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| RESEARCH ARTICLE

Tourism Growth and Financial Sector Development Nexus: Evidence from Selected African Economies

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| ABSTRACT
This article tests the tourism growth and financial sector development nexus. Data came from the World Bank and IMF for the years 1995-2020 from 43 selected African economies. We applied System GMM and dynamic CCEMG to estimate short–run effects and JKS Granger non-causality test for causality, FMOLS and FGLS to estimate long–run effects and sets of co-integration tests for co-movements. The findings support mutual reinforcing effects for both inbound tourism growth and financial sector development. Outbound tourism should be monitored and controlled for its negative effects; inbound tourism should be facilitated and promoted for its positive effects. Political stability and trade openness policies should be a priority for both sectors, while foreign direct investments should be monitored and controlled for their ambiguous impacts. In this work, we are able to show that increases in international tourism activities and developments in the financial sector mutually impact each other.

| KEYWORDS
Tourism growth, financial sector development, developing countries, Africa.

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1. Introduction

1.1. Tourism Growth and financial development in Africa

The tourism industry is the largest industry in the world and has been the third in export after fuels and chemicals (Ohlan, 2017; Rasool et al., 2021). In Africa, it contributes approximately 9% to real GDP and covers about 7% of all jobs (Henseler et al., 2022). This profile has positioned Africa second in tourism growth in the world after Asia Pacific. Given the contribution of tourism to the economic growth of different nations, tourism growth and financial sector development linkages are under-researched in Africa, and the literature mainly focuses on specific countries (Ohlan, 2017; Tsaurai, 2018; Katircioglu et al., 2017). Most studies on tourism growth have found a positive relationship with economic growth, but less consideration has been exerted towards a link to financial development, particularly in Africa. (Rasool, et al., 2021). The findings from this study will contribute to our understanding of the connection between the two variables and help in shaping the respective policies.

Since independence, financial sector development in Africa has shifted from poorer conditions towards momentous developments. Gelbard and Leite (1999) show that these advances started mainly around 1987-1997 in sub-Sahara Africa (SSA). Progress skipped from 2 to 27 economies with comparatively developed financial systems in that same decade. Economies that entirely had nascent financial systems declined from 8 to 2 in the same period. By the year 1997, economies maintaining the most improved financial systems included Mauritius, South Africa, Kenya, Namibia, Zambia, and Ghana. Repressed economies by this year had made leading steps in liberalizing their financial systems. By 1997, improvement in institutional settings amplified from 8 to 23 economies and the financial openness augmented from 2 to 30 economies. Worldbank (2019) demonstrated that between 2015-2017, based on

42 SSA economies, financial institutions' depth as measured through private credit by deposit money bank to GDP% was lower (21.6%) compared to the world (52.2%), developed economies (84.4%), and developing economies (36.8%). In terms of financial institutions access (accounts at formal financial institutions for those age 15 and above were; SSA (30.1%), the world (58.0%), developed economies (89.0%), and developing economies (42.5%). In terms of financial institution efficiency (bank lending-deposit spread %) was for SSA (9.3%), the world (7.3%), developed economies (4.4%), and developing economies (8.4%). On all counts, SSA is still lagging behind compared to the rest of the world; nevertheless, there has been noteworthy evolution since initial reforms.

The development of the financial sector in Africa has been cumulative. The tendency appears to be unrelenting; some factors are ascribed to this progress, some are the role of reforms, liberalization, institutions, and related macroeconomic improvements as evidenced by various scholars (e.g., Agyapong and Bedjabeng, 2020; Asratie, 2021; Beck and Maimbo, 2012; Fiador et al., 2021). These views are consistent with the financial development index for middle and lower-income economies, which was 0.1578 (0.11) and 0.0899 (0.04) averages (standard deviation), respectively, for a scale of 0-1, for the years 1980-2017. At the same time, the financial structure was 0.21 (0.28) and 0.07(0.12), respectively (Ouedraogo and Sawadogo, 2020). More financial development and corresponding variability are witnessed in the middle compared to lower-income economies.

Regional-wise statistics specify that by 2020 the level of financial depth was promising in East African economies (42.8%) compared to Southern African Development and Economic Community (40.5%), while the Economics Communities of West African States (35%) and East Central African states (30.7%). More development in the financial sector is evidenced in the East and Southern parts of Africa compared to the central and western parts of Africa. (Yusheng et al., 2020). They also demonstrate that in terms of financial intermediation, Southern African economies lead (14.7%), trailed by Central African States (11.5%), Western African States (10.1%), and East African economies (8.9%). These dissimilarities among regions spread to other financial market features, such as credit supply to the private sector. These are Southern African States (32.5%), East African States (31.0%), East and Central African States (24.4%), and Western States (7.03%). Credit to the private sector is more constrained in the West compared to Eastern, Southern, and Central Africa. While the West seems to crowd –out, the rest seem to crowd –in credit to the private sectors.

In developing economies, the chief divisions in financial sector development are featured as follows: first, the stock markets are small and have reduced liquidity, deficient market infrastructures, and extremely concentrated (Otchere et al., 2017). Second, financial institutions were captured by governments after independence. Frequently, banks in Africa are considered less efficient and lucrative while operating in relatively less competitive markets. This is a functional performance based on market limitations, viz. – small size, the supremacy of the informal sector, instability, and maladministration, which lead to elevated cost structures (Verhoef, 2017). These are correctly considered to be challenges that are confronting the African financial system; -These banks, as a result, failed to bring the expected development (Verhoef, 2017). As a result, unavoidable progress toward financial sector reforms ensued. This current study seeks to investigate in which ways this evolution in the financial sector development can be related to other exogenous factors, especially the noted growth in the tourism sector in Africa.

The rest of the article is organized as follows: literature review, where both theoretical and empirical reviews are done; methods and estimation strategies section, where a combination of methods are presented for various estimates and tests; findings and discussion; and policy and recommendations.

2. Literature Review

2.1. Tourism Growth and financial development theoretical review

This article deploys the tourism-led growth hypothesis (TLGH) developed by Balaguer and Cantavella-Jorda (2002), which argues that the development of international tourism activities influences the growth of the economy; therefore, the positive and codependent impacts of tourism development on the economy have nurtured the advent of the tourism-led growth (TLG) hypothesis (Rasool et al., 2021). The main assumption grounding the hypothesis is that tourism is a key contributing factor to long-term economic growth and can be caused not only by growing the quantity of labor and capital in the economy but also by increasing exports (Lee, 2021). Export expansion through tourism triggers economic growth by increasing investment levels; it promotes specialization by raising the factors of productivity, which increases the level of competition (Lee, 2021). Tourism growth of any nation is coordinated by well-established economic policies, government structures, and investment mutually in physical capital and human capital (Rasool et al., 2021). Therefore, it is vital for nations to recognize the empirical legitimacy of the TLG hypothesis in an economy to improve resource distribution in tourism development and thereby couple the resulting manifold gains, which could be witnessed in financial development as well (Shahzad et al., 2017). With this notion, the scrutiny of the strength of the TLG hypothesis in Africa is inevitably examined to better understand the tourism-finance nexus.

Financial sector development has recently attracted widespread interest from around the world (e.g. Kapaya, 2021; Abubakar and Kassim, 2018; Agyapong and Bedjabeng, 2020; Arif and Rawat, 2019; Aghughu et al., 2022). This development is mainly explained by Financial Liberalization Theory (FLT) and Institutions Theory in Finance (ITF). The FLT proposes that financial development and

economic growth are closely linked. More liberalization of the financial system and economic growth serves both in return. The main channel for FLT is the interest rate that high-interest rate increases the flow of savings, and more savings create credits to the private sector and investment for growth. However, FLT does not work well in imperfect markets since it is crafted to ignore the ideals of imperfect markets. (Warue, et al., 2018). Around the world, economies are applying various approaches to address inefficiencies and development in their financial systems. One approach is the strengthening of financial institutions. This means reforms empowering financial institutions, limiting state control in financial markets, and permitting market economy principles to prevail. (Suhaibu, et al., 2022). The ITF came into place to address related market imperfections not addressed by FLT. In acknowledgement of these flaws, it underscores informal and formal institutions. According to ITF, the financial system has five institutions, namely norms, incentives, capacities, regulations, and organization. Strong financial institutions are expected to address breaks in the financial system, such as instability, maladministration, inefficiency, and crises. Maximum effectiveness is expected to happen when all institutions are integrated through financial system supervision. (Warue, et al., 2018).

With the adoption of the McKinnon-Shaw 1973 propositions on liberalization, the aim was to shift the role of interest rate determination, allocation of credits, and financial intermediation towards market forces. These changes evidently resulted in significant policy reforms and market-promoting incentives, which attracted internationalization and market openness. This combination enhanced institutional and governing instruments to encourage growth in the financial sector. Liberalization encourages savers to make their funds available for credit to private agents, promotes financial deepening, improves risk sharing between foreign and local investors, and reduces the cost of borrowing. These effects are channeled through both direct and indirect routes and cross-border cash flows (direct), which create capital availability in poor countries and improve financial markets' liquidity. International financial integration (indirect) promotes international capital allocation (Suhaibu et al., 2022) and attracts trade and international tourism activities.

The application of the FLT in financial development had some success and failure stories. For instance, Suhaibu et al. (2022) document success stories in SSA, South Korea, Malaysia, Indonesia, Sri Lanka, and Thailand and failure stories in Kenya, Gambia, Ghana, Madagascar, Malawi, and Zambia. Later post, liberalization documents success evidence for Kenya, South Africa, and Tanzania. The evidence is still highly mixed. Although liberalization is welcome by many of the emerging market economies as an eventful step towards financial sector development due to its promises for greater access to external financial markets and profitable risk-sharing possibilities, there is still support needed from other theories and propositions. (Mukherjee et al., 2022). Institutions play an eminent part in the execution of financial markets' intermediations roles, among others. Palatable outcomes in the financial system are determined by the financial regulation quality and the rule of law as well. Financial institutions help to maintain safe rates of return and mediate the agency's problem through monitoring. A low corruption rate, as mitigated by institutions, promotes trading volume and capitalization. (Ali et al., 2022).

2.2. Tourism Growth and financial development empirical review

A few selected studies exploring the connection between tourism growth and financial sector development are concisely considered. Ohlan (2017) in India found a co-integrated relationship. Cannonier and Burke (2017) state that Caribbean countries have a positive and significant impact. In line with their findings, they revealed that when tourism expenditure rises per capita by $2000, penetration in the financial system increases by about 10–15%, while efficiency rises by about 34% (ibid). Shahbaz et al. (2019) in Malaysia found a positive relationship. Katircioglu et al. (2017) in Turkey support a positive impact on the long-term relationship. They also found a shift in tourism volume has a positive relation to a shifting financial volume. Musakwa and Odhiambo (2022) in South Africa specified a distinctive unidirectional causality from tourism to financial development in the short run and the long run. Ehigiamusoe (2021) found a positive impact.

For any tourism growth in a country, there must be a strong functioning financial sector to support the potential economic impacts of the tourism industry (Sterren, 2008). In most developing countries (ibid.), there is no strong connection between financial sector development and tourism growth; financial sectors, including commercial banks, do not provide financial assistance in the process of growing the tourism industry's local enterprises. But, evidence in other contexts, for instance, in Jordan, Tunisia, Morocco, and Sudan, a positive impact was found (Yusheng et al., 2020). Usman et al. (2021), from 52 findings, revealed a significant impact of financial development on environmental quality in advanced nations and an insignificant impact in emerging countries. This was associated with the harmful practices of tourism sectors in developed countries which receive a large number of tourists compared to developing countries. In contrast to their study, Khan et al. (2019) found positive causality of financial development to greenhouse gas emissions with tourism in America. Similarly, Işik et al. (2017) found that financial development and tourism expenditures are co-integrated in the long run. In major tourist destinations, Irani et al. (2021) established that the financial environment is significantly related to stock price movement in the tourism industry. Equally, Khanna and Sharma (2021) assessed the relationship between financial sectors using bank and stock market development variables on the growth of three tourism demand indicators, namely the number of arrivals, expenditure to gross domestic product ratio, and expenditure per arrival from annual data generated from countries around the world. The findings revealed a positive and significant impact of financial development on tourism growth through arrivals and expenditure.

2.3. Synthesis and hypotheses

Ample research has been done on the finance-growth and tourism-growth nexuses, and the attempt to explain the tourism-finance nexus has been approached mainly through indirect links (Katircioglu et al., 2017). Some marginal evidence supports that tourism growth and financial sector growth granger cause and predicts each other (Ehigiamusoe, 2021). Results are mixed on the directions, causalities, and effects response mechanisms (Liao et al., 2018). Evidence indicates that both industries are complementary and closely coordinate with each other (Ehigiamusoe, 2021). However, the tourism-finance nexus has not been widely and deeply explored theoretically and empirically.

i) Tourism-finance direction

We argue that; the global demand for tourism stimulates individual countries and private agents at both local and international levels to supply tourism services. This is evidenced by increased investments in tourism activities, which in turn creates demand for credit in the private sector to finance such activities. As tourism volume increases and demand for competitive tourism packages increases, the demand for private credits to finance such investments increases. This way, the growth in the tourism sector positively influences banks' credit to the private sector, thereby promoting financial sector growth.

H1: increases in international tourism activities raise the demand for credit from the financial sector

ii) Finance-tourism direction

It is evidenced that a financial crisis is reflected in the tourism sector. (Yenişehirlioğlu and Bayat, 2019) States that economies that have more developed financial systems have better chances of realizing growth via tourism development (Chingarande and Saayman, 2018). Borrowing ideas from Katircioglu et al. (2017), we proceed to argue that development in stability and efficiency in the financial sector, in terms of reduced transaction costs and increased convenience and safety through international banking, facilitates increased tourism activities and volume, at the same time facilitates private investments in tourism services and infrastructures.

H2: development in stability and efficiency in the financial sector increases international tourism activities

2.4. Trade Openness, Foreign Direct Investments and Political Stability

Further, we show that trade openness and political stability play roles in both relationships. Progress in trade liberalization facilitates FDIs and foreign trade. Economy liberalization encourages credits to private agents in the tourism sector and allows market principles to foster the growth of financial markets and banks, thereby increasing credits to private agents. FDIs mediate the connection between tourism and tourism growth (Gao et al., 2022). We, therefore, add trade openness and political stability in our models to account for these effects. Trade openness is capturing the degree of integration of a domestic economy in the international markets (Katircioglu et al., 2017), enhancing tourism access (Chingarande and Saayman, 2018) and enhancing financial sector efficiency (Mukherjee et al., 2021). Similarly, FDIs influence both the tourism and financial sectors. (Katircioglu, et al., 2017). Notably, Shahbaz et al. (2017) confirm feedback effects on granger causation of the following sets in Malaysia; tourism (arrivals and receipts), financial sector growth, and trade openness; and unidirectional causality from trade openness to tourist arrivals and trade openness causing tourist arrival in the short –run.

Sustained political stability attracts tourists and encourages foreign trade and FDI in tourism, and ensures security to private agents and investors in financial institutions. Safety and security in a nation entail the protection of life, health, and physical and political stability; this collection creates a perception of physical and human risk which may affect tourism decisions on destinations or alteration of travel decisions which may be in terms of cancellation of bookings, or moving to safer places (Chingarande and Saayman, 2018) or postponing travels and even influencing other tourists to do the same. Uncertainty, disruption, and risk alter tourism trends (Gao et al., 2022); they note that Arab uprisings negatively impacted both in and outbound tourism development in the Middle East and North Africa. Plenty of evidence documents both short–run and long–run impact, modulation, causality and the positive role of political stability on tourism growth (e.g. Bozkurt et al., 2022; Bayar and Yener, 2019; Khan et al., 2022; Aydin, 2022; Asongu et al., 2022) and on financial sector growth (Yakubu et al., 2021; Mukherjee et al., 2021; Blanco and Dutta, 2020; Çalişkan, 2019; Enowbi-Batuo and Kupukile, 2010).

Much of this literature examined countries' specific case studies. Based on the studies reviewed, it is unsuitable to generalize effects from one economy to the others; the results have been sparse and mixed. This article aims to fill this lacuna by establishing the causal relationship between tourism growth and financial sector development in Africa with a more comprehensive list of countries and both using a combination of methods to attest to both short and long-run causalities and impacts.

3. Methods and Estimation Strategies

3.1 Data and Variables

This article employed data from World Bank Development Indicators (WBDI) and IMF financial development indicators, which span from 1995 to 2020. A total of 25 years by 43 selected African economies balanced panel (Appendix 1) country inclusion depended on the availability of data. We measure tourism growth (TG) by two indicators, namely, international tourism expenditure as a percentage of total imports (TEI) and international tourism receipts as a percentage of total exports (TRE). We measure financial sector development (FS) using two indicators, namely the financial development index (FS1), which captures its comprehensive size and personality and uses claims on the private sector (annual growth as a percentage of broad money) (FS2), this is the growth of gross credit from the financial system to individuals, enterprises, nonfinancial public entities, and financial institutions, which captures the growth of the depth of the financial sector.

Financial sector growth is usually captured by credit-bank-based measures, but the current study applies comprehensive measures to embrace all financial institutions and financial markets. It has been noted previously that financial institutions are the main section representing the financial development disposition in African countries (Worldbank, 2019). As such, the development of the banking sector is commonly similar to the financial development of a country (Kapaya, 2021). Therefore, FS2 is specifically aiming at capturing the growth of financial institutions based on financial development. We also include the following variables as well foreign direct investment, net inflows as a percentage of GDP (FI), trade openness measured by the total trade (imports and exports) as a percentage of GDP (TO), and political stability and absence of violence or terrorism estimate (PS) which measures perceptions of the possibility of political volatility and/or politically-motivated violence and terrorism. The assessment provides the country's score as an aggregate indicator in standard normal distribution units, i.e., ranging from approximately -2.5 to 2.5. The variables were log-transformed for scaling and normalization purposes.

3.2 Empirical models estimation strategies

Two general models are represented to capture both relationships where for i, t country, time panel; while β_1, β_2, β and β_4 are the coefficients in Equation 1, and γ_1, γ_2, γ_3 and γ_4 are coefficients in equation 2.

We estimate two general models as follows to capture both relationships

$$FS_{i,t} = f\left(TG_{i,t}^{\beta_1}, TO_{i,t}^{\beta_2}, FI_{i,t}^{\beta_3}, PS_{i,t}^{\beta_4}\right) - \{1\}$$

$$TG_{i,t} = f\left(FS_{i,t}^{\gamma_1}, TO_{i,t}^{\gamma_2}, FI_{i,t}^{\gamma_3}, PS_{i,t}^{\gamma_4}\right) - \{2\}$$

3.3 Unit root and Cross-sectional dependence tests

In testing unit roots, we applied the (Pesaran, 2007) Cross-sectionally Augmented Im-Peseran-Shin [CIPS] second generation test, an adaptation of the Cross-sectionally Augmented Dickey-Fuller (CADF) statistic, that is suitable in our case where there is the manifestation of cross-sectional dependence and serial correlation among panels. This test follows the following data generation process (DGP).

$$\Delta y_{i.t} = \alpha lpha_i + [\delta_i \tau] + \rho_i y_{i,t-1} + \sum_{j=1}^{p} \gamma_{ij} \Delta\, y_{i,t-j} + residual - - - - - - - - - - - - - \{3\}$$

Where $y_{i,t}$ is the variable tested for unit roots for country and time panel, τ is the optional time trend. And the CIPS is given by;

$$CIPS(N,T) = t_{bar} = N^{-1} \sum_{i=1}^{N} t_i(N,T) = N^{-1} \sum_{i=1}^{N} CADF_i - - - - - - - - - - - - - - - - - \{4\}$$

where the $t_i(N,T)$ is the CADF statistic for each cross-sectional unit given by the coefficient of $y_{i,t-1}$ t-ratio in the CADF regression above. Along with it, the Maddala and Wu (1999) test for robustness check is applied.

Since countries are interposed at both local and global levels, cross-sectional dependence (CD) is inevitable. We investigate CD empirically and control it to avoid spurious and biased estimation results. Avoiding the limitations of prior tests on CD, we employ the one promoted by Pesaran (2004). Which is given by:

$$CD_p = \sqrt{\frac{2}{N(N-1)}} \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} T_{ij} \hat{\rho}_{ij} \rightarrow N(0,1) - \{5\}$$

The test is asymptotic and standardized, normally distributed for $T_{ij} \to \infty$ and $N \to \infty$ in a variety of sequences. The CD tests are applied to capture significant calculations.

3.4 Short-run estimates and Granger Causality

For short–run elasticities, we employ the System General Methods of Moments (Sys-GMM), which is considered to be consistent and performs well for a design of large N and small T as well as both large N and T (Hayakawa, 2015). The panel basic GMM estimator representation is shown below for simplicity.

$$GMM \to g(\beta) = \sum_{i=1}^{M} g_i(\beta) = \sum_{i=1}^{M} Z'_i \varepsilon_i(\beta), ----------\{6\}$$

where Z'_i is a $T_i \times p$ instrument cross-section matrix i and $\varepsilon_i(\beta) = \left(Y_i - f\left(x_{i,t}, \beta\right)\right)$.

In a complementary routine, we also apply the Granger-Causality test developed by (Juodis, et al., 2021), JKS Granger non-causality test. The method is valid under both homogeneous and heterogeneous coefficients. And offers superior power and size performance to existing tests (Xiao, et al., 2022). It applies the well-known Half–Panel Jackknife [HPJ] method. For a general representation, we portray a compact representation of the process as follows:

$$y_{i,t} = \phi_{0,i} + \sum_{p=1}^{P} \phi_{p,i} y_{i,t-p} + \sum_{p=1}^{P} \beta_{p,i} x_{i,t-p} + \varepsilon_{i,t}, ----------\{7\}$$

For $i = 1, \dots, N \;\&\; t = 1, \dots, T$. $\phi_{0,i}$ are individual specific effects, $x_{i,t}$ is considered to be a scalar, $\varepsilon_{i,t}$ are errors, $\phi_{p,i}$ are the heterogeneous autoregressive coefficients, and $\beta_{p,i}$ are the heterogeneous feedback coefficients or Granger causality parameters to be estimated for all variables. The average Wald statistic is deployed as follows to test for the non-causality null hypothesis.

$$Average\ Wald\ statistic \to \overline{W}_{N,T} = \frac{1}{N} \sum_{i=1}^{N} W_{i,T}\,. ----------\{8\}$$

$W_{i,T}$ demonstrates the individual Wald statistics for the i-th country, which is allied to the individual test H_0: $\beta_{p,i} = 0$ for all $i\ and\ p$ (Selected covariates do not Granger-cause the dependent variable) and the H_1: $\beta_{p,i} \neq 0$ for some $i\ and\ p$ (H_0 is violated). (Aslan, 2014).

3.5 Co-integration tests and Long-run estimates

We deploy a group of panel co-integration tests (PCT) based on Pedroni's (2004) tests; also Kao and Westerlund's tests for robustness sake, which include the within and between dimensions tests. After the evidence for a co-integration relationship, we follow the estimation of long–run parameters using appropriate econometric procedures adopted in the presence of a co-integration relationship; these are Pedroni (2000)'s Fully Modified Ordinary Least Squares (FMOLS) (Ullah, et al., 2020), which addresses problems of endogeneity and serial correlation, and impose the same level of stationarity in variables and also applies the Feasible Generalized Least Squares (FGLS) with the capability to handle heteroscedasticity, cross-sectional dependence across panels and serial correlation along time (Reed and Ye, 2011). These problems were evident in our panels. These DGPs tests and estimates are as indicated below:

$$PCT \to y_{i,t} = \alpha_i + [\delta_i \tau] + \beta_{1i} x_{1i,t} + \beta_{2i} x_{2i,t} + \cdots + \beta_{Mi} x_{Mi,t} + e_{i,t} ----------\{9\}$$

Where M is the number of regressors $y_{i,t}$ & $y_{i,t}$ are variables integrated of order one for each country and year. $[\delta_i \tau]$ are time trend and its slope, and β_{1i} is its co-integration slope coefficient.

$$FMOLS \to \hat{\beta}^*_{NT} - \beta = \left(\sum_{i=1}^{N} \hat{L}_{22i}^{-2} \sum_{i=1}^{T} (x_{i,t} - \bar{x}_{i,t})^2 \right) \sum_{i=1}^{N} L_{11i}^{-1} L_{22i}^{-2} \left(\sum_{i=1}^{T} (x_{i,t} - \bar{x}_i) \mu^*_{i,t} - T\hat{\gamma}_i \right), --\{10\}$$

Where, $\mu^*_{i,t} = \mu_{i,t} - \frac{\hat{L}_{21i}}{\hat{L}_{22i}} \Delta_{i,t}$, $y_i = \hat{\Gamma}_{21i} \widehat{\Omega}^0_{21i} - \frac{\hat{L}_{21i}}{\hat{L}_{22i}} \left(\hat{\Gamma}_{21i} + \widehat{\Omega}^0_{21i} \right)$, and $\hat{L}_i$ is the lower triangulation of $\widehat{\Omega}_i$.

$$FGLS \to \hat{\beta} = (X' \widehat{\Omega}^{-1} X)^{-1} X' \widehat{\Omega}^{-1} y\ ;\ Var(\hat{\beta}) = \left(X' \widehat{\Omega}^{-1} X \right)^{-1} ----------\{11\}$$

where $\hat{\beta}$ & $Var(\hat{\beta})$ are its beta estimates and respective variances, and $\widehat{\Omega}$ includes inherent conventions about cross-sectional dependence, and serial correlation, error heteroscedasticity.

3.6 Error-correction speed of adjustments

The Common Correlated Effects Mean Group (CCEMG) estimator is deployed for the variables of interest speeds of adjustment towards equilibrium due to its capability to handle cross-sectional dependence in panels (Huang, 2011-b). It applies OLS to estimate a secondary regression for an individual country to which the weighted cross-sectional means of the dependent variable

and the repressors are included; the coefficients and standard errors then follow the normal computation. (Huang, 2011-a). The CCEMG estimator is a generalization of the mean group (MG) estimator of (Pesaran & Smith, 1995). The CCEMG estimator (Pesaran, 2006) is considered to be robust and can be adapted to dynamic CCEMG applications, which accounts for time series bias not accounted for by CCEMG (Chudik and Pesaran, 2013). In the estimation strategy through the CCEMG, the following is a compact formulation of the dynamic CCEMG estimator.

$$DCCEMG \rightarrow y_{i,t} = \alpha_i + \lambda_i y_{i.t-1} + \beta_{0,i} x_{i,t} + \beta_{1,i} x_{i,t-1} + \sum_{l=0}^{p_T} \delta'_{i,l} \bar{z}_{t-l} + e_{i,t} - - - - - - \{12\}$$

Where $\bar{z}_t = (\bar{y}_{t-1}, \bar{x}_t)$ represent the cross-sectional averages of both the dependent and independent variables. The MG coefficients are estimated as unweighted averages of the cross-sectional coefficients as under $\hat{\pi}_{MG} = \left(\hat{\lambda}_{MG}, \widehat{\beta}_{0,MG}, \hat{\beta}_{1,MG}\right) = \frac{1}{N}\sum_{i=1}^{N} \hat{\pi}_i$ and the asymptotic variance of the MG coefficients is the unweighted variance of the cross-sectional variance coefficients given as under: $Var(\hat{\pi}_{MG}) = \frac{1}{N}\sum_{i=1}^{N}(\hat{\pi}_i - \hat{\pi}_{MG})(\hat{\pi}_i - \hat{\pi}_{MG})'$.

Long –run estimation is achieved by the dynamic CCEMG model, which originated from an underlying steady state of a macroeconomic model where $y_t^* = y_{t-1}^* = y^* \; and \; x_t^* = x_{t-1}^* = x^*$. We employ the ECM formulation as follows to estimate the long –run estimates.

$$\Delta y_{i,t} = \phi_i\left[y_{i.t-1} - \theta_{0,i} - \theta_{1,i} x_{i,t-1}\right] + \beta_{0,i}\Delta x_{i,t} + \sum_{l=0}^{p_T} \delta'_{i,l} \bar{z}_{t-l} + e_{i,t}$$

$$= \alpha_i + \gamma_{1,i} y_{i,t-1} + \gamma_{2,i}\Delta x_{i,t-1} + \beta_{0,i}\Delta x_{i,t} + \sum_{l=0}^{p_T} \delta'_{i,l} \bar{z}_{t-l} + e_{i,t} - - - - - - \{13\}$$

Where $\gamma_{1,i} = -\phi_i$; $\theta_{0,i} = \frac{\alpha_{2,i}}{-\gamma_{1,i}}$; $\theta_i = \frac{\gamma_{2,i}}{-\gamma_{1,i}} = \frac{\beta_{0,i}+\beta_{1,i}}{1-\lambda_i} \; and \; \phi_i = (1-\lambda_i)$. $\phi_i = (1-\lambda_i)$ is the error-correction speed of adjustments parameter and $\left[y_{i.t-1} - \theta_{0,i} - \theta_{1,i} x_{i,t-1}\right]$ is the error correction term for a model. The dynamic CCEMG assumes both long and short–run coefficients to be heterogeneous, but if pooling of long-run coefficients is done, then the MG estimate of the error or correction speed term is taken, the long–run estimate then comes to be $\theta_1^P = {\gamma_2^P}/{\phi_{MG}}$. (Ditzen, 2019).

4. Findings and Discussion

4.1 Descriptive and correlation analysis

The ratios of international tourism expenditure to import and receipts to export stood at 6.28 and 13.31, respectively, implying that these countries have more tourism receipts relative to respective expenditure per import and export, respectively. The financial development indexes (FS1 and FS2) capture both size and growth, respectively. The means for TEI TRE and FS2 indicate declining trends while FS1 tend to increase, which highlights some prospects in terms of financial development growth over time (Figure 1).

Table 1: Descriptive statistics and correlation estimates

Stats	TEI	TRE	FS1	FS2	FI	TO	PSE
Mean	6.2861	13.3104	0.1486	8.5476	3.3206	73.2541	-0.5038
SD	4.6289	13.8209	0.1106	16.4478	5.1717	47.7578	0.8663
Min	0.1578	0.0010	0.0033	-26.9985	-18.9178	0.7846	-2.8447
Max	42.4409	67.4305	0.6426	471.4461	57.8774	347.9965	1.2821
lnTEI	1						
lnTRE	0.3050***	1					
lnFS1	-0.0500*	0.2860***	1				
lnFS2	-0.1194***	0.0000	0.0400	1			
lnFI	-0.1466***	0.0602**	0.0997***	0.0494*	1		
lnTO	-0.1854***	-0.0863***	0.3533***	-0.0805***	0.3865***	1	
lnPSE	0.1027***	0.4642***	0.3347***	-0.0685**	0.1890***	0.4576***	1

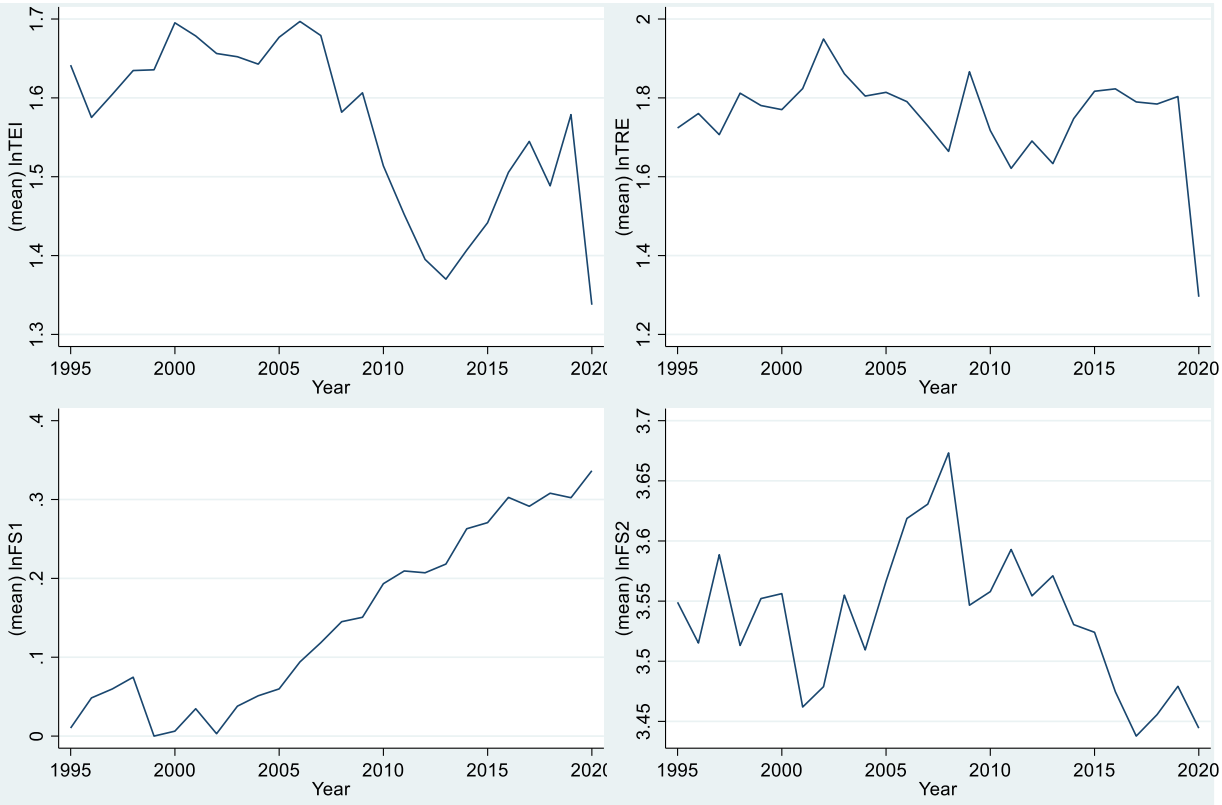
*** p<0.01, ** p<0.05, * p<0.1

Note: The descriptive statistics (untransformed values) and correlation matrix (log-transformed values) results are displayed.

The correlation coefficients indicate the size and direction of the association between variables. The association between lnTEI and lnTRE is positive and large, as expected, since the two variables measure international tourism growth. FS1 and FS2 have a negligible and insignificant relationship, corroborating the fact that both capture two different aspects of the Financial sector development. FS1 captures the economy wide development of the financial sector, containing all aspects of financial markets and

financial institutions access, depth and efficiency in one comprehensive index, while FS2 captures the growth aspect of the money two (M2). So it is expected these indicators to affect tourism indicators differently.

Figure 1: Trourism Growth and Financial Sector Development Indicators



Sources: WBI data 2022 and IMF/FDI data 2022

We applied the Pesaran (2007) CIPS and Maddala and Wu (1999) to tests for unit roots and found that all variables are stationary at *I*(0) except lnTO, which needed differencing. Our variables are log-transformed. Table 2 also finds evidence for CD based on Pesaran's (2004) and (2015) tests, which means cross-sectional dependence in our data would dictate the kind of estimators that would be used.

Table 2: Unit root and Cross-sectional dependence tests

		[A] Maddala & Wu [1999] [MW]		[B] Pesaran [2007] [CIPS]		[C] Peseran [2004] & [2015] [CD]	
	Specification	without trend	with trend	without trend	with trend	Cross sectional Dependence Test	
Variable	Order	chi_sq	chi_sq	Zt_bar	Zt_bar	CD-test	mean ρ
lnTEI	0	73.137***	74.730***	-1.502	0.564	13.774***	0.090
lnTRE	0	51.556	65.283**	-0.877	-1.881**	12.867***	0.080
lnFS1	0	97.489***	123.983***	-5.648***	-3.534***	53.377***	0.350
lnFS2	0	387.665***	325.433***	-10.515***	8.652***	11.200***	0.070
lnFI	0	202.593***	161.534***	-4.118***	3.495***	19.900***	0.130
lnTO	1	49.576	50.941	-1.731**	1.671**	20.121***	0.130
lnPSE	0	133.269***	95.881***	-3.610***	2.784***	1.100	0.010

*** *p<0.01*, ** *p<0.05*, * *p<0.1*

Notes: Under the null hypothesis of cross-section independence, CD ~ N[0,1]
P-values close to zero indicate data are correlated across panel groups.

4.2 Short-run estimates and causality

The short–run elasticity are presented in Table 3 and 4 using different methods, namely the system GMM and dynamic CCEMG in cross-sectional ECM formulation for robustness sake, but also to capture the short–run adjustment speed towards the equilibrium state and some long–run estimates in Table 4. Through the dynamic CCEMG, we have been able to manage and control for CD in the model (see Table 4). Therefore, in these results (Tables), the dependent variables are financial sector development indicators and international tourism sector growth indicators, in turn, because both variables are theoretically considered as reinforcing each other. We find evidence for the elasticity of lnFS2 on lnTEI. The growth of gross credit from the financial system on international tourism expenditure has an inelastic negative impact. This finding is not robust but highlights the implied unknown caveat as to the sensitivity of the variables in the short -run. The causality of lnFS1 towards lnTRE is elastic, positive, statistically significant and robust as expected, thus confirming our hypothesis that financial sector development causes international tourism growth by 0.2686% and 0.3907% in the short –run (Table 3, fourth row). Similarly, lnTRE causes lnFS1; the results are positive, inelastic and not robust, which partially points to the significance of the international tourism receipts' role in supporting financial sector development in short-run. Therefore, these economies need to promote inbound tourism as a strategy to improve the depth, liquidity and efficiency of the financial system in a prior fashion, where the global demand for services from tourists may trigger new mirrored development from the rest of the world in the financial sector. The lagged values of the dependent variables for both tourism growth and financial development highlight the positive and significant impacts of prior years' values on current years in the short –run. So, development in either sector stimulates further development in the same sector as expected.

Table 3: System GMM short-run results

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
VARIABLES	lnTEI	lnTEI	lnTRE	lnTRE	lnFS1	lnFS1	lnFS2	lnFS2
lnFI	-0.4140***	-0.5540***	-0.3993***	-0.3231**	0.0716*	-0.0161	0.2591***	0.4399***
	[0.1136]	[0.1410]	[0.1015]	[0.1323]	[0.0407]	[0.0770]	[0.0865]	[0.1622]
lnTO	0.0386	0.0042	0.1436***	0.1219***	0.0612**	0.0718***	0.1120**	0.0223
	[0.0848]	[0.0746]	[0.0424]	[0.0352]	[0.0267]	[0.0271]	[0.0468]	[0.0774]
lnPSE	0.0694	0.2118*	0.3320*	0.3397*	0.0248	0.0632	-0.0592	0.0139
	[0.0779]	[0.1176]	[0.1751]	[0.1845]	[0.0284]	[0.0654]	[0.0592]	[0.0557]
Years	-0.0039**	-0.0025***	-0.0062***	-0.0026***	0.0019***	0.0032***	-0.0028***	-0.0029***
	[0.0016]	[0.0006]	[0.0012]	[0.0008]	[0.0004]	[0.0006]	[0.0006]	[0.0008]
L.lnTEI	0.6719***	0.6548***						
	[0.0380]	[0.0384]						
L.lnTRE			0.8099***	0.8617***				
			[0.0469]	[0.0427]				
L.lnFS1					0.8863***	0.8243***		
					[0.0278]	[0.0330]		
L.lnFS2							0.1631***	0.1567***
							[0.0388]	[0.0545]
lnTEI					-0.0139		-0.0372	
					[0.0151]		[0.0265]	
lnTRE						0.0203**		0.0232
						[0.0092]		[0.0147]
lnFS1	0.0366		0.2686**					
	[0.1044]		[0.1124]					
lnFS2		-0.0754**		0.0972				
		[0.0339]		[0.0621]				
Constant	9.5484***	7.3414***	14.2697***	5.8609***	-4.1840***	-6.7596***	7.8561***	7.3557***
	[3.4019]	[1.1172]	[2.5075]	[1.6246]	[0.8876]	[1.2607]	[1.2188]	[1.5860]
Observations	1,075	1,075	1,075	1,075	1,075	1,075	1,075	1,075
ar1	-3.692***	-3.645***	-3.254***	-3.201***	-3.653***	-3.537***	-4.986***	-4.778***
ar2p	0.157	0.168	0.144	0.154	0.876	0.734	0.374	0.381
ar2	1.414	1.377	1.459	1.426	0.156	0.339	0.888	0.875
chi2	44374***	53908***	42932***	496340***	293548***	240869***	899414***	1.641e+06***
hansen	39.56	39.48	41.09	42.25	38.41	40.76	39.73	35.00

Standard errors in brackets *** p<0.01, ** p<0.05, * p<0.1

Ourshort–run results in Table 3, row 2, confirm negative elasticities of lnFI on lnTEI and lnTRE, which means that foreign direct investments (FDIs) have negative elasticity with outbound tourism growth. This highlights the fact that FDIs are a complex phenomenon which can have negative or positive impacts; for example, FDIs in the form of transnational corporations may tarnish host countries' images of tourists coming from home countries of the transnational corporations or related ones if host tourist countries are poor or underdeveloped. Conversely, we confirm some positive elasticities of lnFI on lnFS1 and FS2, thus supporting the hypothesis that financial sector development is positive and elastically sensitive to FDIs. Therefore, FDIs are good for financial sector development. We also confirm our hypothesis that trade openness (lnTO) benefits both international tourism growth (inbound) and financial sector development; the latter finding is similar to that of Mukherjee et al. (2022). Our results also support the hypothesis that political stability (lnPSE) supports international tourism growth.

The error correction term (ECT) in our models in Table 4, row 2, confirms the adjustment speeds from the short towards the long –runs. The results are negative and statistically significant, as expected. They are in ranges of -0.4754 to -0.6600 from financial sector development on tourism growth, and-0.6529 to -1.0300 from tourism growth on financial sector development, which implies fast changes towards long-run equilibria.

Table 4: DCCEMG - [CS-ECM] short-run results

	[1]	[3]	[5]	[7]	[9]	[11]	[13]	[15]
VARIABLES	d.lnTEI	d.lnTEI	d.lnTRE	d.lnTRE	d.lnFS1	d.lnFS2	d.lnFS1	d.lnFS2
ECT	-0.6600***	-0.6254***	-0.6347***	-0.4754***	-0.6530***	-1.0300***	-0.6529***	-0.9732***
	[0.0459]	[0.0441]	[0.0542]	[0.0530]	[0.0506]	[0.0400]	[0.0442]	[0.0394]
D.lnFS1	-0.0994		0.3907***					
	[0.1359]		[0.1363]					
D.lnFS2		-0.0336		-0.0745				
		[0.0798]		[0.0968]				
D.lnTEI					0.0285	0.0414		
					[0.0287]	[0.0507]		
D.lnTRE							0.0344	0.0298
							[0.0231]	[0.0480]
LnFS1-LR	-0.1312		0.6041					
	[0.3082]		[0.3689]					
lnFS2-LR		0.1061		1.8453*				
		[0.2486]		[1.0266]				
lnTEI-LR					-0.2199*	-0.0223		
					[0.1269]	[0.0556]		
lnTRE-LR							0.0927	0.0284
							[0.0829]	[0.0511]
Observations	989	989	989	989	989	989	989	989
cdp	0.0584	0.0354	0.0903	0.809	0.0785	0.0945	0.0369	0.0171
cd	-1.893	-2.103	1.694	0.242	-1.760	-1.672	-2.087	-2.385
r2	0.540	0.523	0.570	0.563	0.474	0.374	0.508	0.385
r2_a	0.443	0.422	0.480	0.471	0.363	0.242	0.404	0.255
r2_pmg	0.532	0.539	0.552	0.556	0.585	0.673	0.576	0.669

Standard errors in brackets *** p<0.01, ** p<0.05, * p<0.1

We assess causality using Granger causality approach but adopt the JKS Granger non-causality testing approach. In a Granger causality sense, the past values of, say, x cause the current values of y; in this way, we are able to predict the values of y based on past values of x. In Table 5, for simplicity's sake, we show only one lag, and we confirm the alternative hypothesis that at least some of the covariates grangers cause the dependent variables for equations 1 to 6. Therefore, financial sector development negatively granger-cause (predict) international tourism receipts, and financial sector growth positively granger cause international tourism receipts. Both international tourism expenditure (i.e. outbound tourism) and international tourism receipts (i.e. inbound tourism) negatively granger cause (predict) financial sector development.

We also find evidence that foreign direct investments negatively predict both international tourism expenditure and receipts. As stated in UNCTAD (2007), FDIs can have either positive or negative causality depending on the level of disaggregation of the FDIs. Thus while this relationship is complex, FDIs do not generally favor tourism due to the fact that FDI through transnational corporations may perpetrate a poor image of a country as an unfavorable tourism destination. Thus, host economies need to take

measures to disentangle the negative causes ensuing from FDI and minimize these effects. Trade openness positively granger causes (predicts) international tourism expenditure, which means policies that open the economy will benefit outbound tourism. We also find positive Granger causality of political stability on financial sector development. Policies that promote political stability and peace create confidence and offer conducive spaces for players in the financial system to use it more productively, thereby augmenting its products, services and development.

Table 5: Granger-Causality tests

Results for the Half-Panel Jackknife [HPJ] estimator

VARIABLES	[1] lnTEI	[2] lnTEI	[3] lnTRE	[4] lnTRE	[5] lnFS1	[6] lnFS1	[7] lnFS2	[8] lnFS2
L.lnFI	-0.2419**	-0.2225**	-0.4986***	-0.5906***	0.0098	0.0275	0.0729	0.0786
	[0.0964]	[0.0952]	[0.1228]	[0.1214]	[0.0371]	[0.0369]	[0.0583]	[0.0579]
L.lnTO	0.1923***	0.1944***	-0.1365	-0.1423	-0.0450	-0.0413	0.0308	0.0277
	[0.0707]	[0.0707]	[0.0925]	[0.0926]	[0.0278]	[0.0278]	[0.0447]	[0.0447]
L.lnPSE	-0.0209	-0.0163	-0.0887	-0.1079*	0.0508***	0.0569***	0.0161	0.0156
	[0.0459]	[0.0460]	[0.0597]	[0.0599]	[0.0184]	[0.0185]	[0.0271]	[0.0272]
L.lnFS1	0.0410		-0.2345***					
	[0.0502]		[0.0682]					
L.lnFS2		-0.0710		0.2128***				
		[0.0490]		[0.0650]				
L.lnTEI					-0.0485***		0.0050	
					[0.0099]		[0.0153]	
L.lnTRE						-0.0235***		0.0186
						[0.0083]		[0.0122]
Wald_HPJ	12.31*	13.75***	40.89***	39.78***	36.06***	19.76***	2.633	4.763

Standard errors in brackets *** p<0.01, ** p<0.05, * p<0.1

4.3 Long-run estimates and co-integration tests

In Tables 6 and 7, we present findings from FGLS and FMOLS models for our long–run estimations. We also document a robust negative impact of outbound/tourism expenditures (TEI) on financial sector growth, partially rejecting our first hypothesis; thus, for national economies' interests discouraging outbound tourism may minimize its impacts on financial sector growth. Then, as expected, we found a positive impact of tourism sector activities through tourism receipts (TRE) on financial sector growth (FS2), partially supporting our first hypothesis. On a policy level, encouraging inbound tourism boost financial sector growth. Our results reveal a robust negative long–run effect of financial sector development on international tourism expenditure, partially rejecting our second hypothesis. Our hypothesis is partially supported by a strong positive and robust long–run effect of financial sector development (FS1) on international tourism receipts (TRE); on a policy level, improving the financial sector helps to boost tourism receipts and growth.

Table 6: Feasible Generalized Least Squares -FGLS

VARIABLES	[1] lnTEI	[2] lnTEI	[3] lnTRE	[4] lnTRE	[5] lnFS1	[6] lnFS1	[7] lnFS2	[8] lnFS2
lnFI	-0.4167***	-0.4507***	-0.2033***	-0.1374***	0.0485***	0.0446***	0.0938***	0.1069***
	[0.0324]	[0.0411]	[0.0403]	[0.0475]	[0.0123]	[0.0149]	[0.0216]	[0.0213]
lnTO	-0.0130	-0.0262	0.1067***	0.0890***	0.0450***	0.0423***	0.0646***	0.0423***
	[0.0139]	[0.0236]	[0.0217]	[0.0222]	[0.0064]	[0.0077]	[0.0154]	[0.0160]
lnPSE	0.0514**	0.0421	0.2438***	0.3267***	0.0478***	0.0100	-0.0325***	-0.0358***
	[0.0233]	[0.0267]	[0.0204]	[0.0215]	[0.0061]	[0.0086]	[0.0090]	[0.0104]
lnFS1	-0.0644***		0.4677***					
	[0.0148]		[0.0325]					
lnFS2		-0.0128		0.0643***				
		[0.0186]		[0.0178]				
lnTEI					-0.0124***		-0.0224***	
					[0.0038]		[0.0049]	
lnTRE						0.0504***		0.0074***
						[0.0027]		[0.0028]
Constant	2.6461***	2.9349***	3.0782***	1.6298***	-2.2695***	-2.3304***	3.3061***	3.2165***

	[0.1099]	[0.1468]	[0.1577]	[0.1680]	[0.0388]	[0.0487]	[0.0705]	[0.0660]
Observations	1,075	1,075	1,075	1,075	1,075	1,075	1,075	1,075
chi2	214.5	151.9	566.0	311.5	118.0	403.4	101.8	48.87

Standard errors in brackets *** p<0.01, ** p<0.05, * p<0.1

Unlike the positive findings of Gao et al. (2022), we found a negative and robust negative impact of FDIs on all tourism indicators; this could be related to the well documented crowding –out effect by transnational corporations in the local market tourism investments (UNCTAD, 2007). Policymakers must isolate and curtail such FDIs that do not favor tourism related investments and growth at the same time, control the crowding–out effect manifested by transnational corporations. On the other hand, consistent with Katircioglu et al. (2017), we found a positive impact of FDIs on financial sector development indicators in the long –run. Similar to the findings of Suhaibu et al. (2022), trade openness positively relates to both tourism receipts and financial development indicators. Finally, analogous to Bozkurt et al. (2022), we document robust positive long –run impacts of political stability on both international tourism indicators and financial sector development (FS1) and, conversely, a negative robust impact of political stability on the growth of the financial sector.

Table 7: Fully Modified Ordinary Least Squares --FMOLS

VARIABLES	[1] lnTEI	[2] lnTEI	[3] lnTRE	[4] lnTRE	[5] lnFS1	[6] lnFS1	[7] lnFS2	[8] lnFS2
lnFI	-1.9685***	-1.7272***	-1.2871	-1.2842	-0.2648	0.0581	0.0447	0.0827
	[0.6148]	[0.5896]	[1.2488]	[1.2683]	[0.7173]	[0.7258]	[0.0699]	[0.0705]
lnTO	0.2608	0.4645	0.6243	0.4757	-0.8205	-0.8223	0.0661	0.0576
	[0.5646]	[0.5414]	[1.1469]	[1.1647]	[0.6482]	[0.6639]	[0.0631]	[0.0645]
lnPSE	0.4252**	0.2941*	1.8625***	2.0776***	0.6804***	0.5358**	-0.0474**	-0.0540**
	[0.1890]	[0.1725]	[0.3840]	[0.3711]	[0.2076]	[0.2375]	[0.0202]	[0.0231]
linear	0.0002	0.0002	0.0014***	0.0016***	0.0004	0.0003	0.0001***	0.0001***
	[0.0002]	[0.0002]	[0.0005]	[0.0005]	[0.0003]	[0.0003]	[0.0000]	[0.0000]
lnFS1	-0.0789*		0.4356**					
	[0.1336]		[0.2715]					
lnFS2		-1.2739***		-0.1282				
		[0.3446]		[0.7412]				
lnTEI					-0.1648		-0.0298**	
					[0.1187]		[0.0116]	
lnTRE						0.0341		0.0003
						[0.0667]		[0.0065]
Constant	7.0319***	11.0190***	4.4559	3.7111	-1.7931	-2.9542	3.4314***	3.2745***
	[1.8946]	[2.1182]	[3.8485]	[4.5566]	[2.2051]	[2.1935]	[0.2148]	[0.2129]
Observations	1,074	1,074	1,074	1,074	1,074	1,074	1,074	1,074
r2	0.0425	-0.1892	0.1161	0.1164	0.0130	0.0131	0.0462	0.0353

Standard errors in brackets *** p<0.01, ** p<0.05, * p<0.1

We lastly test for co-integration among the series. The series indicates that they move together over time, and the distance between them is constant. This manifestation reflects a long–run equilibrium towards which the series converges overtime (Table 8). These results corroborate the ECT results in Table 4 and are consistent with Işik et al. (2017) findings that financial development and tourism expenditures are co-integrated in the long –run. Thus, comprehensive policies that address both sectors conjointly are required.

Table 8: Co-integration tests

Equation/Model	1	2	3	4	5	6	7	8
Kao test	Statistics	Statistics	Statistics	Statistics	Statistics	Statistics	Statistics	Statistics
Modified DF	-5.9414***	-5.1956***	-5.5926***	-5.5285***	-1.9213*	-1.2307	-14.3557***	-13.399***

DF	-5.7855***	-5.3119***	-4.4449***	-4.6033***	-2.4056***	-1.7245*	-16.4602***	-16.0423***
Unadjusted modified DF	-11.9099***	-11.8974***	-9.9261***	-10.1244***	-5.7716***	-5.5629***	-32.7743***	-32.7504***
Unadjusted DF	-7.9917***	-7.9206***	-6.1081***	-6.3706***	-4.426***	-4.1378***	-21.0398***	-21.1033***
Pedroni test								
Modified PP	3.0066***	3.5961***	2.5234***	3.3577***	4.0575***	4.0285***	-1.5392	-1.4158
PP	-3.3922***	-2.1163*	-2.9455***	-1.3118	-4.6996***	-4.3588***	-15.0858***	-14.6448***
Augmented DF	-5.3617***	-3.8956***	-3.7474***	-2.0466*	-3.7658***	-3.5017***	-16.3319***	-15.5496***
Westerlund test								
Variance ratio	2.6354***	4.3065***	2.1382*	6.5177***	13.3006***	10.5421***	-1.0351	-1.085
Kao, Pedroni, Westerlund	Kao, Pedroni			Westerlund				
H0: No co-integration	Ha: All panels are co-integrated			Ha: Some panels are co-integrated				

**** p<0.01, ** p<0.05, * p<0.1*

5. Conclusion and Policy Recommendation

The findings substantiate that of Katircioglu et al., 2017 and Musakwa and Odhiambo (2022), they partially support mutual reinforcing effects for both tourism growth and financial sector development. We find negative causality of growth of credit from the financial system to tourism expenditure. The causality of financial sector development to tourism receipts is positive, and vice versa, both in the short and long –run estimations. We find negative Granger causality between financial development and tourism growth and vice versa; these findings are similar to that of Liao et al. (2018). FDIs are negatively related to tourism growth but positively related to financial development. Trade openness favor tourism growth and financial development. Similar to Khan et al. (2022) findings, in our results, political stability supports tourism receipts and expenditure but discourages specific financial sector growth through the gross credit channel, but supports broad financial sector development. Our co-integration results support a mutual interdependence between financial development and tourism sector growth.

Thus, policies need to consider both sectors mutually, as addressing the woes of one without the other, may create more woes for the other sector and vice versa. Comprehensive policies that address interrelated and contingent sectors are of vital importance due to the complexity involved in both sectors. FDIs are complex and need a specific address; the economies need to isolate factors that may lead to negative impacts on both financial development and tourism growth. Policies that foster trade openness are attractive to tourism and financial development; these need to be strengthened so that their full potential may be realized. Political stability is a sensitive matter that, if mishandled, may trigger a crisis and harmful impacts on both tourism growth and financial sector development. Policies that promote peace, democracy, power sharing and smooth political transitions will build players' confidence in the financial sector and attracts international tourism to host countries. Future studies should investigate how other macroeconomic variables influence tourism's ability to impact specific aspects of the financial sector, such as liquidity, depth and efficiency in developing countries.

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Appendix 1: Sampled African Economies

Algeria	Ethiopia	Namibia
Angola	Gabon	Niger
Benin	Gambia	Nigeria
Botswana	Ghana	Rwanda
Burki Faso	Guinea	Senegal
Burundi	Guinea-Bissau	Seychelles
Cabo Verde	Kenya	Sierra Leone
Cameroon	Lesotho	South Africa
Comoros	Libya	Sudan
Congo, Dem. Rep.	Madagascar	Tanzania
Congo, Rep.	Mali	Togo
Cote d'Ivoire	Mauritania	Tunisia
Djibouti	Mauritius	Uganda
Egypt	Morocco	
Eswatini(Swaziland)	Mozambique	