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# Tourism and Development in Developing Economies: A Policy Implication Perspective

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Received: 18 January 2020; Accepted: 19 February 2020; Published: 21 February 2020



**Abstract:** Tourism is considered a competent driver of development in emerging economies. This study assesses the role of tourism in shaping the fundamental pillars of development in developing economies by targeting the case of Pakistan. Various econometric techniques and approaches were used to investigate the causal relationships of tourism with economic growth, energy and agriculture development, and poverty. This study highlights the important role of tourism in the development of emerging economies. The findings of our study suggest that a 1% increase in tourism significantly enhances gross domestic product (GPD) by 0.051%, foreign direct investment by 2.647%, energy development by 0.134%, and agriculture development by 0.26%, and reduces poverty by 0.51% in the long run. Hence, policy-makers should be informed that through public interventions, tourism can advance development by the design and implementation of integrated policies in developing economies. In addition, policy consistency and coherence are essential for competitiveness, sustainability, and maximizing benefits from tourism.

**Keywords:** Tourism development; developing economies; sustainability; policy implication; causal relationship

## 1. Introduction

Every year, scholars attempt to discover new mechanisms that can enhance growth in developing nations. A literature review suggests that in most developing nations, growth is supported by tourism, agriculture, capital, and energy development. Tourism development has gotten worldwide recognition as an impetus for economic growth, agriculture, and energy development and poverty alleviation. It is widely believed that tourism development leads to economic growth, though scholars conflict with the basis of empirical investigations (for instance, see [1–4]). Governments in the developing world support and promote tourism due to its high multiplier effects in terms of generating employment, increasing foreign exchange earnings, having a positive impact on the balance of payment, and stimulating the supply sectors of tourism; also, all these activities help to alleviate poverty (for instance, see [5–7]).

Tourism development stimulates growth by attracting new foreign direct investment (FDI) and building new facilities [8]. The relationship between tourism and capital investment is twofold: potential business tourists are attracted by investment opportunities through information, business-friendly environments, and available human capital (For instance, see [9,10]); and foreign investors develop

tourism facilities such as hotels, resorts, parks, and energy and transportation amenities (For instance, see [8,9]). Moreover, tourism is highly dependent on energy to carry out its daily business activities [11]. Scholars suggest that an increase in tourism activities leads to a higher demand for energy development (for instance, see [11,12]). Through a backward integration strategy, tourism supports the agriculture sector [13], which is considered as a backbone in developing countries such as Pakistan [14]. Hence, tourism plays a vital role in economic growth and overcoming poverty in developing nations.

Pakistan was chosen as a case study for many reasons. First, Pakistan has vast tourism potential and offers a vast infrastructure network for international tourists in the form of the China–Pakistan Economic Corridor (CPEC) and a vast road network, the Motorways. Second, although tourism revenue in Pakistan is lower than in other South Asian countries, capital investments in the tourism sector are higher, with some exceptions [15]. Third, Pakistan is an agriculture-dependent economy [14]. Fourth, approximately 40% of people live below the poverty line. Fifth, Pakistan is dependent on fossil fuel for energy and spends approximately 60% of foreign exchange earnings on energy imports.

The trends suggest that tourism development has never been investigated with economic growth, capital investment, agriculture, energy development, and poverty in a single econometric framework to analyze the backward and forward integration of tourism in developing nations. Using Pakistan as a test case, this study aims to answer the following questions:

- Is there any relationship between tourism and economic growth in Pakistan? If so, to what extent does economic expansion respond to tourism development?
- Is there any relationship between tourism and capital development? If so, to what extent does capital development respond to an increase in tourism activity?
- Is there any relationship between tourism and energy development? If so, to what extent does energy development respond to tourism development?
- Is there any relationship between tourism and agriculture development? If so, to what extent does agriculture development respond to tourism development?
- Is there any relationship between tourism and poverty? If so, to what extent does poverty respond to tourism development?
- If there are stable relationships of tourism with economic, capital, energy, and agriculture development and poverty, what is the direction of these causal relationships?
- What policy initiatives should be taken to make the contribution of tourism sustainable?

This study contributes to the current debate on these questions and is the first study that investigates the empirical relationship between the mentioned variables in a single framework. Croes and Vanegas [16] established a causal relationship between tourism, economic growth, and poverty in Nicaragua (a Central American country) and called for incorporating more variables in the specification at different geographies for theoretical consistency and generalizability of the premise. This study fills the knowledge gap by applying various econometric techniques and approaches to time-series data covering the period 1995–2016 to investigate the causal relationships between the mentioned variables. This paper seeks to contribute to the understanding of tourism resilience in poverty reduction by empirically linking tourism with economic growth, and energy and agriculture development.

This study contributes to the literature in many ways: First, to the best of our knowledge, this is the first study to establish a unique empirical understanding of tourism resilience in poverty reduction through various mechanisms. Second, developing South Asian economies such as Pakistan, India, and Bangladesh are agriculture-dependent, but no relationship has been established between tourism and agriculture; for the first time, we report a causal link between tourism and agriculture. Third, we believe that it is the primary causal relationship between tourism and poverty alleviation in South Asian economies. The other significant contributions are bidirectional causality between tourism and capital investments, unidirectional causality between tourism and energy development, and reinvestigation of tourism led growth hypothesis (TLG) for a developing economy.

Tourism has great potential to speed up progress across the economic sectors in a sustainable manner. Through integrated policies, tourism can generate quality employment opportunities for durable economic and social growth, hence reduce poverty and provide encouragement for environmental protection, and thus offer a triple-win situation for nations to move toward an inclusive and resilient economy. Moreover, the logical sustainable implications of the study are provided. This study comprises six sections: the first section is the introduction, the second covers the literature review, the third describes the methodological approach, the fourth show's findings, the fifth presents a discussion, and the sixth section covers the conclusion, limitations, and future research prospects.

## 2. Literature

Literature trends show that extensive empirical investigations have been carried out to find the causal relationship between tourism and economic growth. However, investigations have rarely been conducted on the causal relationship between capital investment, energy and agriculture development, and poverty. Studies on the relationship between tourism, economic growth, capital investment, agriculture and energy development, and poverty alleviation have focused on specific geographies, time periods, datasets, and methodologies. The findings of these studies are varied, and some contradict each other. Tourism is a dynamic segment that can lead to the development of various sectors of an economy.

### 2.1. Tourism and Economic Growth

Tourism can play a dynamic role in the economic growth of developing as compared to developed nations [17]. Tourism development is viewed as an instrument of employment generation and income [2]. Tourism enhances foreign exchange earnings through commodities trade and importing of capital goods, required services, and manufacturing segments of an economy [18]. The trends suggest three types of the economic impact of tourism development: direct, indirect, and induced [19]. An example of the direct economic impact of tourism is the increased revenue of hotels, restaurants, and tourism organizations. The indirect impact occurs from flows such as hotel and restaurant purchases supplies by firms at the destination. Induced impact occurs when the beneficiaries of direct and indirect impacts (such as firm owners, employees) spend their income. Hence, tourism development influences various sectors of the economy through multiplier effects [20].

Moreover, scholars have applied various methodological approaches and sets of variables to measure the economic impact of tourism development. For instance, Khalil, Kakar [2], in a bivariate analysis, found that tourism caused economic growth in Pakistan in the short run. However, Kadir and Karim [3], Ohlan [21], and Al-mulali, Fereidouni [22] found that tourism and economic growth Granger-cause each other irrespective of model specification. Katircioglu [4] found no co-integration and causality between tourism and gross domestic product (GDP) for Turkey and rejected TLG and growth led tourism hypothesis (GLT). The literature suggests bidirectional, unidirectional, and no causal relationship between tourism and economic growth. Scholars are indifferent to the relationship between tourism and economic development; hence, due to inconclusiveness, this area of research is still open for discussion. Tourism development and its impact at the community level can be linked with national-level poverty reduction through economic growth, and Sustainable Development Goals (SDGs) 8 and 12 deal directly with sustainable economic growth [23,24]. Based on the varied studies in the literature, we postulate the following hypothesis:

**H1:** *Tourism influences economic growth.*

### 2.2. Tourism and Capital Development

Trends suggest that tourism is a determinant of foreign direct investment (FDI) in a country [8]. The common characteristics of internationalization bind tourism and FDI in one sphere. An increase in tourists demands more tourism-related amenities and facilities (such as hotels, bars, casinos, beaches,

theme parks) that would require more investments. International restaurants, hotels, and food chains are investing in every potential corner of the globe to meet the increased tourism demand. Sanford and Dong [10] suggest that foreign investors visit the destination country to identify potential investment opportunities. Investment in tourism leads to better infrastructure, new tourist attractions, and better transportation [8].

Moreover, researchers have used different approaches and techniques to quantify the relationship between tourism and FDI. For instance, Tang, Selvanathan [8] used Granger causality in the vector autoregressive (VAR) framework and found a unidirectional relationship between FDI and tourism in China, and suggested that the rapid growth in tourism was due to FDI. Sanford and Dong [10] used a Tobit model and found that tourism led to FDI in the USA, indicating that tourism development attracts FDI in the USA. Khoshnevis Yazdi, Homa Salehi [25] applied the autoregressive distributed lag (ARDL) model in a multivariate setting and found no causal relationship between tourism and FDI for Iran. Selvanathan, Selvanathan [26], using a VAR framework, found unidirectional causality running from FDI to tourism in India, suggesting that the growth in FDI developed the tourism sector in the country. By using panel data for developing countries in the vector error correction model (VECM) framework, Samimi, Sadeghi [27] reported bidirectional causality between tourism and FDI in the long run, proposing that tourism potential in developing nations attract FDI, and FDI has improved tourism infrastructure and amenities. Rabindra [28] suggested a significant long-term association between capital formation and tourism in Nepal. The literature also shows that little research has been conducted to investigate the relationship between tourism and FDI. Tourism development relies on good public and private infrastructure [23]. The tourism industry can influence public policy for infrastructure upgrades and can provide the required capital investment by attracting tourists and foreign investments [24]. Moreover, SDG 9 specifically concentrates on attracting foreign direct investment for tourism infrastructure development and sustainable innovation. Thus, we postulate the following hypothesis:

**H2:** *Tourism influences capital development.*

### 2.3. *Tourism and Energy Development*

The tourism industry requires energy at every step to carry out daily operations; for instance, tourists and suppliers use energy for transportation, and restaurants and hotels use it for food preparation and accommodations, hence, the increased demand for more energy development. The supply of energy directly influences the expansion or stagnation of the tourism industry [29]. Tourism and hospitality organizations are using innovative energy-production and saving solutions (such as using solar panels, wind, and waste systems for energy production, and using energy-saving appliances in accommodations) to minimize the environmental impact [30–32].

Scholars have applied various approaches to analyzing the relationship between tourism and energy consumption or development. Katircioglu, Feridun [12], and Katircioglu [11] found that tourism Granger-causes energy consumption in Cyprus and Turkey. The study of Tiwari, Ozturk [33] used a trivariate model and suggested that shocks in tourism impact energy consumption in Organization for Economic Cooperation and Development (OECD) countries. Tourism is considered to play a key role in tackling current energy challenges, including reducing the carbon footprint, protecting local environments, cutting costs for businesses, and creating local economic opportunities [29]. Using renewable energy is considered a fundamental way to increase the eco-efficiency of a destination and achieve sustainable tourism development. Hence, the tourism industry can help in the development of sustainable energy by adopting renewable technologies such as bioenergy, solar, wind, small hydro, tidal, geothermal, and wave energy based on the facility location [34]. As a sector, tourism is energy-intensive; it can accelerate the shift toward an increased share of renewable energy in the global energy mix by promoting investment in clean energy sources. SDG 7 explicitly focuses on affordable and clean energy [23,24]. Based on the literature, we posit the following hypothesis:

**H3:** *Tourism influences energy development.*

#### 2.4. Tourism and Agriculture Development

Pakistan is an agriculture-based economy; 68% of its population depends on agriculture, which contributes to the livelihood of 44.7% of the labor force, and earns 21.8% of GDP and 60% of foreign exchange [14]. Tourism has significant backward links with the agriculture sector [35]. In rural areas, tourism is being used as a strategy for agriculture and community development [13]. The literature on the empirical investigation between tourism and agriculture development is quite silent. In a multivariate analysis using ARDL and the Granger causality mechanism, Vanegas Sr, Gartner [36] suggested a unidirectional causality running from tourism development to agriculture development in Costa Rica and Nicaragua, proposing that tourism leads to agriculture development. Scholars have suggested that tourism increases the demand for local food products, which provides support for agriculture development, hence increases the economic multiplier effects [37]. Torres and Momsen [35] argued that through an integrated production approach, institutional procedures, infrastructure, strategic alliances, and marketing mechanisms could develop sustainable links between tourism and agriculture to fight poverty and hunger in rural areas. Sustainable cuisine is essential for an authentic tourist experience, supporting local agriculture production [38]. Enhanced links between agriculture and tourism present significant opportunities to stimulate local production, retain tourism earnings in the locale, and improve the distribution of economic benefits of tourism to rural people [37]. These demands can result in a variety of positive outcomes [38]. Agro-tourism can generate additional income while enhancing the value of the tourism experience; SDG 2 (no hunger) particularly concentrates on sustainable agriculture to fight against hunger [23,24]. Therefore, we propose the following hypothesis:

**H4:** *Tourism influences agriculture development.*

#### 2.5. Tourism Development and Poverty

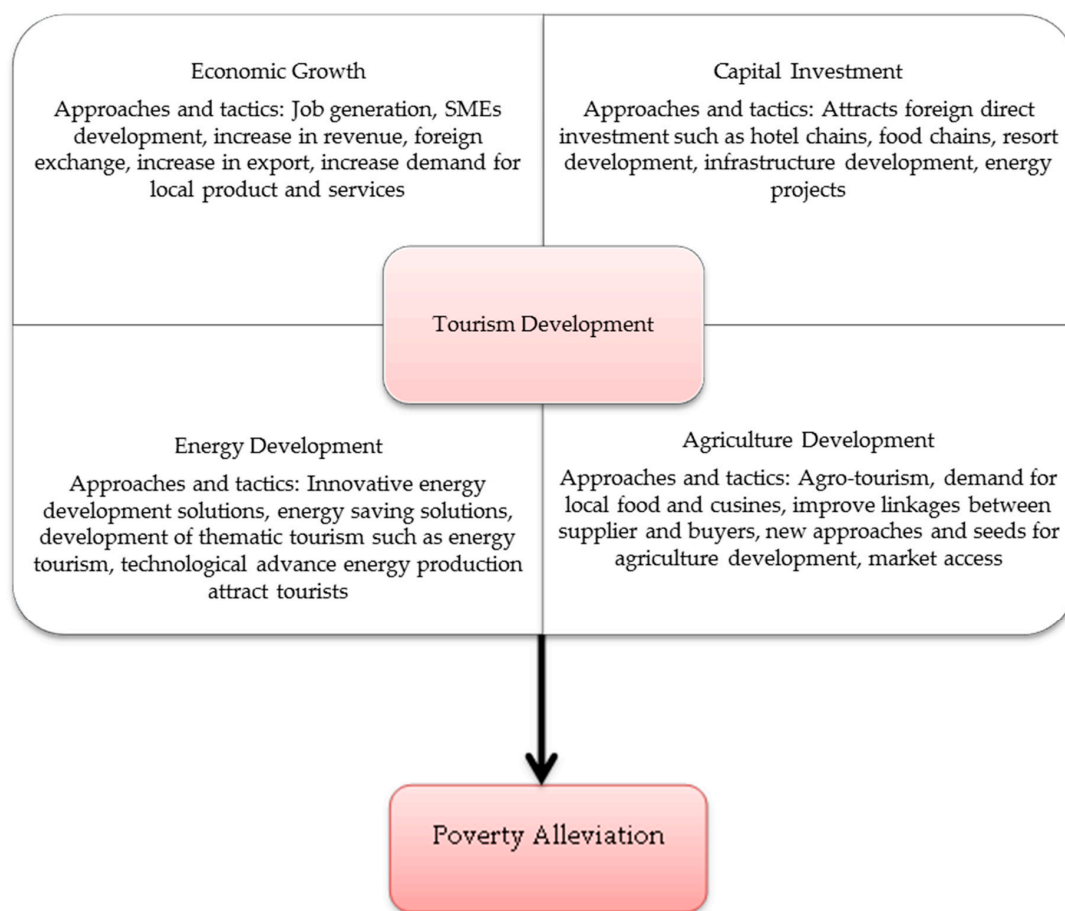
There is a lack of empirical investigation in the literature on tourism development and poverty alleviation. Tourism is considered an essential tool for developing economies, noticeably in generating foreign exchange, attracting international investment, increasing tax revenue, and providing job opportunities [7]. Croes and Vanegas [16], in a multivariate analysis of economic growth, poverty reduction, and tourism using the Engle and Granger [39] co-integration approach, found that tourism development helped to reduce poverty in Nicaragua. Vanegas Sr, Gartner [36], in a multivariate framework and applying the ARDL mechanism, reported that tourism development caused poverty reduction in developing countries. Vanegas and Croes [6], in a multivariate investigation of capital investment, human capital, economic growth, poverty, tourism, and export, by using the Johansen and Juselius [40] and Johansen [41] approach to co-integration, found that tourism significantly Granger-causes poverty. These studies suggest that tourism development helps to alleviate poverty in developing countries through increased income, skill development, and infrastructure development.

By using a computable general equilibrium (CGE) model, Blake, Arbache [42] reported that tourism development helped reduce poverty in Brazil. Croes [43] researched a multivariate framework and found that tourism led to poverty alleviation. Thus, the tourism industry is well-positioned to foster economic growth and development at all levels by creating jobs, promoting entrepreneurship and small businesses, and empowering less privileged groups, particularly youngsters and women [23,24], hence it helps reduce poverty at the national level. Therefore, we posit the following hypothesis:

**H5:** *Tourism influences poverty.*

Based on the literature and our hypotheses, we developed a conceptual model of the study, as shown in Figure 1.





**Figure 1.** Conceptual model. Tourism development and poverty alleviation

### 3. Methodology and Data

This section of the paper deals with the data collection and methodological approaches applied. Several econometric techniques were used to examine our hypotheses.

#### 3.1. Methodology and Estimation Strategy

The main aim of the current study is to examine the role of tourism in economic growth, capital investment, energy and agriculture development, and poverty alleviation. To conduct this study, we measured tourism development by tourist arrivals, economic growth by GDP, capital investment/development by net FDI flow, energy development by energy consumption, agriculture development by wheat production in tons, and poverty by headcount ratio at \$1.90 per day. We developed various models based on our hypotheses:

$$\text{GDP}_{(t)} = f [\text{Capital}_{(t)}, \text{Energy}_{(t)}, \text{Agriculture}_{(t)}, \text{Poverty}_{(t)}, \text{Tourism}_{(t)}]; \quad (1)$$

$$\text{Capital}_{(t)} = f [\text{GDP}_{(t)}, \text{Energy}_{(t)}, \text{Agriculture}_{(t)}, \text{Poverty}_{(t)}, \text{Tourism}_{(t)}]; \quad (2)$$

$$\text{Energy}_{(t)} = f [\text{GDP}_{(t)}, \text{Capital}_{(t)}, \text{Agriculture}_{(t)}, \text{Poverty}_{(t)}, \text{Tourism}_{(t)}]; \quad (3)$$

$$\text{Agriculture}_{(t)} = f [\text{GDP}_{(t)}, \text{Capital}_{(t)}, \text{Energy}_{(t)}, \text{Poverty}_{(t)}, \text{Tourism}_{(t)}]; \quad (4)$$

$$\text{Poverty}_{(t)} = f [\text{GDP}_{(t)}, \text{Capital}_{(t)}, \text{Energy}_{(t)}, \text{Agriculture}_{(t)}, \text{Tourism}_{(t)}]; \quad (5)$$

$$\text{Tourism}_{(t)} = f [\text{GDP}_{(t)}, \text{Capital}_{(t)}, \text{Energy}_{(t)}, \text{Agriculture}_{(t)}, \text{Poverty}_{(t)}]; \quad (6)$$

Unit root tests according to Dickey and Fuller [44] and Phillips and Perron [45] were used to test the stationary characteristics of all series. Later, the bounds test approach for the co-integration of Pesaran and Shin [46] were applied to confirm long-run relationships in our proposed models. The bounds test approach offers various benefits over the traditional co-integration approach; for instance, the bounds test considers suitable lag order structure, which minimizes the issues of serial correlation [46]. Besides, the bounds test approach is applicable when the variables are stationary at the level or first difference or a combination of both, while the methods of Johansen and Juselius [40] and Engle and Granger [39] cannot be applied at different levels. Co-integration would exist if  $F > F^U$ . Moreover, a dynamic unrestricted error correction model can be derived through a simple linear transformation. The error correction model (ECM) equation integrates short-run relationships with the long-run equilibrium without losing any long-run information. The bounds test is principally a test of the coefficient by executing the Wald test [47] on the following (ECM):

$$\begin{aligned} \Delta Y_t = & a_0 + \sum_{i=1}^n a_{1i} \Delta Y_{t-i} + \sum_{i=1}^n a_{2i} \Delta X_{1,t-i} + \sum_{i=1}^n a_{3i} \Delta X_{2,t-i} + \sum_{i=1}^n a_{4i} \Delta X_{3,t-i} \\ & + \sum_{i=1}^n a_{5i} \Delta X_{4,t-i} + \sum_{i=1}^n a_{6i} \Delta X_{5,t-i} + a_7 Y_{t-1} + a_8 X_{1,t-1} + a_9 X_{2,t-1} \\ & + a_{10} X_{3,t-1} + a_{11} X_{4,t-1} + a_{12} X_{5,t-1}. \end{aligned} \quad (7)$$

In Equation (7),  $Y$  represents the dependent variable and  $X$  independent variables, while  $\Delta$  is the first difference. The co-integration exists between the variables if the Wald test rejects null hypothesis  $H_0: a_7 = a_8 = a_9 = a_{10} = a_{11} = 0$ . The long-run and short-run dynamics of Equations (1)–(6) are estimated by using the following autoregressive distributed lag (ARDL) ( $p_1, q_1, q_2, q_3, q_4, q_5$ ) model:

$$\begin{aligned} Y_t = & b_0 + \sum_{i=1}^{p_1} b_{1i} Y_{t-i} + \sum_{i=0}^{q_1} b_{2i} X_{1,t-i} + \sum_{i=0}^{q_2} b_{3i} X_{2,t-i} + \sum_{i=0}^{q_3} b_{4i} X_{3,t-i} \\ & + \sum_{i=0}^{q_4} b_{5i} X_{4,t-i} + \sum_{i=0}^{q_5} b_{6i} X_{5,t-i}. \end{aligned} \quad (8)$$

We used the ARDL model to calculate the long-run relationships in Equations (1)–(6) by using the ARDL estimation in Equation (9). We estimated the long-run dynamics of Equations (1)–(6) by using the following formulas:

$$a_0 = \frac{b_0}{1 - \sum_{i=1}^{p_1} b_{1i}} \quad (9)$$

$$a_j = \frac{b_m}{1 - \sum_{i=1}^{p_1} b_{1i}} \quad (10)$$

where  $j = 1, \dots, 5$  and  $m = 2, \dots, 6$ .

We calculated the short-run dynamics for Equations (1)–(6) by using Equation (11):

$$\begin{aligned} \Delta Y_t = & d_0 + \sum_{i=1}^n a_{1i} \Delta Y_{t-1} + \sum_{i=1}^n a_{2i} \Delta X_{1,t-1} + \sum_{i=1}^n a_{3i} \Delta X_{2,t-1} \\ & + \sum_{i=1}^n a_{4i} \Delta X_{3,t-1} + \sum_{i=1}^n a_{5i} \Delta X_{4,t-1} + \sum_{i=1}^n a_{6i} \Delta X_{5,t-1} + \sum_{i=1}^n a_{7i} \text{ECT}_{t-1} + e_t. \end{aligned} \quad (11)$$

In order to confirm the stability of the ECM, cumulative sum (CUSUM) and cumulative sum of square (CUSUMQ) tests [48] were conducted. We applied standard diagnostic tests (serial correlation, normality, and heteroscedasticity tests) to scrutinize the model misspecifications. The Granger causality test based on a vector error correction (VAR) model was used to determine the direction of causality [49]. Based on the information on long- and short-run dynamics and Granger causality, we tested our proposed hypotheses.

### 3.2. Data Collection

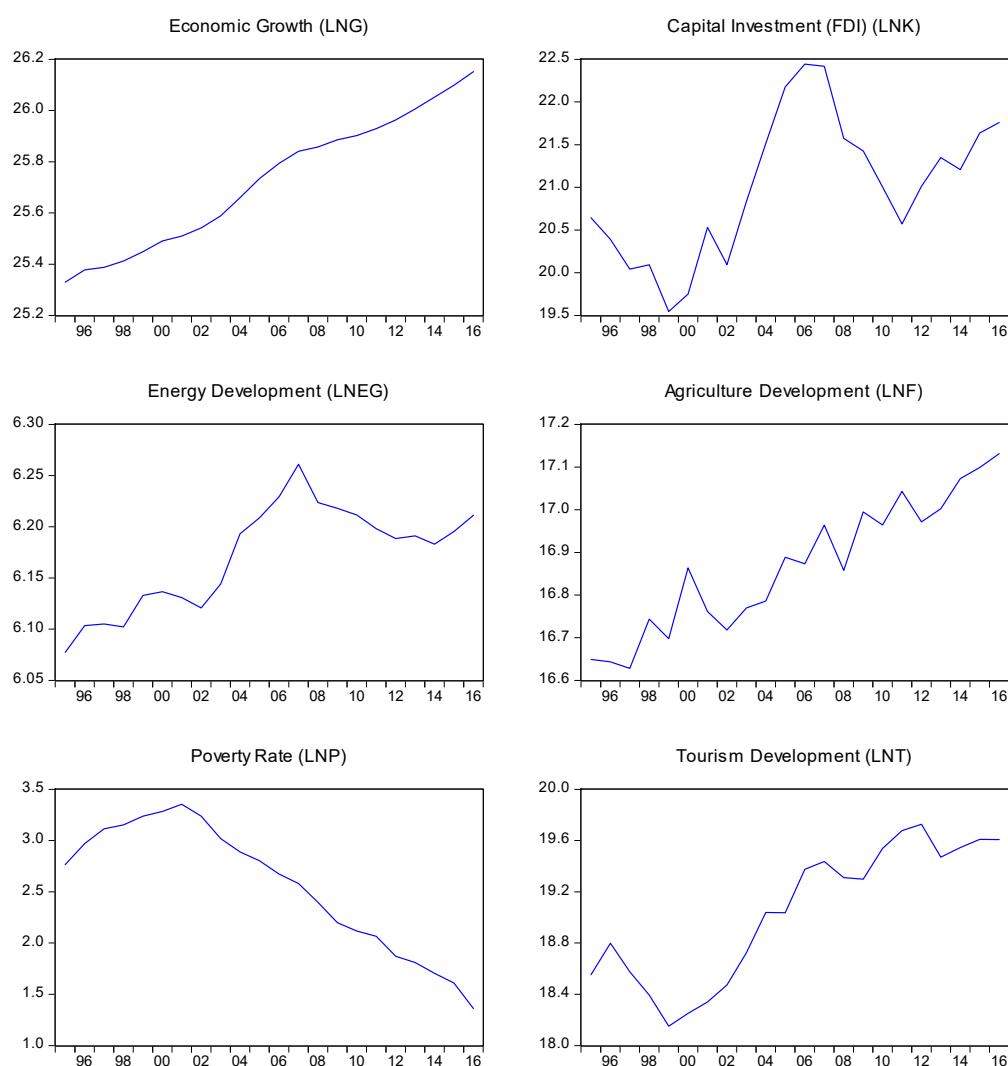
To carry out this study, we took annual time series data from 1995–2016. The data were collected from the World Bank and the economic survey of Pakistan. Moreover, we measured economic growth by GDP (G), capital investment/development (net FDI, K), agriculture development (wheat production in tons per year, F), energy development (energy consumption in kg oil used per capita, EG), poverty (headcount ratio at \$1.90 per day, P), and tourism development (tourist arrivals, T). Natural logarithms were taken of all series to induce stationarity. The monetary variables are constant in 2010 USD.

The descriptive statistics are summarized in Table 1, and Figure 2 shows the variation in the variables. Trends in economic growth suggest that GDP showed a sharp increase in 2004–2008 as exhibited in Figure 2. Economic growth accelerated to 7.0% in 2006–2007 at the back of robust growth in agriculture, manufacturing, and services [50]. The good performance was caused by the combination of sound economic policies, ongoing structural reforms, and a benign international economic environment [50]. Since 2004, FDI sharply increased, as shown in Figure 2, due to privatization, sovereign debts, and concessional long-term loans from the World Bank [51]. FDI comes from four major sectors: energy, banking and finance, telecommunications, and food and beverages [50]. Pakistan's economy had been growing at an average rate of over 7.6% per annum from 2003 to 2008 [50], which increased the demand for energy [52], as exhibited in Figure 2. Agriculture is the backbone of Pakistan's economy and has been designated by the government as the engine of national economic growth and poverty reduction; the mix trends in this sector are due to the availability of water and technological resources, and the economic growth in 2007 was highly linked to agriculture production [50]. Agriculture provides not only raw materials for the manufacturing industry but also tremendous employment opportunities [53]. The sharp decrease in poverty was due to high economic growth, agriculture, FDI, and to some extent, increased tourism. The tourism development trends are mixed due to security and political instability.

**Table 1.** Descriptive statistics. G, gross domestic product (GDP); K, net Foreign direct investment (FDI); EG, energy development; F, agriculture development; P, poverty; T, tourism development.

	G	K	EG	F	P	T
Maximum	26.15	22.44	6.26	17.13	3.35	19.61
Mean	25.72	21.00	6.17	16.86	2.55	19.16
Minimum	25.33	19.54	6.07	16.63	1.36	18.15
Std. Dev.	0.26	0.83	0.05	0.15	0.62	0.67
Jarque–Bera	1.67	0.74	1.31	1.34	1.83	0.88
Probability	0.43	0.69	0.52	0.51	0.40	0.64





**Figure 2.** Annual developmental trends in various sectors. The x-axis represents years, and the y-axis shows the percent of the total; for instance, on the upper left graph, the y-axis represents economic growth (% of total).

#### 4. Empirical Results

The correlation analysis in Table 2 suggests that economic growth, capital investment, agriculture, energy, and tourism development are positively correlated, but are negatively correlated with poverty. Hence, an increase in tourism boosts economic growth, capital investment, and agriculture and energy development and reduces poverty. Various econometric procedures and techniques were applied to estimate the causal relationships between variables.

**Table 2.** Spearman rank-order correlation.

Variable	G	K	EG	F	P	T
G	1					
K	0.63	1				
EG	0.68	0.81	1			
F	0.95	0.61	0.67	1		
P	−0.87	−0.64	−0.57	−0.83	1	
T	0.91	0.71	0.61	0.86	−0.97	1

We conducted augmented Dickey-Fuller (ADF) and Phillips–Perron (PP) unit root tests to satisfy the assumption of the bounds test approach. The results of ADF and PP unit root tests are given in the supplementary materials. During our investigation, we saw that all variables were integrated on order I (0) or I (1) or both and hence satisfied the assumption of the bounds test.

Scholars suggest that the bounds test approach is sensitive to lag length [54]; therefore, the lag length was estimated by using VAR lag order selection criteria, and the results indicated that the optimum lag length was 3, confirmed by Akaike’s Information Criterion (AIC) Hannan–Quinn Criterion (HQ) Schwarz Criterion (SC) criteria (for details, please see Supplementary Materials).

After confirming the bounds test conjecture and lag length criteria, the bounds test was conducted for Equations (1)–(6), and we found that all models were co-integrated, as shown in Table 3. This ensured that the models were free of serial correlation problems to avoid invalid results.

**Table 3.** Results of bounds test for co-integration. ARDL, autoregressive distributed lag.

ARDL Model (Lags of Explanatory Variables)	Critical Bounds Value		
	1%	5%	10%
FG(G K, EG, F, P, T) = 7.65,* ARDL (1,1,0,1,0,1)	3.93–5.23	3.12–4.25	2.75–3.79
FK(K G, EG, F, P, T) = 5.88,* ARDL (1,1,2,0,2,2)	3.93–5.23	3.12–4.25	2.75–3.79
FEG(EG G, K, F, P, T) = 5.94,* ARDL (1,1,2,2,2,0)	3.41–4.68	2.62–3.79	2.26–3.35
FF(F G, K, EG, P, T) = 5.21,* ARDL (1,2,1,2,0,2)	3.93–5.23	3.12–4.25	2.75–3.79
FP(P G, K, EG, F, H, T) = 11.55,* ARDL (1,0,1,0,1,0)	3.41–4.68	2.62–3.79	2.26–3.35
FT(T G, K, EG, F, H, P) = 4.88,* ARDL (1,0,1,0,1,1)	3.41–4.68	2.62–3.79	2.26–3.35

Note: All models use the assumption of unrestricted constant. \* suggest co-integration at a 1% significance level.

The findings of Table 3 permit the estimation of the long-run relationships for all six equations. The calculated ARDL long-run relationships are presented in Table 4. The calculations of Table 4 indicate that tourism development has significant effects on economic growth, capital, and agriculture and energy development, and hence poverty reduction. Moreover, capital investment enhances tourism development while poverty causes harm due to the fear of disease infection, crime, and unhealthy food. The findings suggest that tourism significantly contributes to economic growth, which is in line with Jalil, Mahmood [55]. The results of this study also suggest that tourism has significant effects on capital investment and are thus aligned with the findings of Ho and Rashid [56] in Malaysia and the Philippines. In addition, capital investment significantly influences tourism development, which is in line with Haley and Haley [57], who suggested that FDI leads to tourism. Tourism development indicates a significant relationship with agriculture; to the best of our knowledge, the literature is silent on the econometric relationship between tourism and agriculture. The findings further suggest that tourism has a significant negative relationship with poverty, therefore our results are similar to those of Vanegas Sr, Gartner [36] in Costa Rica and Nicaragua.

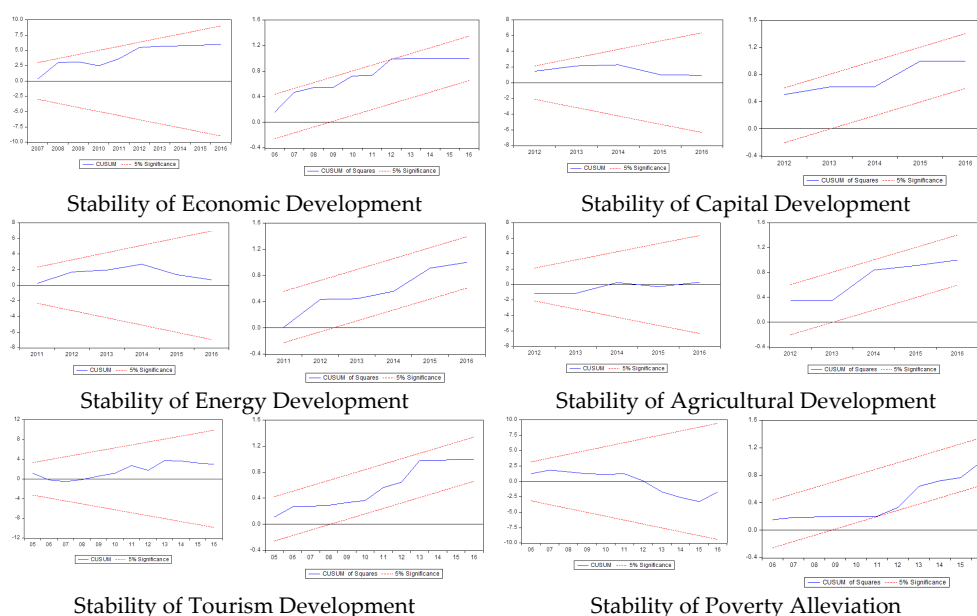
Several diagnostic tests were performed to check whether our models fulfill the linear regression assumptions. The results of diagnostic tests are reported in the bottom panel of Table 4. The Jarque–Bera test reveals that all models are normally distributed; the Breusch–Godfrey serial correlation LM test confirms that our models are free of a serial correlation problem, and the Breusch–Pagan–Godfrey heteroskedasticity test indicates that the modeling errors are uncorrelated and uniform. The error correction term, which is a long-run element, is expected to be negative and significant. It shows the speed of adjustment and suggests convergence from short to long run [58]. The results of CUSUM and CUSUM square tests confirm the stability of the models, as shown in Figure 3; the CUSUM graphs indicate that the cumulative sum of recursive residuals plots is within the critical 5% significance line, hence the test finds that our parameters are stable. In addition, the graphs of CUSUM square tests show that the plots of variance against time are within the 5% critical boundary line, suggesting that our models are free of structural breaks. Thus CUSUM and CUSUM square collectively suggest that our dependent variables are stable [59]. The results at the bottom of Table 5 suggest that deviations in the long-run relationship for economic growth, capital investment, energy and agriculture development,

poverty, and tourism are corrected in the future by 88%, 98%, 71%, 94%, 48%, and 55%, respectively, in a year. (Note: The coefficients are reported in the Discussion section for a debate on sustainable policy implications.)

**Table 4.** ARDL long-run relationship and diagnostics.

Variables	G		K		EG		F		P		T	
	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat
G			30.79	8.36*	−0.56	−1.45	5.07	3.23**	−2.92	−4.24*	−1.81	−1.55
K	0.038	6.51*			0.055	2.92**	0.138	3.39**	0.075	2.50**	0.25	2.70*
EG	0.312	3.14*	−21.60	−4.56*			−2.08	−2.56***	0.78	0.57	0.79	0.45
F	0.161	3.43*	1.398	2.11***	0.682	2.028***			−2.02	−2.29**	1.16	0.98
P	−0.101	−3.96*	4.556	5.61*	−0.03	−0.43	0.59	3.18**			−1.17	−5.96*
T	0.051	2.084***	2.647	4.34*	0.134	2.34***	0.26	2.81***	−0.59	−5.17*		
Const	21.25	25.79*	−668.0	−9.14*	7.70	1.61	−102.92	−2.89**	46.09	6.86*	39.07	2.76**
Trend	0.027	22.46*	−0.83	−7.19*			−0.122	−2.43***				
A	2.47 (0.15)		4.53 (0.18)		1.78 (0.24)		1.63 (0.27)		2.02 (0.18)		0.87 (0.45)	
B	0.67 (0.72)		0.72 (0.69)		1.66 (0.43)		2.96 (0.23)		0.33 (0.85)		0.14 (0.92)	
C	0.55 (0.82)		1.72 (0.46)		0.46 (0.88)		0.43 (0.89)		0.51 (0.83)		0.62 (0.75)	
Adj. R <sup>2</sup>	0.81		0.77		0.83		0.62		0.76		0.67	
F-state	10.96 (0.00)		5.71 (0.03)		8.27 (0.00)		3.26 (0.049)		9.06 (0.00)		5.56 (0.00)	

Note: \*, \*\*, \*\*\* significance at 1%, 5%, and 10% level, respectively. A: Breusch–Godfrey serial correlation LM test; B: Jarque–Bera statistic; C: Breusch–Pagan–Godfrey heteroskedasticity test (probability); F-state shows overall model fit.



**Figure 3.** Cumulative sum and cumulative sum of squares tests.

The short-run results in Table 5 indicate that tourism development positively contributes to economic growth. The findings also indicate that tourism contributes more to capital investment than the other variables. Moreover, tourism negatively contributes to poverty. Capital investment, on the other hand, provides support for tourism development. The results further suggest that poverty negatively affects tourism development.

Table 5. ARDL short-run relationships.

Variables	G		K		EG		F		P		T	
	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat
G			53.27	5.33*	0.78	2.56**	5.28	2.61**	-1.404	-5.11*	-2.00	-1.71
K	0.014	4.28*			0.004	0.46	0.04	1.36	0.054	2.07***	0.15	2.19***
EG	0.275	3.30*	-24.96	3.15**			1.26	1.63	0.37	0.55	0.87	0.44
F	0.106	3.55*	-2.89	-1.53	-0.077	0.95			-0.47	-1.97***	0.57	0.78
P	-0.088	-4.94*	-3.71	2.81**	-0.157	3.85*	0.83	3.19*			-1.97	-3.74*
T	0.021	1.81***	1.48	2.07***	0.01	0.34	0.17	0.79	-0.28	-3.85*		
ECT	-0.88	-7.12*	-0.98	-6.09*	-0.71	-4.17*	-0.94	-6.19*	-0.48	-7.14*	0.55	-4.57*

Note: \*, \*\*, \*\*\* significance at 1%, 5%, and 10% level, respectively.

The Granger causality test was conducted to determine the direction of causation between the variables; the results are reported in Table 6.

Table 6. Granger causality.

Null Hypothesis	F-Statistic	Probability
GDP does not Granger-cause tourism	2.00	0.211
Tourism does not Granger-cause GDP	3.69***	0.071
Capital does not Granger-cause tourism	4.19***	0.055
Tourism does not Granger-cause capital	3.809***	0.068
Energy does not Granger-cause tourism	0.421	0.789
Tourism does not Granger-cause energy	6.401*	0.010
Food does not Granger-cause tourism	1.99	0.175
Tourism does not Granger-cause food	4.97**	0.038
Poverty does not Granger-cause tourism	0.66	0.425
Tourism does not Granger-cause poverty	8.125*	0.010

Note: \*, \*\*, \*\*\* significance at 1%, 5%, and 10% level, respectively.

Based on the long- and short-run dynamics and Granger causality results, we determined several causations, hence establishing that tourism development causes changes in economic growth. It is further established that tourism development and capital investment Granger-cause each other. However, tourism development also causes energy and agriculture development and poverty. We highlight the following key causality results that provide a foundation for discussion and sustainable policy implementation, which will be discussed in a later section:

- The findings suggest unidirectional causality between tourism development and economic growth. Our results replicate the findings of Kadir and Karim [3], Ohlan [21], and Al-mulali, Fereidouni [22] on developing economies. The established findings will be discussed and argued in great detail along with sustainable policy implications in the next section.
- Bidirectional causality exists between tourism development and capital investment. Our results contradict those of Selvanathan, Selvanathan [26] and Tang, Selvanathan [8], who suggested unidirectional causality between tourism and capital development for India and China.
- Our results suggest a unidirectional causality between tourism and energy development. Our findings are in line with those of Katircioglu, Feridun [12], and Solarin [60].
- This investigation reveals that tourism causes agricultural development. This study suggests a unidirectional causal relationship between tourism and agriculture development. This mechanism will be discussed in detail in the next part.
- The findings further suggest unidirectional causality between tourism development and poverty. Our results replicate the findings of Croes and Vanegas [16], who suggested that tourism helped in poverty reduction in Nicaragua.

## 5. Discussion and Policy Implications

The purpose of this paper is to examine the role of tourism in poverty reduction through the mechanism of economic growth, capital investment, and energy and agriculture development in a developing economy such as Pakistan. This study contributes to the literature by providing empirical evidence of tourism multiplier effects. Moreover, it enhances our knowledge through an understanding of tourism forward (such as TLG) and backward (such as agriculture development) integration. It also showcases tourism resilience in poverty reduction by empirically linking tourism with different sectors of the economy that may play essential roles in the development of a country.

This section briefly describes sustainable policy guidelines and implications of tourism development for economic growth and poverty alleviation based on empirical investigation and support from the literature.

### 5.1. Tourism and Economic Development

This investigation discovered that a 1% increase in tourism development enhances economic growth by 0.051% significantly in the long run. In the short run, a 1% improvement in tourism development boosts economic growth by 0.021%, hence Granger causality runs from tourism to economic growth, which provides support for TLG. The tourism sector directly contributes 3% to Pakistan's economy annually [15], which is far below its potential. The existence of TLG requires more reliable and sustainable tourism development strategies and programs to take full advantage of tourism to promote economic growth. Based on the findings and the literature, it is suggested that tourism offers many opportunities that can be capitalized to enhance economic growth. In order to utilize tourism to advance sustainable economic growth, a few strategies are proposed:

- Develop a strong tourism value chain and integrated system (such as policy-making, integrated planning, new product development, marketing operations).
- Provide a business-friendly environment (reform policies, rules, and regulations, institutions that govern business activities).
- Provide a high level of connectivity and openness (such as investments in transportation infrastructure, communication, favorable policies, and sustainable management).
- Use of the advanced technological innovations (such as mobile technologies, smartphones, user-generated content, reviews and feedback, GPS, use of social media, big data, and artificial intelligence).
- Encourage collective partnerships (such as public-private partnerships, community participation, linking value chain and local economic development strategies).

Hence, to achieve desirable economic growth through tourism development in developing nations, the specific focus should be on enthusiastically advancing policy development and implementation, and special attention should be paid to human capital development. Also, steps can be taken to showcase various aspects of natural and cultural heritage and hospitality globally, for instance, "Emerging Pakistan" and "Incredible India," to help counterbalance some of the misconceptions about tourism.

### 5.2. Tourism and Capital Investment

The findings suggest bidirectional causality between tourism and capital investment. In the long run, a 1% increase in tourism development improves capital investment by 2.64%, and a 1% rise in capital investment enhances tourism development by 0.25%. In the short run, 1% tourism development and capital investment compensate each other respectively by 1.48% and 0.15%. The tourism-related investment contribution to total investment was 9.1% in 2018 [15]. As compared to Nepal, Sri Lanka, Bangladesh, and Myanmar, Pakistan has attracted more foreign investment in the tourism sector [15]. Hence, it is suggested that a coherent and integrated sustainable policy framework should be adopted for tourism-related FDI to maximize benefits and minimize costs. The tourism industry is complex

and involves a long value chain; therefore, for such investments, attention should be paid to a range of policies on sustainability issues, for instance, environmental laws, town planning, tourism education, labor policy, transport policy, health and safety standards, agriculture, communication, and financial policies. Policy design is a challenge but requires more effort such as adequate human and financial resources for implementation at various levels. Proactive policies are needed to help local communities gain skills and resources to take advantage of the opportunities created by tourism. Therefore, in developing economies, in order to use tourism-related investments as a catalyst for development, FDI policy should be linked to the wider policy context in a coherent way to achieve sustainable economic and human development goals.

### *5.3. Tourism and Energy Development*

The results of this paper suggest unidirectional causality between tourism and energy development. In the long run, a 1% increase in tourism development increases energy development by 0.13%, and Granger causality runs from tourism to energy development. Tourism is considered to be the largest consumer of energy worldwide [61]. An increase in tourist arrivals and tourism-related FDI increases the demand for energy consumption, which leads to more energy development. Tourism, an energy-dependent industry in developing nations, can play a vital role in the development of sustainable energy; for instance, the Global Himalayan Expedition (GHE) is a social impact initiative in the Indian Himalayas that leverages tourism and technology to provide clean energy, digital education, connectivity, and access, create livelihoods in remote mountain communities, and reduce carbon emissions [62]. Northern areas of Pakistan such as Gilgit Baltistan Hunza Valley [63] and Kaghan [64], Naran, and Swat valleys are considered tourist hubs of the country, full of water resources offering great potential for hydro energy production and at the same time providing natural reservoirs for water storage. Besides, it will greatly benefit the local population for drinking water and agricultural needs. Meanwhile, the Thar Desert in Punjab and Sindh offer desert safaris and have great potential for wind energy projects. Hence, by adopting renewable technologies at tourism destinations, such as bioenergy, solar, wind, small hydro, tidal, geothermal, and waves, Pakistan would be able to produce sustainable energy and protect the natural environment. Besides, while attracting tourism-related investments, the government should encourage the use of renewable energy to combat climate change.

### *5.4. Tourism and Agriculture Development*

This investigation indicates unidirectional causality running from tourism to agriculture development. In the long run, a 1% increase in tourism enhances agriculture development by 0.26%, and tourism Granger-causes agriculture development. Vanegas Sr, Gartner [36] argued that the rapid decline in poverty in Nicaragua was mainly driven by high agricultural export and tourism development. The literature reveals that tourism development increases the demand for local food and hence enhances the economic multiplier effects [37]. Tourism benefits to the local community can be improved by expanding backward links to support local agriculture and enhancing the tourist experience by offering indigenous food. In developing economies such as Pakistan and India, links between agriculture and tourism present significant opportunities to stimulate local production, retain tourism earnings in the locale, and improve the distribution of economic benefits to rural people. Nowadays, tourists are interested in food quality and sustainable agricultural practices, and require information about different cuisines that affect their behavior. Therefore, the market base value chain between tourism and agriculture is crucial for local development. Hence, it is recommended that the government should develop links between local farmers and tourism organizations through proper marketing channels and intermediaries. Tourists should be encouraged to participate in local farming activities and explore local cuisines, cultures, landscapes, and agrobiodiversity. Hotel chains should be encouraged through policy initiatives to purchase local agricultural products. Locals should be provided with capacity building training to produce high-quality tourism products.



### 5.5. Tourism and Poverty Alleviation

This investigation reveals unidirectional causality running from tourism to poverty alleviation. In the long run, a 1% increase in tourism development decreases poverty by  $-0.59\%$ , and a 1% increase in poverty offsets tourism development by  $-1.17\%$ . In the short run, a 1% rise in tourism development reduces poverty by  $-0.28\%$ . Relatively few studies have examined the empirical relationship between tourism development and poverty alleviation. Croes and Vanegas [5] are among the few who reported a causal relationship between tourism and poverty alleviation. Due to the high growth potential of the tourism industry, it can be used as a strategy to fight poverty in developing countries. This study's findings support the common proposition that tourism development reduces poverty and offers a convincing case to use tourism as a policy instrument such as for targeted investment policy, marketing and promotion, agriculture development, and the support of tourism organizations in the public and private sectors focused on the tourism-driven economy. However, tourism development in poor areas should be based on a bottom-up strategy, maximum local participation, locally-owned small to medium enterprises (SMEs), and a high level of integrated backward links to the agriculture sector. In addition, to use tourism as a successful method of poverty alleviation in developing economies, special attention should be given to the sustainable capacity building, skills training, quality agriculture production, infrastructure development, equal distribution of benefits, and empowerment of less favored groups such as women and young people.

## 6. Conclusions

Developing economies consider tourism as an essential element for economic development and poverty alleviation. However, using tourism as a sustainable instrument against poverty depends on how well tourism development policy is linked with overall economic, investment, agriculture, energy, and environmental policies. In addition, to make tourism development sustainable depends on its incorporation with employment, its links with the agricultural and services sectors, and its role in stimulating infrastructure such as the construction of roads, airports, ports, and investment support to the economy.

This study supports TLG in the case of Pakistan and suggests that policy-makers should focus on the development of tourism infrastructure and facilities. Our findings related to the contribution of tourism to the economy provide support for Sustainable Development Goal (SDG) 8 (decent work and economic growth) in Pakistan. However, to further strengthen tourism's sustainable contribution to the economy, an integrated tourism policy should be developed that focuses on product and service development, national branding, SME development, protection of natural and sociocultural resources, and analysis of tourism demand and supply. In addition, TLG provides useful information for policy-makers to examine economic development policies and adjust priorities regarding investments and budget allocation to promote tourism as a sustainable economic tool. Such a policy initiative will favor better diversification of work through the tourism value chain network and can enhance the impact of socioeconomic tourism.

The bidirectional causality between tourism and capital investment provides convincing evidence for policy-makers that the relationship between tourism and capital development can enhance economic growth; hence, it is suggested to develop a friendly business environment in order to attract tourism-related investments. However, a well-designed environmental policy must be put in place to make these investments sustainable. Flagship promotional activities such as "Emerging Pakistan" should be propagated through social, national, and international media to create awareness of the natural and cultural diversity of Pakistan. Investors and tourists should be encouraged toward sustainable investments and behaviors to safeguard the nation's interests. Tourism-related FDI can help in achieving several SDGs directly or indirectly, such as poverty alleviation and food security. However, FDI directly or partly targets Sustainable Development Goals such as sub-target 7.2, "increase the share of renewable energy in the global energy mix substantially" and target 9.1, "develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to

support economic development and human well-being, with a focus on affordable and equitable access for all." FDI can also help in achieving sustainable targets (Goal 12, target 12.6, and Goal 17, target 17.5). The best example of this is Chinese public and private investments in various energy projects along the China–Pakistan Economic Corridor (CPEC) [65].

The unidirectional causality between tourism and energy development provides guidance for policy-makers that increases tourism activities, increases the demand for energy development. Hence, to make tourism contributions sustainable, policy-makers should focus on the production of renewable energy; besides this, at a firm level, the government should encourage entrepreneurs to use green energy and energy-saving appliances to minimize their environmental impact. In addition, by promoting investments in clean energy projects, tourism can help to reduce carbon emissions and contribute to SDG 7. Thus, it is suggested that, based on tourism destination location, renewable energy resources should be utilized to make tourism more productive and sustainable in developing economies.

Furthermore, food is an essential and important part of the tourist experience. Tourists demand cuisines that are highly dependent on local agriculture supply. The findings on the relationship between tourism and agriculture provide evidence for policy-makers on the backward integration of tourism. Sustainable Developmental Goal 2 specifically focuses on the backward integration of the agriculture sector by developing links between local farmers, hotels, and restaurants to enhance tourists' culinary experience and generate extra income for locals. Therefore, it is recommended that local farmers should be trained in the production of high-quality organic food, and proper market access and links between the business community and locals should be developed through public intervention. Agriculture development not only supplies food, but also helps sustain a green environment.

The main limitation of this study is the small sample size; scholars may investigate this methodology and approach with a larger sample size. Moreover, scholars are encouraged to use tourism activity-specific data, for example, hotels, restaurants, and modes of transportation; this could be more helpful in guiding tourism policies in developing countries.

**Supplementary Materials:** The following are available online at <http://www.mdpi.com/2071-1050/12/4/1618/s1>, Table S1: Unit root tests, Table S2: Lag length Criteria..

**Author Contributions:** The first author (A.K.), the second author (S.B.), and the fifth author (Z.U.B.) contributed equally to the conception, study design, and writing of the original manuscript. The third author (A.L.) revised and edited the manuscript; the fourth author (J.L.) supervised the article. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research received no external funding.

**Conflicts of Interest:** The authors declare no conflict of interest.

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