirical analysis using panel data on Peru's departments. *International Journal of Tourism Research*, 19(6), 746-756. <https://doi.org/10.1002/jtr.2147>
- Manzoor, F., Wei, L., Asif, M., Haq, M. Z. U., & Rehman, H. U. (2019). The contribution of sustainable tourism to economic growth and employment in Pakistan. *International Journal of Environmental Research and Public Health*, 16(19), 3785. <https://doi.org/10.3390/ijerph16193785>
- Matei, I. (2020). Is financial development good for economic growth? Empirical insights from emerging European countries. *Quantitative Finance and Economics*, 4, 653-678. <https://doi.org/10.3934/qfe.2020030>
- McCoskey, S., & Kao, C. (1998). A residual-based test of the null of cointegration in panel data. *Econometric Reviews*, 17(1), 57-84. <https://doi.org/10.1080/07474939808800403>
- Mensah, I. A., Sun, M., Gao, C., Omari-Sasu, A. Y., Zhu, D., Ampimah, B. C., & Quarcoo, A. (2019). Analysis on the nexus of economic growth, fossil fuel energy consumption, CO<sub>2</sub> emissions and oil price in Africa based on a PMG panel ARDL approach. *Journal of Cleaner Production*, 228, 161-174. <https://doi.org/10.1016/j.jclepro.2019.04.281>
- Mohieldin, M., Hussein, K., & Rostom, A. (2019). On financial development and economic growth in Egypt. *Journal of Humanities and Applied Social Sciences*, 1(2), 70-86. <https://doi.org/10.1108/jhass-08-2019-0027>
- Musakwa, M. T., & Odhiambo, N. (2022). Tourism and financial development in South Africa: A trivariate approach. *Journal of Policy Research in Tourism, Leisure and Events*, 14(2), 148-164. <https://doi.org/10.1080/19407963.2020.1856860>
- Nasir, M. A., Huynh, T. L. D., & Tram, H. T. X. (2019). Role of financial development, economic growth & foreign direct investment in driving climate change: A case of emerging ASEAN. *Journal of Environmental Management*, 242, 131-141. <https://doi.org/10.1016/j.jenvman.2019.03.112>
- Nikraftar, T., & Hosseini, E. (2016). Factors affecting entrepreneurial opportunities recognition in tourism small and medium sized enterprises. *Tourism Review*, 71(1), 6-17. <https://doi.org/10.1108/tr-09-2015-0042>
- Ohlan, R. (2017). The relationship between tourism, financial development and economic growth in India. *Future Business Journal*, 3(1), 9-22. <https://doi.org/10.1016/j.fbj.2017.01.003>
- Ouyang, Y., & Li, P. (2018). On the nexus of financial development, economic growth, and energy consumption in China: New perspective from a GMM panel VAR approach. *Energy Economics*, 71, 238-252. <https://doi.org/10.1016/j.eneco.2018.02.015>
- Pesaran, M. H. (2004). *General diagnostic tests for cross section dependence in panels*. Cambridge Working Papers in Economics No. 435. University of Cambridge.
- Pesaran, M. H. (2007). A simple panel unit root test in the presence of cross-section dependence. *Journal of Applied Econometrics*, 22(2), 265-312. <https://doi.org/10.1002/jae.951>
- Pesaran, M. H., Shin, Y., & Smith, R. P. (1999). Pooled mean group estimation of dynamic heterogeneous panels. *Journal of the American Statistical Association*, 94(446), 621-634. <https://doi.org/10.1080/01621459.1999.10474156>
- Pesaran, M. H., & Yamagata, T. (2008). Testing slope homogeneity in large panels. *Journal of Econometrics*, 142(1), 50-93. <https://doi.org/10.1016/j.jeconom.2007.05.010>
- Rasool, H., Maqbool, S., & Tarique, M. (2021). The relationship between tourism and economic growth among BRICS countries: A panel cointegration analysis. *Future Business Journal*, 7(1), 1-11. <https://doi.org/10.1186/s43093-020-00048-3>
- Rogerson, C. M., & Saarinen, J. (2018). Tourism for poverty alleviation: Issues and debates in the global South. In Chris Cooper, Serena Volo, William C. Gartner and Noel Scott (Eds.), *The SAGE Handbook of Tourism Management: Applications of Theories and Concepts to Tourism*. In (pp. 22-37). London: Sage Publications Ltd.

- Shahbaz, M., Benkraiem, R., Miloudi, A., & Tiwari, A. K. (2019). Tourism-induced financial development in Malaysia: New evidence from the tourism development index. *Tourism Economics*, 25(5), 757-778. <https://doi.org/10.1177/1354816618806123>
- 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>
- Shakouri, B., Yazdi, S., Nategian, N., & Shikhrezaei, N. (2017). International tourism and economic growth and trade: Variance decomposition analysis. *Journal of Tourism and Hospitality*, 6(3), 1-11. <https://doi.org/10.4172/2167-0269.1000286>
- Siddiquee, M. N., & Rahman, M. M. (2021). Foreign direct investment, financial development, and economic growth nexus in Bangladesh. *The American Economist*, 66(2), 265-280. <https://doi.org/10.1177/0569434520938673>
- Sokhanvar, A., Çiftçioğlu, S., & Javid, E. (2018). Another look at tourism-economic development nexus. *Tourism Management Perspectives*, 26, 97-106. <https://doi.org/10.1016/j.tmp.2018.03.002>
- Truong, V. D. (2018). Tourism, poverty alleviation, and the informal economy: The street vendors of Hanoi, Vietnam. *Tourism Recreation Research*, 43(1), 52-67. <https://doi.org/10.1080/02508281.2017.1370568>
- Tsaurai, K. (2018). The role of financial sector development in the tourism-growth nexus: A case of Southern African countries. *Journal of Economics and Behavioral Studies*, 10(3 (J)), 100-110. <https://doi.org/10.22610/jeb.v10i3.2320>
- Usman, M., Yaseen, M. R., Kousar, R., & Makhdam, M. S. A. (2021). Modeling financial development, tourism, energy consumption, and environmental quality: Is there any discrepancy between developing and developed countries? *Environmental Science and Pollution Research*, 28(41), 58480-58501. <https://doi.org/10.1007/s11356-021-14837-y>
- Vita, G. D., & Kyaw, K. (2016). Tourism development and growth. *Annals of Tourism Research*, 60, 23-26. <https://doi.org/10.1016/j.annals.2016.05.011>
- Westerlund, J. (2005). New simple tests for panel cointegration. *Econometric Reviews*, 24(3), 297-316. <https://doi.org/10.1080/07474930500243019>
- Westerlund, J. (2006). Reducing the size distortions of the panel LM test for cointegration. *Economics Letters*, 90(3), 384-389. <https://doi.org/10.1016/j.econlet.2005.09.002>
- Westerlund, J. (2008). Panel cointegration tests of the Fisher effect. *Journal of Applied Econometrics*, 23(2), 193-233. <https://doi.org/10.1002/jae.967>
- Westerlund, J., & Edgerton, D. L. (2007). A panel bootstrap cointegration test. *Economics Letters*, 97(3), 185-190. <https://doi.org/10.1016/j.econlet.2007.03.003>
- World Development Indicators. (2020). *The world bank data bank*. NW Washington, USA: The World Bank.
- World Travel and Tourism Council (WTTC). (2021). *Travel and tourism: Economic impact, regional overview*. London, UK: WTTC.
- Yenişehirlioğlu, E., & Bayat, T. (2019). The relationship between tourism income and financial development in the MENA countries. *İşletme Araştırmaları Dergisi*, 11(2), 1183-1190. <https://doi.org/10.20491/isarder.2019.664>
- Yi, J., Yuan, G., & Yoo, C. (2020). The effect of the perceived risk on the adoption of the sharing economy in the tourism industry: The case of Airbnb. *Information Processing & Management*, 57(1), 102108. <https://doi.org/10.1016/j.ipm.2019.102108>
- Zagorchev, A., Vasconcellos, G., & Bae, Y. (2011). Financial development, technology, growth and performance: Evidence from the accession to the EU. *Journal of International Financial Markets, Institutions and Money*, 21(5), 743-759. <https://doi.org/10.1016/j.intfin.2011.05.005>
- Zhu, X., Asimakopoulou, S., & Kim, J. (2020). Financial development and innovation-led growth: Is too much finance better? *Journal of International Money and Finance*, 100, 102083. <https://doi.org/10.1016/j.jimonfin.2019.102083>

ANNEX

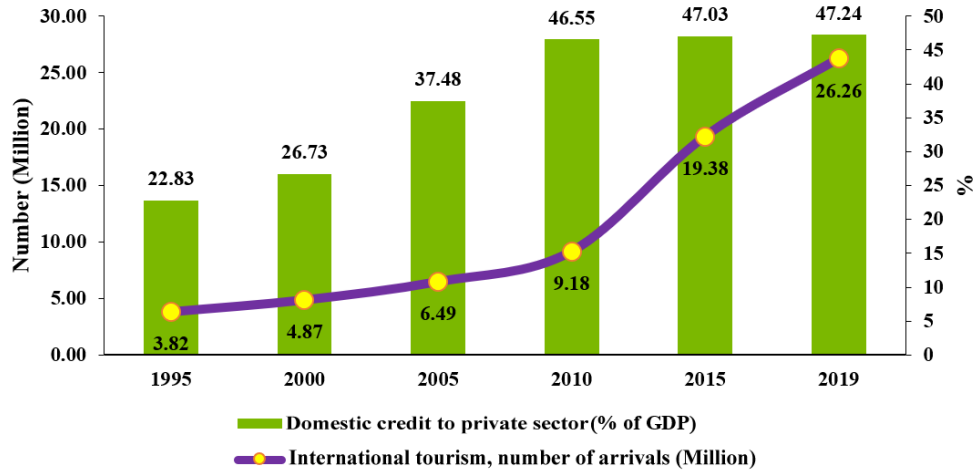


Figure A1. Tourism and financial development in South Asia.

Source: World Development Indicators (2020).

*Views and opinions expressed in this article are the views and opinions of the author(s), Journal of Tourism Management Research shall not be responsible or answerable for any loss, damage or liability etc. caused in relation to/arising out of the use of the content.*