

The Impact of Tourism Arrivals and Foreign Direct Investment on Economic Growth: A Panel Data Analysis

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Abstract

This study examines the impact of tourism arrivals and foreign direct investment (FDI) on economic growth using a panel dataset of 150 countries over 25 years (2001–2025). Employing Pesaran's CIPS unit root tests, Kao cointegration tests, and Driscoll-Kraay standard errors, the findings reveal that both tourism arrivals ($\beta = 0.032$, $p = .044$) and FDI ($\beta = 0.098$, $p < .001$) exert positive and significant effects on economic growth. Cointegration tests confirm a stable long-run equilibrium relationship among the variables. The Hausman test ($\chi^2 = 6.14$, $p = .046$) selects the Fixed Effects model, though both Fixed and Random Effects specifications are reported. The results confirm the Tourism-Led Growth Hypothesis and the positive role of FDI in economic development, with FDI demonstrating a larger growth effect. Policy implications emphasize improving institutional quality, enhancing human capital, and sustaining long-term coordinated strategies for tourism and FDI promotion.

Keywords: Tourism-Led Growth Hypothesis, Foreign Direct Investment, Economic Growth, Panel Data, Cointegration, Cross-Sectional Dependence, Absorptive Capacity

Introduction

Economic growth remains a fundamental objective for policymakers worldwide, as it directly influences employment, living standards, and overall national prosperity (Barro, 1991). In the pursuit of sustainable development, countries have increasingly recognized the strategic importance of international tourism and foreign direct investment (FDI) as key drivers of economic expansion (Balaguer & Cantavella-Jordá, 2002; Borensztein et al., 1998). The interplay between these two forces has become particularly relevant in an era of increasing globalization, where capital flows and tourist movements transcend national boundaries with unprecedented ease. Understanding the simultaneous impact of tourism and FDI on economic growth is essential for formulating coherent development strategies that leverage both sectors effectively. The growing interconnectedness of global economies has amplified the potential synergies between tourism and FDI, making their joint examination both timely and policy-relevant.

Tourism has emerged as one of the fastest-growing and most dynamic sectors in the global economy, contributing approximately 10% to global GDP and supporting one in ten jobs worldwide (World Travel & Tourism Council, 2023). The sector's remarkable capacity to generate foreign exchange earnings, stimulate infrastructure development, and create diverse employment opportunities has positioned it as a vital instrument for economic growth, particularly in

developing economies where alternative sources of foreign currency may be limited (Brida et al., 2016). Using panel data of 42 African countries for 1995 to 2004, Fayissa, Nsiah, and Tadasse (2008) found that receipts from the tourism industry contribute significantly both to the current level of GDP and to economic growth, as do investments in physical and human capital, providing robust evidence of tourism's growth-enhancing effects in developing contexts.

Recent empirical evidence, however, has challenged the universal applicability of the tourism-led growth hypothesis. A study examining 47 major countries from 1995 to 2020 using Unconditional Quantile Regression found mixed evidence, rejecting the null hypothesis that tourism growth has a positive impact on economic growth across all contexts (Journal of Asia-Pacific Studies, 2025). This finding suggests that the tourism-growth relationship may be contingent on various factors including country-specific characteristics and growth patterns. Similarly, Wu et al. (2025) empirically investigated the asymmetric effect of the tourism-led growth hypothesis within the Chinese economy for the period 1995–2019, finding evidence supporting the hypothesis only in specific provinces such as Heilongjiang, Henan, Hubei, and Jiangxi, while other provinces showed no significant causal relationship (Wu et al., 2025). These findings underscore the importance of tailoring policy responses to specific economic conditions and contexts (Wu et al., 2025; Chiriko et al., 2025). Foreign direct investment has long been recognized as a powerful catalyst for economic growth and structural transformation. Borensztein, De Gregorio, and Lee (1998) established that FDI promotes a higher rate of economic growth by facilitating technology transfer, introducing new production procedures in the host market, and enhancing human capital through continuous worker training and skill development. Their research demonstrated that the higher productivity of FDI holds only when the host country possesses a minimum threshold stock of human capital, introducing the concept of absorptive capacity into the FDI-growth literature (Borensztein et al., 1998). FDI integrates domestic economies into global value chains and enables the adoption and implementation of new technologies already in use in leading countries, thereby enhancing total factor productivity (Alfaro et al., 2004).

The absorptive-capacity hypothesis, first articulated by Borensztein et al. (1998), has been substantially refined by recent research. Shah, Saunders, and Kollydas (2026) examined panel data from 46 developed and developing countries spanning 1996–2023, finding that the growth effects of FDI are conditional rather than uniform (Shah et al., 2026). Their threshold analysis revealed that in developing countries, the effect of FDI becomes much stronger once human capital exceeds 9.35 years of education (Shah et al., 2026). Institutional quality and the technology gap also generate threshold effects, although the pattern differs across country groups and is not monotonic (Shah et al., 2026). The study suggests that governments should not blindly rely on FDI to promote economic growth, but should develop technological capabilities, human capital, and institutional quality if foreign investment is to be most effective (Shah et al., 2026).

Despite extensive research examining the individual effects of tourism and FDI on economic growth, empirical evidence remains mixed and inconclusive. The tourism-led growth hypothesis (TLGH), first formally examined by Balaguer and Cantavella-Jordá (2002), has generated a substantial wave of studies attempting to understand the temporal and causal relationship between tourism and economic growth. Brida, Cortes-Jimenez, and Pulina (2016) conducted an exhaustive review of approximately 100 peer-reviewed papers on the TLGH, concluding that with few exceptions, the empirical findings suggest that international tourism drives economic growth (Brida et al., 2016). However, some studies have found negligible or even negative impacts in certain contexts (Oh, 2005), suggesting that the tourism-growth relationship may be contingent on various factors including institutional quality, economic structure, and absorptive capacity. Furthermore, limited attention has been given to the simultaneous assessment of tourism and FDI within a comprehensive panel framework that accounts for cross-sectional dependence and long-run equilibrium relationships. Country-specific evidence from Thailand using data from 1991 to

2021 indicates that international tourism and FDI have long-term positive impacts on economic growth (Mehmood et al., 2024), reinforcing the importance of both factors as development drivers. Against this backdrop, the present study provides new empirical evidence on the effects of tourism and FDI on economic growth using a comprehensive panel dataset of 150 countries over 25 years, employing advanced panel econometric techniques to address key methodological concerns that have plagued prior research. By utilizing Pesaran's CIPS unit root tests, Kao cointegration tests, and Driscoll-Kraay standard errors, this study aims to contribute to a more nuanced understanding of the tourism-FDI-growth nexus. The findings are expected to inform policy formulation for countries seeking to leverage tourism and FDI for sustainable economic growth, with implications for both national development strategies and international cooperation.

Research Question and Objectives

This study seeks to examine the impact of tourism arrivals and foreign direct investment on economic growth. Specifically, the research has two primary objectives: first, to examine the effect of tourism arrivals on economic growth, and second, to examine the effect of foreign direct investment on economic growth.

Significance of the Study

This study contributes to the existing literature in several meaningful ways that advance both academic knowledge and policy discourse. First, it employs a large panel dataset spanning 150 countries over a 25-year period, providing broader generalizability than country-specific or small-sample studies that have dominated the literature. Second, it utilizes advanced panel econometric techniques including Pesaran's CIPS unit root tests, Kao cointegration tests, and Driscoll-Kraay standard errors to address cross-sectional dependence and other methodological issues that prior studies have often overlooked, thereby providing more reliable estimates. Third, the findings provide empirical evidence to inform policy formulation for countries seeking to leverage tourism and FDI for sustainable economic growth, with implications for both national development strategies and international cooperation.

Research Gap and Problem Statement

Despite extensive research on tourism and foreign direct investment (FDI), empirical evidence on their effects on economic growth remains fragmented and inconclusive. Most studies examine these drivers in isolation, neglect critical methodological concerns such as cross-sectional dependence, and lack comprehensive large-scale analysis spanning diverse countries and extended time periods. Consequently, the simultaneous assessment of tourism and FDI within a robust empirical framework that accounts for panel heterogeneity and long-run equilibrium relationships remains underexplored. This study addresses these gaps by providing new empirical evidence on the effects of tourism arrivals and FDI on economic growth using a panel dataset of 150 countries over 25 years, employing advanced econometric techniques to inform evidence-based policy formulation for sustainable economic development.

Literature Review

Theoretical Framework

The theoretical foundation of this study is grounded in the Tourism-Led Growth Hypothesis (TLGH), which provides a robust framework for examining the relationship between tourism arrivals, foreign direct investment, and economic growth. The TLGH is a variant of the broader export-led growth hypothesis, which posits that export expansion serves as an engine of economic growth by generating foreign exchange earnings, stimulating investment, creating employment opportunities, and fostering the development of related industries (Balaguer & Cantavella-Jordá, 2002; Brida et al., 2016). This theoretical framework has gained considerable traction in tourism

economics literature due to its intuitive appeal and empirical support across diverse geographical contexts. The TLGH suggests that tourism, as an export activity, can play a pivotal role in driving economic development, particularly in countries where the sector represents a significant share of gross domestic product and employment. The hypothesis has been extensively tested since its formal introduction, with a substantial body of empirical evidence supporting its validity across different country contexts and time periods (Brida et al., 2016; Chiriko et al., 2025).

The TLGH is further supported by the broader Endogenous Growth Theory, originally developed by Romer (1986) and Lucas (1988), which provides a complementary theoretical foundation for understanding how tourism and FDI influence economic growth. Endogenous growth theory challenges the neoclassical growth model's assumption of exogenous technological progress by emphasizing that growth is driven by internal factors such as human capital accumulation, knowledge spillovers, and innovation. This theoretical framework is particularly relevant for examining the tourism-growth relationship because tourism inherently involves knowledge transfer, human capital development, and technological diffusion. As tourists from advanced economies interact with host communities, they facilitate the transfer of ideas, skills, and technologies that can enhance local productivity and innovation capacity. Similarly, FDI brings advanced technologies, managerial practices, and production processes to host countries, generating positive productivity spillovers that align with the endogenous growth framework's emphasis on knowledge diffusion as a driver of long-run growth (Borensztein et al., 1998; Grossman & Helpman, 1991). This theoretical synergy between the TLGH and endogenous growth theory provides a comprehensive foundation for examining how tourism and FDI jointly contribute to economic development through both direct and indirect channels, reinforcing the importance of human capital and institutional quality in realizing growth benefits.

Balaguer and Cantavella-Jordá (2002) formally introduced the TLGH in the empirical literature, providing evidence from Spain that tourism receipts Granger-cause economic growth. Since then, the hypothesis has been extensively tested across various countries and regions, yielding generally supportive findings that have solidified its status as a foundational framework in tourism economics. Brida, Cortes-Jimenez, and Pulina (2016) conducted an updated review of approximately 100 peer-reviewed empirical articles, concluding that the TLGH continues to find strong support in the academic literature, with most studies confirming a positive relationship between tourism and economic growth (Brida et al., 2016). This sustained scholarly interest reflects the enduring relevance of tourism as a driver of economic development and the continued validity of the TLGH as an analytical framework. Chiriko, Alemu, and Kim (2025) further contributed to this literature by examining the TLGH in 43 African countries, finding that international tourism earnings contributed to economic growth, though the effect was conditional on institutional quality and income levels (Chiriko et al., 2025).

Recent contributions to the theoretical literature have emphasized the conditional nature of both the TLGH and the FDI-growth relationship. Shah, Saunders, and Kollydas (2026) extended the absorptive-capacity framework by demonstrating that threshold effects in human capital, institutional quality, and technology gaps determine the effectiveness of FDI in promoting growth (Shah et al., 2026). Similarly, Wu et al. (2025) highlighted the asymmetric nature of the TLGH, showing that the growth effects of tourism vary significantly across different regions and economic contexts (Wu et al., 2025). These theoretical refinements underscore the importance of considering country-specific characteristics and conditioning factors when examining the tourism-FDI-growth nexus.

Tourism Arrivals and Economic Growth

The empirical relationship between tourism arrivals and economic growth has been extensively examined in the literature, with a substantial body of evidence supporting a positive and significant effect consistent with the TLGH. This finding is robust across diverse geographical contexts, methodological approaches, and time periods, providing compelling evidence for tourism's growth-enhancing role in both developed and developing economies. Using panel data of 42 African countries for 1995 to 2004, Fayissa, Nsiah, and Tadasse (2008) found that receipts from the tourism industry contribute significantly both to the current level of GDP and to economic growth, as do investments in physical and human capital (Fayissa et al., 2008). This study demonstrated that tourism's impact is comparable to that of traditional growth determinants, highlighting its importance as a development tool in resource-constrained contexts. Brida et al. (2016) reviewed approximately 100 peer-reviewed papers on the TLGH and concluded that with few exceptions, the empirical findings suggest that international tourism drives economic growth (Brida et al., 2016). The consistency of these findings across diverse contexts strengthens the case for tourism as a driver of economic growth.

Cross-country evidence further reinforces these findings. In a panel study of 48 developing countries, Seetanah (2011) demonstrated that tourism has a positive and significant impact on growth, with the effect varying depending on the level of tourism development (Seetanah, 2011). This study emphasized the importance of tourism infrastructure and investment in realizing growth benefits, suggesting that countries with more developed tourism sectors tend to experience stronger growth effects. Dogru and Bulut (2018) examined 34 OECD countries and found that tourism significantly contributes to economic growth, consistent with the TLGH (Dogru & Bulut, 2018). Chiriko, Alemu, and Kim (2025) investigated the TLGH in 43 African countries over an 18-year period and found that international tourism earnings contributed to economic growth, though institutional quality moderated this relationship depending on income levels, highlighting the conditional nature of tourism's growth effects (Chiriko et al., 2025). This emerging body of research highlights the importance of considering institutional and environmental factors in tourism development strategies. Country-specific studies have also provided supportive evidence. Balaguer and Cantavella-Jordá (2002) found that tourism receipts have a positive long-run impact on economic growth in Spain (Balaguer & Cantavella-Jordá, 2002). Dritsakis (2004) examined the relationship between tourism and economic growth in Greece, finding that tourism receipts Granger-cause economic growth (Dritsakis, 2004). Research on the tourism-growth relationship has also been conducted in various regional contexts, providing supportive evidence for the TLGH across different geographical settings. Mehmood, Kaewsang-on, and Iram (2024) examined Thailand using data from 1991 to 2021 and found that international tourism has a long-term positive impact on economic growth (Mehmood et al., 2024).

Recent empirical evidence, however, has challenged the universal applicability of the TLGH. A study examining 47 major countries from 1995 to 2020 using Unconditional Quantile Regression found mixed evidence, rejecting the null hypothesis that tourism growth has a positive impact on economic growth across all contexts (Journal of Asia-Pacific Studies, 2025). This finding suggests that the tourism-growth relationship may be contingent on various factors including country-specific characteristics and growth patterns. Wu et al. (2025) empirically investigated the asymmetric effect of the TLGH within the Chinese economy for the period 1995–2019, finding evidence supporting the hypothesis only in specific provinces such as Heilongjiang, Henan, Hubei, and Jiangxi, while other provinces showed no significant causal relationship (Wu et al., 2025).

Despite the generally supportive evidence, the literature also reveals mixed findings that warrant careful consideration. Oh (2005) examined the Korean economy and found no evidence of a causal relationship from tourism to economic growth, suggesting that the TLGH may not hold universally (Oh, 2005). Narayan (2004) found limited support for the TLGH in the South Pacific islands,

indicating that tourism's growth effects may be context-dependent (Narayan, 2004). Tang and Selvanathan (2008) found that the relationship between tourism and growth in Malaysia is more complex than a simple causal relationship, suggesting the influence of other mediating factors such as infrastructure development, human capital, and institutional quality (Tang & Selvanathan, 2008). These contradictory findings highlight the importance of methodological rigor, including the consideration of cross-sectional dependence, cointegration relationships, and country-specific heterogeneity. The evidence suggests that tourism's contribution to growth may be conditional on host country characteristics, including institutional quality, human capital levels, and economic structure, underscoring the need for comprehensive empirical frameworks that account for these conditioning factors.

H1: Tourism arrivals have a significant positive effect on economic growth.

Foreign Direct Investment and Economic Growth

The theoretical and empirical relationship between FDI and economic growth is well-established in the international economics literature, with a substantial body of evidence supporting a positive and significant effect of FDI on economic growth. FDI contributes to growth through multiple channels, including capital formation, technology transfer, human capital development, and integration into global value chains (Borensztein et al., 1998; Dunning, 1988; Alfaro et al., 2004). The multi-channel nature of FDI's impact makes it a particularly potent driver of economic development, capable of influencing growth through both direct and indirect mechanisms that operate at different levels of the economy. Borensztein, De Gregorio, and Lee (1998) established that FDI promotes a higher rate of economic growth by facilitating technology transfer, introducing new procedures in the host market, and enhancing human capital through continuous worker training (Borensztein et al., 1998). Using cross-country data, they demonstrated that FDI contributes to growth more effectively than domestic investment, particularly when host countries possess a minimum threshold of human capital (Borensztein et al., 1998). This finding has been influential in shaping policy recommendations for attracting FDI as a development strategy and has motivated subsequent research on the conditional nature of FDI's growth effects. The technological diffusion channel posits that multinational enterprises bring advanced technologies, managerial practices, and production processes to host countries, generating positive productivity spillovers to domestic firms. FDI facilitates the adoption and implementation of new technologies already in use in leading countries, thereby enhancing the host country's total factor productivity. The absorptive-capacity hypothesis suggests that the benefits of FDI depend on how well a country can use the knowledge and resources that come with it. Shah, Saunders, and Kollydas (2026) investigated the role of absorptive capacity in the FDI-growth relationship, finding that FDI's growth effects are conditional on the host country's ability to absorb and effectively utilize foreign knowledge and technology (Shah et al., 2026). The study emphasized that human capital development and institutional strengthening are critical for maximizing the developmental benefits of FDI (Shah et al., 2026). Their threshold analysis revealed that in developing countries, the effect of FDI becomes much stronger once human capital exceeds 9.35 years of education (Shah et al., 2026). Institutional quality and the technology gap also generate threshold effects, although the pattern differs across country groups and is not monotonic (Shah et al., 2026). The study suggests that governments should not blindly rely on FDI to promote economic growth, but should develop technological capabilities, human capital, and institutional quality if foreign investment is to be most effective (Shah et al., 2026). Mehmood, Kaewsang-on, and Iram (2024) examined Thailand using data from 1991 to 2021 and found that FDI has a long-term positive impact on economic growth (Mehmood et al., 2024).

Empirical evidence from various regions provides additional support for FDI's growth effects. Research examining the causal relationship between FDI and economic growth in Southern

African Development Community (SADC) countries has found that the FDI-led growth hypothesis does not universally apply, with the growth effects of FDI varying across countries and depending on host country characteristics. This finding is consistent with the broader literature emphasizing the conditional nature of FDI's growth effects and the importance of institutional quality, human capital, and financial development in mediating the FDI-growth relationship. However, empirical evidence on the FDI-growth relationship is not universally positive. Some studies have found negative or insignificant effects. These contradictory findings highlight the importance of methodological rigor, including the consideration of cross-sectional dependence, cointegration relationships, and country-specific heterogeneity. The evidence suggests that FDI's contribution to growth may be conditional on host country characteristics, including institutional quality, human capital levels, financial development, and trade openness, underscoring the need for comprehensive empirical frameworks that account for these conditioning factors.

H2: Foreign direct investment has a significant positive effect on economic growth.

Methodology

The methodological framework employed to examine the impact of tourism arrivals and foreign direct investment on economic growth utilizes a comprehensive panel dataset covering 150 countries over a 25-year period, sourced from the World Bank's World Development Indicators (WDI). Advanced panel econometric techniques are employed to address cross-sectional dependence, unit roots, and cointegration, ensuring robust and reliable empirical findings.

Data and Variables

Variables and Proxies

Variable	Proxy	Source
Dependent Variable		
Economic Growth	GDP per capita (constant US\$) - Natural Log	World Bank WDI
Independent Variables		
Tourism Arrivals	International tourist arrivals - Natural Log	World Bank WDI
Foreign Direct Investment	FDI net inflows (% of GDP) - Natural Log	World Bank WDI

The final dataset comprises 3,750 observations (150 countries $\times$ 25 years), forming a balanced panel structure.

Model Specification

To examine the effects of tourism and FDI on economic growth, this study employs the following panel regression model:

$$\ln eg_{(it)} = \beta_0 + \beta_1 \ln ta_{(it)} + \beta_2 \ln fdi_{(it)} + \mu_i + \varepsilon_{(it)}$$

Where $\ln eg$ represents economic growth, $\ln ta$ represents tourism arrivals, $\ln fdi$ represents foreign direct investment, μ_i captures country-specific fixed effects, and $\varepsilon_{(it)}$ is the error term.

Estimation Strategy

The estimation strategy proceeds through several steps to ensure robust and reliable results. Pooled OLS serves as the baseline specification, assuming homogeneity across countries. The Fixed Effects (FE) model controls for time-invariant unobserved heterogeneity by allowing each country to have its own intercept. The Random Effects (RE) model assumes that country-specific effects

are uncorrelated with the explanatory variables. The Hausman test is employed to determine whether FE or RE is more appropriate for the data. Given the presence of cross-sectional dependence a common feature in panel data due to global shocks and economic integration this study employs Driscoll-Kraay standard errors (Driscoll & Kraay, 1998), which are robust to heteroskedasticity, autocorrelation, and cross-sectional dependence, providing more reliable inference.

Diagnostic Tests

To ensure the validity of the empirical results, several diagnostic tests are conducted. Panel unit root tests, specifically Pesaran's CIPS test (Pesaran, 2007), are employed to determine the order of integration of the variables, accounting for cross-sectional dependence. The Kao cointegration test (Kao, 1999) examines whether a long-run equilibrium relationship exists among the variables. The Pesaran CD test (Pesaran, 2004) formally tests for cross-sectional dependence in the residuals. Multicollinearity is assessed using Variance Inflation Factors (VIF), with a threshold of 10 indicating potential concerns.

Estimation Procedure Summary

Step	Procedure	Purpose
1	Descriptive Statistics	Summarize data characteristics
2	Correlation Analysis	Examine relationships between variables
3	CIPS Unit Root Tests	Determine stationarity of variables
4	Kao Cointegration Test	Examine long-run equilibrium relationship
5	Pesaran CD Test	Check for cross-sectional dependence
6	Pooled OLS	Baseline estimation
7	Fixed Effects (FE)	Control for country heterogeneity
8	Random Effects (RE)	Random effects estimation
9	Hausman Test	Select between FE and RE
10	Driscoll-Kraay RE	Final model with robust standard errors

Results

The results are organized into several sections: descriptive statistics, correlation analysis, diagnostic tests (including panel unit root tests, cointegration tests, cross-sectional dependence tests, and multicollinearity tests), model selection tests, and regression results. The final model is estimated using Random Effects with Driscoll-Kraay standard errors to address cross-sectional dependence.

Descriptive Statistics

Table 1 presents the descriptive statistics for all variables included in the analysis. The mean value of economic growth (lneg) is 1.060, with a standard deviation of 0.926, indicating substantial variation in growth performance across countries and over time. The minimum and maximum values are -5.403 and 4.464, respectively, highlighting the wide dispersion in economic growth outcomes. Tourism arrivals (lna) have a mean of -13.898 and a standard deviation of 2.097, reflecting significant differences in tourism development across countries. FDI (lnfdi) shows a mean of 1.009 with a standard deviation of 1.361, indicating considerable variation in FDI inflows across the sample. These descriptive statistics suggest that the sample provides sufficient variation for meaningful econometric analysis.

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
lneg	3750	1.06	.926	-5.403	4.464
lnta	3750	-13.898	2.097	-19.199	-6.802
lnfdi	3750	1.009	1.361	-6.492	7.444

Correlation Analysis

Table 2 presents the correlation matrix for all variables. The correlation between tourism arrivals (lnta) and economic growth (lneg) is 0.059, indicating a weak positive relationship. The correlation between FDI (lnfdi) and economic growth is 0.090, also indicating a weak positive relationship. The correlation between tourism arrivals and FDI is -0.022, suggesting no significant multicollinearity concerns. All correlation coefficients are well below the threshold of 0.80, indicating that multicollinearity is unlikely to be a problem.

Table 2: Matrix of correlations

Variables	lneg	lnta	lnfdi
lneg	1.000		
lnta	0.059	1.000	
lnfdi	0.090	-0.022	1.000

Diagnostic Tests**Panel Unit Root Tests**

Table 3 presents the results of the Pesaran CIPS and CADF panel unit root tests, which account for cross-sectional dependence. The results indicate mixed orders of integration. Economic growth (lneg) is I(1), as the CIPS test statistic at levels (-3.651) is significant at the 5% level (*p* < 0.05), and the CADF test statistic (-3.298) also confirms significance, becoming stationary after first differencing (CIPS = -5.560, CADF = **-5.542**). Tourism arrivals (lnta) is I(1), as the CIPS level statistic (-2.056) is insignificant, while the first difference statistic (-4.148) confirms stationarity at the 1% level. The CADF test similarly shows insignificance at levels (-1.627) and significance after differencing (-3.865). FDI (lnfdi) is I(0), as both the CIPS (-3.302) and CADF (-2.845) level statistics are significant at the 5% level, indicating stationarity at levels without differencing. This mixed order of integration justifies the application of cointegration tests.

Table 3: Panel Unit Root Tests (CIPS and CADF)

Variable	CIPS Level	CIPS First Diff	CADF Level	CADF First Diff	Stationary?
lneg	-3.651**	-5.560***	-3.298**	-5.542***	I(1)
lnta	-2.056	-4.148***	-1.627	-3.865***	I(1)
lnfdi	-3.302**	-5.114***	-2.845**	-4.955***	I(0)

*** p < .01, ** p < .05, * p < .1.*

Cointegration Test

Table 4 presents the results of the Kao cointegration test. The Modified Dickey-Fuller statistic (-18.0825) and the Dickey-Fuller statistic (-23.7729) are both statistically significant at the 1% level

(*p* < 0.01), rejecting the null hypothesis of no cointegration. This confirms that tourism, FDI, and economic growth move together in the long run, indicating the existence of a stable long-run equilibrium relationship among the variables.

Table 4: *Kao Cointegration Test*

	Statistic	Value	p-value
t	Modified Dickey-Fuller	-18.0825***	0.000
	Dickey-Fuller t	-23.7729***	0.000

*** p < .01.*

Cross-Sectional Dependence Test

Table 5 presents the results of the Pesaran CD test for cross-sectional dependence. The test statistics for all variables are statistically significant at the 1% level (*p* < 0.01), rejecting the null hypothesis of cross-sectional independence. This indicates significant cross-sectional dependence across countries, justifying the use of Driscoll-Kraay standard errors, which are robust to cross-sectional dependence.

Table 5: *Pesaran Cross-Sectional Dependence (CD) Test*

Variable	CD-test	p-value
lneg	78.638***	0.000
lna	160.580***	0.000
lnfdi	23.812***	0.000

*** p < .01.*

Multicollinearity Test

Table 6 presents the Variance Inflation Factor (VIF) results. The VIF values are 1.00 for both independent variables, and the mean VIF is 1.00, indicating no multicollinearity concerns. This confirms that the variables are not highly correlated, ensuring the stability of the regression estimates.

Table 6: *Variance Inflation Factor*

Variable	VIF	1/VIF
lnfdi	1.00	1.00
lna	1.00	1.00
Mean VIF	1.00	

Regression Results

Table 7 presents the regression results for all model specifications. The OLS results show that a 1% increase in tourism arrivals is associated with a 0.027% increase in economic growth ($\beta = 0.027$, *p* < 0.01), while a 1% increase in FDI is associated with a 0.062% increase in growth ($\beta = 0.062$, *p* < 0.01). The Fixed Effects model yields similar findings, with tourism arrivals ($\beta = 0.041$, *p* < 0.05) and FDI ($\beta = 0.111$, *p* < 0.01) both positively and significantly affecting economic growth. The Random Effects model also confirms these findings, with tourism arrivals ($\beta = 0.032$, *p* < 0.05) and FDI ($\beta = 0.098$, *p* < 0.01) showing positive and significant effects. The preferred specification is the Random Effects model with Driscoll-Kraay standard errors, which accounts for cross-sectional dependence. In this model, tourism arrivals have a positive and

significant effect on economic growth ($\beta = 0.032$, $*p = 0.044$), as does FDI ($\beta = 0.098$, $*p < 0.001$).

Table 7: Regression Results

Model	lnta	lnfdi	R ²	F/Wald
Pooled OLS	0.027*** (0.007)	0.062*** (0.011)	0.012	F = 22.37***
Fixed Effects	0.041** -0.021	0.111*** (0.015)	0.017 (within)	F = 30.81***
Random Effects	0.032** -0.013	0.098*** (0.013)	0.012 (overall)	$\chi^2 = 57.73$ ***
xtsc RE	0.032 -0.015	0.098 -0.02	0.012 (overall)	$\chi^2 = 38.22$ ***

*** $p < .01$, ** $p < .05$, * $p < .1$.

Model Selection Tests

The Hausman (1978) test was employed to determine whether Fixed Effects (FE) or Random Effects (RE) is more appropriate for the data. As presented in Table 8, the test statistic ($\chi^2 = 6.14$, $p = .046$) is statistically significant at the 5% level, rejecting the null hypothesis that the Random Effects model is appropriate. Therefore, the Fixed Effects model is selected as the preferred specification. However, given the borderline p-value ($p = .046$) and the theoretical importance of the variables, both specifications are reported for completeness. The Breusch-Pagan Lagrange Multiplier (LM) test (not shown) also supported the use of panel models over Pooled OLS.

Table 8: Hausman Test

	b FE	B RE	Difference	Std. Err.
lnta	0.041	0.032	0.009	0.016
lnfdi	0.111	0.098	0.013	0.006

Note: $\chi^2(2) = 6.14$, $p = .046$. ** $p < .05$.

Decision: Based on the Hausman test ($\chi^2 = 6.14$, $p = .046$), the null hypothesis is rejected. The Fixed Effects model is selected at the 5% significance level.

Summary of Hypotheses Testing

Table 9: Hypotheses Testing Summary

Hypothesis	Result	Decision
H1: Tourism arrivals have a significant positive effect on economic growth.	$\beta = 0.032$, $p = 0.044$ **	Supported
H2: Foreign direct investment has a significant positive effect on economic growth.	$\beta = 0.098$, $p < 0.001$ ***	Supported

** $p < .05$, *** $p < .01$.

Conclusion

This study set out to examine the impact of tourism arrivals and foreign direct investment on economic growth using a comprehensive panel dataset of 150 countries spanning a 25-year period. The empirical investigation employed advanced panel econometric techniques, including Pesaran's CIPS panel unit root tests, Kao cointegration tests, and Driscoll-Kraay standard errors, to address key methodological concerns related to cross-sectional dependence, panel heterogeneity, and long-run equilibrium relationships that have often been overlooked in prior research. The findings of this study provide robust empirical evidence that both tourism arrivals and foreign direct investment exert positive and statistically significant effects on economic growth across all model specifications, confirming the validity of the Tourism-Led Growth Hypothesis and the well-established positive role of FDI in economic development. The panel unit root tests revealed mixed orders of integration among the variables, justifying the application of cointegration tests, which confirmed the existence of a stable long-run equilibrium relationship among tourism, FDI, and economic growth. This finding indicates that these variables move together over time and suggests that policies promoting tourism and FDI should be sustained over the long term rather than implemented as short-term measures. The Pesaran CD test indicated significant cross-sectional dependence across countries, justifying the use of Driscoll-Kraay standard errors to obtain reliable inference and addressing a critical methodological concern that has been overlooked in many prior studies. The regression results consistently demonstrated that both tourism arrivals and FDI positively and significantly affect economic growth across all model specifications, including Pooled OLS, Fixed Effects, Random Effects, and the preferred Random Effects model with Driscoll-Kraay standard errors. In the preferred specification, tourism arrivals were found to have a positive and significant effect on economic growth with a coefficient of 0.032 and a p-value of 0.044, while FDI demonstrated a larger positive and highly significant effect with a coefficient of 0.098 and a p-value below 0.001. The relatively modest coefficient for tourism suggests that while tourism contributes positively to growth, its impact is not transformative on its own, implying that tourism development should be part of a broader, integrated development strategy rather than pursued as a standalone solution for economic growth. The larger coefficient for FDI underscores the critical importance of attracting and retaining foreign investment as a key driver of economic development. The relatively low R^2 values across all specifications suggest that other factors not included in the model also contribute to economic growth, which is consistent with the inherent complexity of growth determinants and the multitude of factors that influence economic development trajectories. Based on these empirical findings, both hypotheses formulated in this study are supported, confirming that tourism arrivals have a significant positive effect on economic growth and that foreign direct investment has a significant positive effect on economic growth.

Policy Recommendations

The empirical findings of this study carry several important policy implications for countries seeking to leverage tourism and foreign direct investment as engines of sustainable economic growth. Governments should continue to prioritize international tourism as a strategic sector for economic development by investing in tourism infrastructure, improving visa facilitation and border procedures, and implementing effective tourism marketing strategies to attract international visitors. However, given the relatively modest effect size of tourism compared to FDI, tourism promotion should be embedded within a broader development strategy that includes investment in other productive sectors and human capital development rather than being pursued as an isolated policy initiative. The conditional nature of tourism's growth effects, as highlighted by Chiriko, Alemu, and Kim (2025), suggests that institutional quality, human capital, and economic structure play important roles in determining the magnitude of tourism's contribution to growth (Chiriko et

al., 2025), and policymakers should therefore invest in these enabling factors to maximize the developmental benefits of tourism. Policymakers should prioritize creating a favorable environment for foreign direct investment by improving institutional quality, enhancing human capital through education and training programs, maintaining macroeconomic stability, and ensuring the rule of law and property rights protection. The larger coefficient for FDI underscores the critical importance of attracting and retaining foreign investment as a key driver of economic development. Countries should actively work to remove barriers to FDI, streamline regulatory procedures, and create incentives for foreign investors while simultaneously ensuring that the benefits of FDI are widely shared across the economy and contribute to broader development objectives. The absorptive-capacity hypothesis, as emphasized by Shah, Saunders, and Kollydas (2026), suggests that the benefits of FDI depend on how well a country can utilize the knowledge and resources that accompany foreign investment (Shah et al., 2026), underscoring the importance of investing in human capital development and institutional strengthening to maximize the developmental benefits of FDI. Their threshold analysis revealed that the effect of FDI becomes much stronger once human capital exceeds 9.35 years of education (Shah et al., 2026), providing a specific policy target for developing countries seeking to maximize FDI benefits.

The cointegration results indicate a stable long-run equilibrium relationship among tourism, FDI, and economic growth, suggesting that policies promoting tourism and FDI should be coordinated and sustained over time rather than implemented as short-term or piecemeal measures. Governments should adopt comprehensive development strategies that simultaneously promote tourism and FDI while addressing structural constraints that limit their growth effects. This integrated approach recognizes the complementary nature of tourism and FDI as drivers of growth and ensures that policies in these areas reinforce rather than undermine each other. Short-term or piecemeal policies may not yield the full benefits of these growth drivers, and policymakers should therefore adopt a long-term perspective when formulating policies related to tourism and FDI promotion. Countries should invest in absorptive capacity to maximize the developmental benefits of both tourism and FDI, including investing in human capital development, improving institutional quality, and strengthening backward linkages between tourism and other sectors of the economy. The conditional nature of tourism's and FDI's growth effects suggests that passive development is insufficient for structural change and that active policy interventions are necessary to ensure that the benefits of tourism and FDI are fully realized and widely distributed across the economy and society. Policymakers should adopt sustainable tourism practices that balance growth objectives with environmental sustainability and social inclusivity, including promoting eco-tourism, protecting natural and cultural heritage, and ensuring that tourism benefits are distributed equitably across communities. Sustainable tourism development is essential for long-term economic growth and social well-being, and countries should ensure that tourism growth does not come at the expense of environmental degradation or social inequality.

Limitations of the Study

While this study makes significant contributions to the existing literature, several limitations must be acknowledged. The model is relatively parsimonious, focusing on tourism and FDI as the main explanatory variables, and while this approach provides clear and interpretable results, it does not capture the full complexity of growth determinants. Other important factors such as institutional quality, human capital, financial development, and governance may mediate or moderate the tourism-growth and FDI-growth relationships, and their exclusion from the model may result in omitted variable bias or overestimation of the effects of tourism and FDI on growth. The study employs a linear specification, which may not capture potential non-linear effects of tourism and FDI on growth. There may be threshold effects or diminishing returns to tourism and FDI that are not captured in the current model, and the relationship between tourism, FDI, and growth may also

vary across different stages of development or country contexts. The use of aggregate measures of tourism arrivals and FDI may mask heterogeneity across countries and over time, and different types of tourism, such as domestic versus international, and different types of FDI, such as greenfield versus mergers and acquisitions, may have different effects on growth that are not captured in the current analysis. The study does not examine the potential mediating or moderating role of other variables in the tourism-growth and FDI-growth relationships, and understanding these mechanisms would provide a more nuanced understanding of the channels through which tourism and FDI affect growth. Finally, the study covers a 25-year period ending in recent years, which may not capture more recent structural changes in the global economy, including the impacts of the COVID-19 pandemic on tourism and FDI flows, and future research should incorporate more recent data to examine post-pandemic recovery and structural transformation.

Directions for Future Research

Based on the limitations of this study, several promising directions for future research emerge. Future studies could extend the model by including additional control variables such as institutional quality, human capital, financial development, and governance indicators, which would provide a more comprehensive understanding of the determinants of economic growth and the conditional nature of tourism's and FDI's growth effects. This would help identify the specific channels through which tourism and FDI affect growth and the conditions under which these effects are strongest, thereby informing more targeted and effective policy interventions. Future research could explore non-linear relationships and threshold effects using advanced econometric techniques such as panel threshold regression or quantile regression, which would help identify the conditions under which tourism and FDI contribute most effectively to economic growth and whether there are diminishing returns to these factors. This would provide valuable insights for policy formulation by identifying optimal levels of tourism and FDI for growth and the circumstances under which these factors are most beneficial.

Future studies could investigate the effects of different types of tourism and FDI on growth by disaggregating tourism into domestic and international arrivals and FDI into greenfield and mergers and acquisitions, which would provide more nuanced insights into the differential effects of these factors on economic development and inform more targeted policy interventions. Future research could also explore the mediating and moderating mechanisms through which tourism and FDI affect growth, including the role of infrastructure development, human capital enhancement, technology transfer, and institutional quality in mediating the tourism-growth and FDI-growth relationships. Understanding these mechanisms would provide a more comprehensive understanding of the channels through which tourism and FDI affect growth and inform more effective policy design. Future studies could employ alternative econometric techniques such as dynamic panel GMM, system GMM, or panel VAR to address potential endogeneity concerns and examine the dynamic relationships among tourism, FDI, and growth. These methods would provide insights into the causal direction and temporal dynamics of the relationships and help establish whether tourism and FDI Granger-cause growth or whether the relationship is bidirectional. Future research could also examine the tourism-FDI-growth nexus in specific regional contexts or country groups to identify region-specific patterns and policy implications, and comparative studies across different income levels, regions, or institutional settings would provide valuable insights for context-specific policy formulation. Finally, future studies should incorporate post-pandemic data to examine the recovery and structural transformation of tourism and FDI flows in the aftermath of COVID-19, which would provide timely insights for policy formulation in the post-pandemic era and help identify whether the relationships between tourism, FDI, and growth have changed in the post-pandemic period and what policy responses are needed to support recovery and sustainable growth.

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