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Real Effective Exchange Rate Dynamics and International Tourism Demand in Tanzania: An Investigation of Short-Run and Long-Run Effects

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Abstract: This study investigates the short-run and long-run effects of Real Effective Exchange Rate (REER) dynamics on international tourism demand in Tanzania. Guided by Tourism Destination Competitiveness Theory, Utility Theory, and Push–Pull Theory, the study examines whether exchange-rate competitiveness and tourists' purchasing power influence international tourist arrivals. A quantitative ex-post facto research design was employed using 120 annual observations of tourism demand, per capita income from China, the United States and Canada, and REER. Secondary time-series data were analysed using EViews 13. Descriptive statistics, Augmented Dickey-Fuller unit root tests, Variance Inflation Factor diagnostics, and the Autoregressive Distributed Lag (ARDL) bounds-testing approach were employed. The bounds test confirmed a stable long-run relationship among the variables, with the F-statistic of 6.853 exceeding the 1% upper-bound critical value. Long-run results revealed positive and statistically significant effects of per capita income from China, the United States and Canada on tourism demand, while REER had a negative but statistically insignificant effect. In the short run, however, REER exerted a negative and statistically significant effect, indicating that reduced price competitiveness can discourage international tourist arrivals. The error-correction coefficient was negative and significant, showing that approximately 86.5% of short-run disequilibrium is corrected within one period. The study concludes that exchange-rate competitiveness is particularly important in the short run, whereas source-market income is a stronger long-run determinant. It recommends macroeconomic stability, market-specific tourism promotion, flexible pricing, and strengthened destination competitiveness to sustain international tourism demand in Tanzania.

Keywords: International Tourism Demand, Real Effective Exchange Rate, Tanzania, Short Run, Long Run

1. INTRODUCTION

Tourism is a strategic sector in Tanzania, contributing significantly to foreign-exchange earnings, employment creation, income generation and economic development. Tanzania possesses diverse tourism resources, including the Serengeti National Park, Ngorongoro Conservation Area, Mount Kilimanjaro and Zanzibar, which attract international visitors from different source markets. Recent evidence indicates that tourism demand in Tanzania is influenced by tourists' income, exchange rates, infrastructure and the cost of living (Wamboye et al., 2020). The continued expansion of international tourism therefore makes understanding the macroeconomic determinants of tourist arrivals increasingly important.

Exchange-rate competitiveness is particularly relevant because it affects the relative cost of tourism services between Tanzania and tourists' countries of origin. However, bilateral nominal

exchange rates may provide an incomplete measure of international competitiveness because they do not incorporate relative price movements across countries. The Real Effective Exchange Rate (REER), which combines exchange-rate movements with relative price changes among trading partners, provides a broader measure of price competitiveness and may therefore offer a more appropriate indicator for analysing tourism demand (Song et al., 2010; Brida & Scuderi, 2013).

Changes in REER may influence tourism demand differently in the short and long run. While tourists may respond gradually to exchange-rate changes because travel decisions are often planned, persistent changes in relative prices can influence destination competitiveness over time. Therefore, this study investigates the short-run and long-run effects of REER dynamics on international tourism demand in Tanzania,

contributing to evidence-based tourism and macroeconomic policy formulation.

2. PROBLEM STATEMENT

Tourism remains a strategic component of Tanzania's economy, contributing to foreign-exchange earnings, employment, household incomes and economic growth. Tanzania has considerable tourism assets, including wildlife, beaches, cultural heritage and mountain tourism, which provide a strong basis for attracting international visitors. Recent evidence indicates that the tourism sector has continued to support Tanzania's economic recovery, with tourism identified among the drivers of economic expansion in 2024 (World Bank, 2025). However, sustaining international tourism demand remains a challenge because Tanzania operates within an increasingly competitive regional and global tourism market. The country must continuously maintain destination price competitiveness while responding to changing economic conditions in major tourist-source countries.

Despite the importance of tourism, the role of exchange-rate competitiveness in determining international tourism demand in Tanzania remains insufficiently established. Existing studies have examined exchange rates, tourists' income, infrastructure and living costs as determinants of tourism demand (Wamboye et al., 2020), but considerable attention has been placed on nominal or bilateral exchange rates. Such measures may not adequately reflect Tanzania's overall external price competitiveness because they do not incorporate relative price movements across its major trading partners. The Real Effective Exchange Rate (REER) provides a broader measure by combining exchange-rate movements with relative price differentials and therefore offers a more appropriate indicator of international price competitiveness (Song et al., 2010; Brida & Scuderi, 2013).

Furthermore, there is inadequate empirical evidence on whether changes in REER influence Tanzania's international tourism demand differently in the short and long run. This is important because tourists may respond gradually to exchange-rate changes, while persistent changes in relative prices may have stronger effects on destination choice over time. The absence of clear evidence on these dynamic relationships limits the ability of policymakers and tourism stakeholders to design appropriate exchange-rate, pricing and tourism competitiveness strategies. Therefore, this study investigates the short-run and long-run effects of Real Effective Exchange Rate dynamics on international tourism demand in Tanzania, providing evidence for macroeconomic management, tourism competitiveness and sustainable tourism development.

3. RESEARCH OBJECTIVES

General Objective

To examine the short-run and long-run effects of Real Effective Exchange Rate (REER) dynamics on international tourism demand in Tanzania.

Specific Objectives

1. To test for the existence of a long-run cointegrating relationship among tourism demand, per capita income in China, the United States, and Canada, and the Real Effective Exchange Rate in Tanzania.
2. To estimate the long-run effects of per capita income in China, the United States, and Canada, and the Real Effective Exchange Rate on tourism demand in Tanzania.
3. To estimate the short-run effects of per capita income in China, the United States, and Canada, and the Real Effective Exchange Rate on tourism demand in Tanzania.

4. RESEARCH QUESTIONS

The study sought to answer the following research questions:

- Is there a long-run equilibrium relationship among tourism demand, per capita income in China, the United States, and Canada, and the Real Effective Exchange Rate in Tanzania?
- What are the long-run effects of per capita income in China, the United States, and Canada, and the Real Effective Exchange Rate on tourism demand in Tanzania?
- What are the short-run effects of per capita income in China, the United States, and Canada, and the Real Effective Exchange Rate on tourism demand in Tanzania?

5. HYPOTHESES

Based on the research objectives and theoretical framework, the following hypotheses were formulated:

H₁: There is a significant long-run equilibrium relationship among tourism demand, per capita income in China, the United States, and Canada, and the Real Effective Exchange Rate in Tanzania.

H₂: Per capita income in China has a positive and significant effect on tourism demand in Tanzania in both the short run and long run.

H₃: Per capita income in the United States has a positive and significant effect on tourism demand in Tanzania in both the short run and long run.

H₄: Per capita income in Canada has a positive and significant effect on tourism demand in Tanzania in both the short run and long run.

H₅: The Real Effective Exchange Rate has a negative and significant effect on tourism demand in Tanzania in the short run.

H₆: The Real Effective Exchange Rate has a negative but insignificant effect on tourism demand in Tanzania in the long run.

6. THEORETICAL FRAMEWORK

The study is guided by Tourism Destination Competitiveness (TDC) Theory, Utility Theory, and Push–Pull Theory. The three theories provide complementary explanations of international tourism demand by linking destination competitiveness, tourists' economic decision-making, and destination-specific motivations.

6.1 Tourism Destination Competitiveness (TDC) Theory

Tourism Destination Competitiveness (TDC) Theory, developed from the work of Crouch and Ritchie (1999), Ritchie and Crouch (2003), and Dwyer and Kim (2003), explains tourism performance through the interaction of destination resources, infrastructure, supporting factors, destination management, demand conditions, and enabling environments. Contemporary evidence continues to demonstrate that competitiveness is multidimensional and dynamic. For example, recent research identifies price competitiveness, ICT readiness, infrastructure, human resources, and natural and cultural resources as important determinants of destination competitiveness (González-Rodríguez et al., 2025). The theory is particularly relevant to Tanzania because changes in the Real Effective Exchange Rate (REER) can alter the country's relative price competitiveness against competing destinations. Thus, TDC Theory provides the principal theoretical foundation for explaining international tourism demand.

6.2 Utility Theory

Utility Theory provides the economic basis for understanding tourists' destination-choice decisions. The theory assumes that consumers choose alternatives that maximize expected utility subject to income and price constraints. In tourism, visitors compare the expected benefits of destinations with the monetary and non-monetary costs of travelling. Consequently, tourists' income and the relative cost of visiting Tanzania influence the utility derived from the destination. A depreciation or appreciation in the real effective exchange rate can change the relative prices of accommodation, transport,

food and tourism experiences, thereby influencing destination choice. Recent tourism-choice research similarly demonstrates that tourists evaluate combinations of destination attributes when making travel decisions (Li et al., 2024).

6.3 Push–Pull Theory

Push–Pull Theory, originating from Dann (1977) and developed by Crompton (1979), explains tourism behaviour through internal push factors and external pull factors. Push factors include the desire for relaxation, escape, recreation and adventure, whereas pull factors include wildlife, beaches, cultural heritage, safety, infrastructure and destination attractiveness. Recent evidence continues to support the relevance of push–pull factors in explaining destination choice (Li et al., 2024).

7. CONCEPTUAL FRAMEWORK

The conceptual framework illustrates the hypothesized relationships among the study variables. Tourism demand (LNTORD) is the dependent variable, while per capita income in China (LNPCIN_CH), per capita income in the United States (LNPCIN_US), per capita income in Canada (LNPCIN_CA), and the Real Effective Exchange Rate (LNREER) are the independent variables. The framework posits that:

- Per capita income in China, the United States, and Canada positively influences tourism demand, as higher income increases tourists' purchasing power and propensity to travel internationally.
- The Real Effective Exchange Rate negatively influences tourism demand in the short run, as REER appreciation makes Tanzania more expensive for international tourists relative to competing destinations. However, in the long run, the effect may be less pronounced as tourists adapt to persistent exchange-rate changes.

The conceptual framework is presented diagrammatically below:

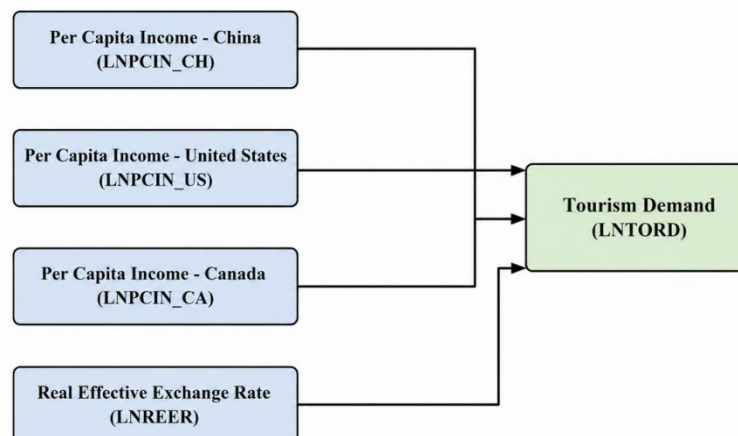


Figure 1: Conceptual Framework of the Study

The framework demonstrates that tourism demand in Tanzania is influenced by economic conditions in source countries (income levels) and price competitiveness (REER). These relationships are examined in both the short run and long run using the ARDL bounds-testing approach.

8. LITERATURE REVIEW

Empirical evidence demonstrates that exchange rates and exchange-rate volatility are important determinants of international tourism demand, although their magnitude, direction and persistence differ across destinations and source markets.

Sharma and Pal (2020) found that tourism demand in India responds asymmetrically to both nominal and real exchange-rate volatility, with uncertainty producing stronger effects in the long run than in the short run. Similarly, Rookayyah et al. (2024), using panel ARDL evidence from Mauritius, established that exchange rates and exchange-rate volatility significantly affected tourism demand negatively in the long run, while tourists' income had a positive effect. These findings suggest that exchange-rate competitiveness and economic conditions in source countries are important for destination attractiveness.

Other studies provide mixed evidence. Jong et al. (2020) found that tourists' income positively influenced tourism demand in Sabah, whereas transportation costs and prices negatively affected demand. Bozkurt et al. (2021) established causality from exchange-rate shocks to tourism-demand shocks, although their estimated long-run cointegrating coefficients were statistically insignificant. Ding and Timmer (2023) further demonstrated that both bilateral and US-dollar exchange rates influence international tourism volumes, with dollar appreciation generally reducing tourism demand.

Evidence from Malaysia, Barbados, Turkey and Mauritius also reveals considerable heterogeneity. Karimi et al. (2019) found asymmetric long-run effects of exchange rates and tourists' income in Malaysia, while Alleyne et al. (2021) reported short-lived tourism-demand shocks in Barbados. Canbay et al. (2024) established both short- and long-run effects of exchange-rate shocks on European tourism demand in Turkey. Conversely, Imamboccus et al. (2024) found exchange rates and volatility insignificant in Mauritius, while income, relative prices and infrastructure significantly influenced tourism demand.

9. RESEARCH GAP

Despite the extensive literature on tourism demand determinants, there is a notable gap in the context of Tanzania.

Specifically, existing studies have not adequately distinguished between the short-run and long-run effects of Real Effective Exchange Rate (REER) dynamics on tourism demand in Tanzania. Most previous studies have either focused on nominal or bilateral exchange rates, which do not adequately capture Tanzania's overall external price competitiveness relative to its trading partners. The REER provides a more comprehensive measure by incorporating relative price movements alongside exchange-rate changes.

Furthermore, limited Tanzanian studies have employed the ARDL bounds-testing approach to simultaneously estimate both short-run and long-run relationships between REER, source-country income, and tourism demand. The absence of clear evidence on these dynamic relationships limits the ability of policymakers and tourism stakeholders to design appropriate exchange-rate, pricing, and tourism competitiveness strategies.

Therefore, this study aims to fill this gap by examining the short-run and long-run effects of REER dynamics on international tourism demand in Tanzania, disaggregating source-country income effects from China, the United States, and Canada, and employing the ARDL bounds-testing approach to provide empirical evidence for policy formulation.

10. METHODOLOGY

The study adopted a positivist research philosophy, emphasizing objective measurement, empirical observation, and statistical verification of relationships among the study variables. A quantitative, non-experimental ex-post facto research design was employed using secondary time-series data on tourism demand, per capita income from China, the United States and Canada, real effective exchange rate, and inflation. The analysis was conducted using EViews 13.

10.1 Research Design

The study employed a quantitative ex-post facto research design. This design was appropriate because the study examined existing relationships among variables that cannot be manipulated experimentally. The ex-post facto design allows for the analysis of cause-and-effect relationships using secondary data that have already occurred (Cohen et al., 2018). This design is commonly used in tourism demand studies that employ time-series econometric techniques (Song et al., 2012).

10.2 Data Sources and Study Period

The study utilized secondary time-series data covering a period of thirty years from 1995 to 2024, yielding 120 quarterly observations. The data sources for each variable are presented in Table 1 below:

Table 1: Variable Definition and Data Sources

Variable	Symbol	Measurement	Source	Study Period
Tourism Demand	LNTORD	Natural logarithm of international tourist arrivals to Tanzania	World Bank Development Indicators (WDI)	1995Q1-2024Q4
Per Capita Income - China	LNPCIN_CH	Natural logarithm of GDP per capita (constant US\$) - China	World Bank Development Indicators (WDI)	1995Q1-2024Q4
Per Capita Income - United States	LNPCIN_US	Natural logarithm of GDP per capita (constant US\$) - United States	World Bank Development Indicators (WDI)	1995Q1-2024Q4
Per Capita Income - Canada	LNPCIN_CA	Natural logarithm of GDP per capita (constant US\$) - Canada	World Bank Development Indicators (WDI)	1995Q1-2024Q4
Real Effective Exchange Rate	LNREER	Natural logarithm of real effective exchange rate (CPI-based)	Bank for International Settlements (BIS)	1995Q1-2024Q4

Source: Researcher's compilation, 2026

10.3 Population and Sample

The population of this study comprised all international tourist arrivals to Tanzania during the study period. The sample consisted of 120 quarterly observations of time-series data for the variables of interest from 1995Q1 to 2024Q4. The selection of the study period was guided by data availability and the need to capture both short-run and long-run dynamics in tourism demand. The sample size of 120 observations is sufficient for ARDL estimation, which performs well with sample sizes between 30 and 80 observations (Pesaran et al., 2001) and even better with larger samples.

10.4 Variable Definitions and Operationalization

The variables were operationalized as follows:

Dependent Variable: Tourism Demand (LNTORD)

1. **Definition:** International tourism demand in Tanzania
2. **Measurement:** Natural logarithm of international tourist arrivals to Tanzania
3. **Data Source:** World Bank Development Indicators
4. **Justification:** Tourist arrivals is the most commonly used measure of tourism demand in empirical tourism research (Song et al., 2012; Wamboye et al., 2020)

Independent Variables:

• Per Capita Income - China (LNPCIN_CH)

- **Definition:** Income levels in the tourists' country of origin (China)
- **Measurement:** Natural logarithm of GDP per capita (constant US\$)
- **Data Source:** World Bank Development Indicators

- **Expected Sign:** Positive (+), as higher income increases tourism expenditure capacity

• Per Capita Income - United States (LNPCIN_US)

- **Definition:** Income levels in the tourists' country of origin (United States)
- **Measurement:** Natural logarithm of GDP per capita (constant US\$)
- **Data Source:** World Bank Development Indicators
- **Expected Sign:** Positive (+), as higher income increases tourism expenditure capacity

• Per Capita Income - Canada (LNPCIN_CA)

- **Definition:** Income levels in the tourists' country of origin (Canada)
- **Measurement:** Natural logarithm of GDP per capita (constant US\$)
- **Data Source:** World Bank Development Indicators
- **Expected Sign:** Positive (+), as higher income increases tourism expenditure capacity

• Real Effective Exchange Rate (LNREER)

- **Definition:** Real effective exchange rate reflecting Tanzania's international price competitiveness
- **Measurement:** Natural logarithm of CPI-based real effective exchange rate
- **Data Source:** Bank for International Settlements

- **Expected Sign:** Negative (-), as appreciation makes Tanzania more expensive for foreign tourists

10.5 Model Specification

The general functional relationship between tourism demand and the critical success factors is expressed as:

$$\text{TORDt} = f(\text{PCINit}, \text{REEXt}) \quad \text{..... (1)}$$

Where:

- **TORDt** = Tourism Demand in Tanzania. This is proxied by international tourists' arrivals to Tanzania at time t
- **PCINit** = Per capita income levels in tourists' countries of origin. The study purposely selected countries with the major spending on tourism in Tanzania. These countries are China, Canada and USA.
- **REEXt** = Real Exchange Rate at time t

The ARDL estimation process using EViews 13 simultaneously estimates both long-run and short-run models. Therefore, the short-run and long-run form of the equation is given as:

$$\Delta \text{LnTORDt} = \alpha_0 + \alpha_1 \text{LnTORDt-i} + \alpha_2 \text{LnPINCit-i} + \alpha_3 \text{LnREERt-i} + \beta_1 \Delta \text{LnTORDt-i} + \beta_2 \Delta \text{LnPINCit-i} + \beta_3 \Delta \text{LnREERt-i} + \lambda \text{ectt-1} + \varepsilon_t \quad \text{..... (2)}$$

Where:

1. Δ = First difference operator
2. α_0 = Intercept
3. α_1 to α_3 = Long-run coefficients

11. RESULTS

11.1 Descriptive Statistics

Table 2: Descriptive Statistics

	LNTORD	LNPCIN_CH	LNPCIN_US	LNPCIN_CA	LNREER
Mean	13.5791	4.3092	10.791	17.22137	2.4355
Median	13.5199	4.2991	10.792	17.21981	2.40037
Maximum	14.3949	4.3957	11.345	17.72784	2.93705
Minimum	12.5947	4.1907	10.264	16.71451	1.91479
Std. Dev.	0.48419	0.0483	0.2909	0.303963	0.43608
Skewness	-0.1161	-0.323	0.0181	0.022956	-0.0468
Kurtosis	2.18484	2.4297	2.2071	1.825	1.18626
Jarque-Bera	3.59192	0.8976	3.1499	1.958872	3.98559

4. β_1 to β_3 = Short-run coefficients

5. λ = Error correction coefficient

6. ectt-1 = Error correction term lagged one period

7. ε_t = Error term

10.6 Analytical Techniques

Descriptive statistics were first generated to establish the distributional characteristics of the variables. These included the mean, median, standard deviation, skewness, kurtosis, and Jarque-Bera statistics. Appropriate lag lengths were subsequently selected to establish the dynamic structure of the model. The Augmented Dickey-Fuller (ADF) unit root test, following Dickey and Fuller (1979, 1981), was employed to determine the stationarity and order of integration of the variables. Variance Inflation Factor (VIF) tests were also conducted to assess potential multicollinearity among the explanatory variables.

The Autoregressive Distributed Lag (ARDL) bounds-testing approach developed by Pesaran, Shin, and Smith (2001) was subsequently employed to establish whether a long-run equilibrium relationship existed among the variables and to estimate both short-run and long-run effects. The ARDL approach was preferred for several reasons: (1) it can be applied regardless of whether the variables are I(0) or I(1); (2) it provides unbiased long-run estimates and valid t-statistics even with endogenous regressors; (3) it estimates both short-run and long-run dynamics simultaneously; and (4) it performs well with small sample sizes (Pesaran et al., 2001).

Finally, post-estimation diagnostic tests, including the Breusch-Godfrey serial correlation test, Breusch-Pagan-Godfrey heteroskedasticity test, and Jarque-Bera normality test, were performed to assess model adequacy and ensure the reliability and robustness of the estimated results.

Probability	0.16597	0.6384	0.207	0.375523	0.13631
Sum	1629.49	124.97	1294.9	585.5265	70.6294
Sum Sq. Dev.	27.8988	0.0654	10.071	3.048992	5.32474
Observations	120	120	120	120	120

Source: Researcher's computation using EViews 13, 2026

Table 2 presents the descriptive statistics for the variables used in the study based on 120 observations. Tourism demand (LNTORD) recorded a mean of 13.5791 and a standard deviation of 0.4842, indicating relatively moderate variation in international tourist arrivals during the study period. The mean values of per capita income for China, the United States and Canada were 4.3092, 10.7910 and 17.2214, respectively, with standard deviations of 0.0483, 0.2909 and 0.3040, indicating comparatively limited fluctuations in source-country income. The REER (LNREER) had a mean of 2.4355 and a standard deviation of 0.4361, suggesting greater variation in exchange-rate competitiveness relative to Chinese income.

The skewness values, ranging from -0.3230 to 0.0230, indicate that the variables were approximately symmetrically distributed. Kurtosis values were below three for all variables, suggesting relatively flatter distributions than the normal distribution. Furthermore, the Jarque-Bera probability values exceeded 0.05 for all variables, confirming that the null hypothesis of normality cannot be rejected. Overall, the statistics indicate acceptable distributional properties for subsequent ARDL analysis.

11.2 Unit Root Test

Table 3: Test for Stationarity: Augmented Dickey-Fuller (ADF) Unit Root Test

Variable	ADF Level	at Critical Value @ 5%	Prob	ADF at 1st Diff	Critical values	Prob	Order of Integration
LnTORD	-1.561	-2.886	0.499	-3.581	-2.886	0.000	I(1)
LnPCIN_CN	-1.211	-2.886	0.668	-7.187	-2.886	0.000	I(1)
LnPCIN_US	0.047	-2.886	0.960	-3.581	-2.886	0.008	I(1)
LnPCIN_CA	-1.363	-2.886	0.598	-11.178	-2.886	0.000	I(1)
LnREER	-3.706	-2.886	0.005	-	-	-	I(0)

Source: Researcher's computation using EViews 13, 2026

Table 3 presents the Augmented Dickey-Fuller (ADF) unit root test results used to determine the stationarity properties and order of integration of the study variables. The results indicate that LNTORD, LNPCIN_CN, LNPCIN_US and LNPCIN_CA were non-stationary at level, as their ADF probability values of 0.499, 0.668, 0.960 and 0.598, respectively, were greater than the 5% significance level. Therefore, the null hypothesis of a unit root could not be rejected for these variables. However, after first differencing, all four variables became stationary, with probability values of 0.000, 0.000, 0.008 and 0.000, respectively. They are consequently integrated of order one, I(1). In contrast, LNREER was stationary at level, with an ADF statistic of -3.706, which is more negative than the 5% critical value of -2.886, and a probability value of 0.005. It is therefore integrated of order zero, I(0). Overall, the variables exhibit a mixture of I(0) and I(1) processes, with none integrated beyond I(1), satisfying an important condition for applying the ARDL bounds-testing approach.

11.3 Multicollinearity Test

Table 4: Test for Multicollinearity

Variance Inflation Factors

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
LNTORD	0.000272	46.47965	3.953286
LNPCIN_CH	0.000257	27.46610	3.837624
LNPCIN_US	0.000120	279.6514	1.144721

LNPCIN_CA	0.003242	36.55885	4.165394
INFL	0.167712	3198.064	1.000000
C	13.94331	844332.1	NA

Source: Researcher's computation using EViews 13, 2026

Table 4 presents the Variance Inflation Factor (VIF) results used to assess whether serious multicollinearity exists among the explanatory variables. The centered VIF values are the appropriate values for assessing multicollinearity because they account for the constant term. The results show that LNTORD has a centered VIF of 3.953, LNPCIN_CH has 3.838, LNPCIN_US has 1.145, LNPCIN_CA has 4.165, and INFL has 1.000. Since all centered VIF values are below the commonly applied threshold of 5, the results indicate that there is no serious multicollinearity among the variables included in the model.

The relatively higher VIF for LNPCIN_CA (4.165) and LNTORD (3.953) suggests some degree of correlation with other regressors, but these values remain within acceptable limits and are unlikely to distort the estimated coefficients substantially. The very high uncentered VIF values, particularly for inflation (3198.064) and the constant (844332.1), should not be interpreted as evidence of problematic multicollinearity because uncentered VIFs can become excessively large when a constant is included in the model. Overall, the centered VIF results confirm that multicollinearity is not a major concern, supporting the suitability of the variables for subsequent ARDL estimation.

11.4 Cointegration Test: ARDL Bounds Test

Table 5: Cointegration Test - ARDL Bounds Test

Test Statistic	Value					
F-statistic	6.853033					
	10%	5%	1%			
Sample Size	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
Asymptotic	1.850	2.850	2.110	3.150	2.620	3.770

Source: Researcher's computation using EViews 13, 2026

Table 5 presents the ARDL bounds test for cointegration among tourism demand, tourists' per capita income and the Real Effective Exchange Rate (REER) in Tanzania. The calculated F-statistic of 6.853033 exceeds the upper-bound critical values at the 10% (2.850), 5% (3.150), and 1% (3.770) significance levels. Therefore, the null hypothesis of no long-run relationship is rejected at all conventional significance levels. This result confirms the existence of a stable long-run equilibrium relationship among the variables. Consequently, changes in tourists' income and REER are systematically associated with international tourism demand in Tanzania over the long term. The finding validates the use of the ARDL approach to estimate both the short-run dynamics and long-run effects.

11.5 Stability Test

Table 6: Stability Test - CUSUM and CUSUMSQ

Test	Result	Interpretation
CUSUM	Plots within 5% critical bounds	Stable coefficients
CUSUMSQ	Plots within 5% critical bounds	Stable coefficients

Source: Researcher's computation using EViews 13, 2026

The stability of the estimated ARDL model was assessed using the cumulative sum (CUSUM) and cumulative sum of squares (CUSUMSQ) tests proposed by Brown, Durbin, and Evans (1975). The results indicate that both the CUSUM and CUSUMSQ plots remain within the 5% critical bounds, suggesting that the estimated coefficients are stable over the study period. This stability confirms the reliability of the long-run and short-run estimates and supports the validity of the model for policy analysis and forecasting purposes.

11.6 Long-Run Results

Table 7: ARDL Estimation - Long-run Results

Variable *	Coefficient	Std. Error	t-Statistic	Prob.
LNPCIN_CH(-1)	2.713957	0.510071	5.320744	0.0000
LNPCIN_US(-1)	1.063716	0.269174	3.951778	0.0001
LNPCIN_CA(-1)	7.590743	2.435702	3.116450	0.0023
LNREER(-1)	-2.134916	3.125376	-0.683091	0.4961
C	54.05460	84.93242	0.636442	0.5259

Source: Researcher's computation using EViews 13, 2026

Table 7 presents the estimated long-run relationship between international tourism demand and the selected explanatory variables in Tanzania. The results show that per capita income in China, the United States and Canada has a positive and statistically significant long-run effect on tourism demand. Specifically, a 1% increase in Chinese, US and Canadian per capita income is associated with approximately 2.714%, 1.064% and 7.591% increases in tourism demand, respectively. These effects are statistically significant at the 1% level ($p < 0.01$), indicating that rising incomes in the major source markets increase tourists' capacity to travel to Tanzania. In contrast, the REER coefficient is negative (-2.135) but statistically insignificant ($p = 0.4961$). Although the negative sign suggests that an increase in REER may reduce tourism demand, the evidence is insufficient to conclude that REER has a significant long-run effect. Therefore, the findings indicate that income conditions in major source markets are more important long-run determinants of Tanzania's international tourism demand than REER.

11.7 Short-Run Results

Table 8: ARDL Short-Run Results

Dependent Variable: D(LNTORD)

Method: ARDL

Variable	Coefficient	Std. Error	t-Statistic	Prob.
COINTEQ*	-0.865351	0.113697	-7.610669	0.0000
D(LNTORD(-4))	0.290452	0.100615	2.886776	0.0049
D(LNPCIN_CH(-4))	1.135833	0.275408	4.124187	0.0001
D(LNPCIN_US)	10.22223	0.878376	11.63765	0.0000
D(LNPCIN_CA)	1.409463	0.339339	4.153557	0.0001
D(LNREER)	-0.832705	0.306562	-2.716272	0.0080
R-squared	0.759615	Mean dependent var	0.014914	
Adjusted R-squared	0.680429	S.D. dependent var	0.116835	
S.E. of regression	0.066047	Akaike info criterion	-2.381664	
Sum squared resid	0.370792	Schwarz criterion	-1.685613	
Log likelihood	164.7548	Hannan-Quinn criter.	-2.099176	
F-statistic	9.592815	Durbin-Watson stat	2.159751	
Prob(F-statistic)	0.000000			

Source: Researcher's computation using EViews 13, 2026

Table 8 presents the short-run ARDL estimates of international tourism demand in Tanzania. The error-correction term is negative and statistically significant (-0.8654 ; $p < 0.001$), confirming convergence toward long-run equilibrium, with approximately 86.5% of disequilibrium corrected within one period. The lagged tourism demand coefficient is positive and significant (0.2905 ; $p = 0.0049$), indicating persistence in tourist arrivals. Per capita income in China, the United States and Canada has positive and statistically significant effects, with coefficients of 1.1358, 10.2222 and 1.4095, respectively ($p < 0.01$), implying that higher incomes stimulate tourism demand. Conversely, REER has a negative and significant coefficient (-0.8327 ; $p = 0.0080$), suggesting that a 1% increase in REER reduces tourism demand by approximately 0.83% in the short run. The model is statistically significant ($F = 9.593$; $p < 0.001$), while the R^2 of 0.760 indicates substantial explanatory power. Overall, REER significantly affects tourism demand in the short run.

11.8 Diagnostic Tests

Table 9: ARDL Diagnostic Test

Normality Test		Decision	Remarks						
Jarque-Bera Test	3.846	Prob	0.146	Prob > 0.05	Normally distributed				
Breusch-Godfrey Serial Correlation LM Test									
F Statistics			3.067	Prob	0.097	Prob > 0.05	Abs of Serial Correlation		
Breusch-Pagan-Godfrey Homoskedasticity Test			Test:						
Breusch-Pagan-Godfrey Test			1.972	Prob	0.128	Prob > 0.05	Abs of Heteroskedasticity		

Source: Researcher's Computations Using EViews 13, 2025

Table 9 presents the diagnostic tests assessing the adequacy of the ARDL model. The Jarque-Bera test reports a probability value of 0.146, exceeding 0.05, indicating that the residuals are normally distributed. The Breusch-Godfrey test has a probability of 0.097, suggesting absence of serial correlation. Similarly, the Breusch-Pagan-Godfrey test reports a probability value of 0.128, confirming that the residuals are homoskedastic. Therefore, the null hypotheses for normality, no serial correlation, and homoskedasticity cannot be rejected. Overall, the diagnostic results demonstrate that the estimated ARDL model satisfies the key statistical assumptions and is suitable for reliable inference and interpretation.

12. DISCUSSION OF FINDINGS

The findings demonstrate that international tourism demand in Tanzania is influenced by tourists' income and exchange-rate competitiveness, with effects differing between the short and long run.

The positive and significant long-run effects of per capita income from China, the United States and Canada support Utility Theory, which suggests that higher disposable income increases consumers' ability to purchase tourism services and maximize travel utility. This finding is consistent with Jong et al. (2020), Rookayyah et al. (2024), and Wamboye et al. (2020), who found that tourists' income is an important determinant of tourism demand. The differential income elasticities across source markets (China: 2.714, United States: 1.064, Canada:

7.591) suggest that Tanzania's tourism demand responds differently to income changes in each market, with Canadian tourists exhibiting the highest responsiveness. This variation may be attributed to differences in income levels, travel preferences, and the nature of tourism demand in each source market.

The negative and significant short-run effect of REER supports Tourism Destination Competitiveness (TDC) Theory, as changes in relative prices influence Tanzania's competitiveness against alternative destinations. A higher REER is associated with reduced tourism demand, indicating that deteriorating price competitiveness can discourage visitors. This finding is consistent with Sharma and Pal (2020), Rookayyah et al. (2024), and Canbay et al. (2024), who reported significant exchange-rate effects on tourism demand. The short-run significance of REER suggests that tourists are sensitive to immediate price changes when making travel decisions, possibly because exchange-rate movements directly affect the cost of international travel.

However, the insignificant long-run REER effect contrasts with studies reporting persistent exchange-rate effects, suggesting that Tanzania's tourism attractiveness extends beyond price factors. This finding implies that while exchange-rate fluctuations create short-term volatility in tourist arrivals, their long-term effects are less pronounced, possibly because tourists adapt to persistent exchange-rate changes over time or because

Tanzania's unique attractions (wildlife, beaches, cultural heritage) compensate for price disadvantages. The long-run insignificance of REER may also reflect the fact that tourists from high-income countries are less price-sensitive, or that Tanzania's tourism products are relatively inelastic to price changes in the long run.

The findings also align with Push-Pull Theory, because Tanzania's wildlife, beaches, cultural heritage and other attractions can continue attracting tourists despite long-run exchange-rate movements. The strong income effects indicate that tourists' economic capacity (push-side conditions) interacts with Tanzania's destination attributes (pull factors). The significant error-correction coefficient further confirms that tourism demand adjusts rapidly toward equilibrium following short-run shocks, suggesting that Tanzania's tourism sector is resilient and can recover quickly from economic disturbances.

Overall, the results support the three theories while demonstrating that their explanatory relevance varies across time horizons. The TDC Theory is particularly relevant for explaining short-run REER effects, while Utility Theory provides a stronger explanation for long-run income effects. The Push-Pull Theory helps explain why Tanzania remains attractive despite short-run price fluctuations.

13. CONCLUSION

The study investigated the short-run and long-run effects of Real Effective Exchange Rate (REER) dynamics on international tourism demand in Tanzania using the ARDL bounds-testing approach. The study concludes that REER dynamics play an important but time-dependent role in determining international tourism demand in Tanzania.

The ARDL bounds test confirms a stable long-run relationship among tourism demand, tourists' income and REER. In the short run, REER has a negative and statistically significant effect, indicating that deterioration in Tanzania's price competitiveness can reduce international tourist arrivals. However, its long-run effect is negative but statistically insignificant, suggesting that tourists' destination decisions over time are influenced by broader factors beyond exchange-rate competitiveness.

Per capita income in China, the United States and Canada has positive and significant effects on tourism demand in both the short and long run. The significant error-correction coefficient further demonstrates rapid adjustment toward equilibrium, with approximately 86.5% of short-run disequilibrium corrected within one period.

Overall, maintaining destination competitiveness while strengthening tourism attractions and responding to income conditions in major source markets is essential for sustaining Tanzania's international tourism demand. The study contributes to the theoretical understanding of tourism demand by demonstrating the relevance of the TDC Theory, Utility Theory, and Push-Pull Theory in the context of a developing country, while also providing empirical evidence on the differential effects of REER across time horizons.

14. RECOMMENDATIONS

Based on the findings of this study, the following recommendations are made:

1. **Prioritize Exchange-Rate and Price Competitiveness:** Tanzanian policymakers should prioritize exchange-rate and price competitiveness, particularly in the short run, by promoting macroeconomic stability and avoiding policies that unnecessarily increase the relative cost of tourism services. This includes maintaining low and stable inflation rates, avoiding excessive currency appreciation, and implementing policies that support a competitive exchange rate.
2. **Develop Source-Market-Specific Strategies:** Tourism authorities and industry stakeholders should develop market-specific strategies targeting China, the United States and Canada, where rising incomes generate significant tourism opportunities. These strategies should recognize the different income elasticities across source markets and tailor marketing efforts accordingly.
3. **Diversify and Strengthen Tourism Products:** Tanzania should diversify and strengthen its tourism products, including wildlife, cultural, coastal and adventure tourism, so that destination attractiveness remains strong even when exchange-rate conditions are less favourable. This includes investing in new tourism attractions, improving existing facilities, and developing niche tourism segments.
4. **Adopt Flexible Pricing Strategies:** Tourism businesses should adopt flexible pricing strategies and monitor exchange-rate movements when designing packages for international visitors. This could include offering discounts during periods of unfavourable exchange rates, developing tiered pricing structures, and using dynamic pricing strategies based on demand conditions.
5. **Improve Tourism Infrastructure and Service Quality:** Policymakers should improve tourism infrastructure, service quality, digital promotion and destination management to strengthen Tanzania's long-term competitiveness. These measures can reduce excessive dependence on exchange-rate advantages and support sustainable growth in international tourism demand.
6. **Strengthen Tourism Marketing and Promotion:** The Tanzania Tourist Board should increase investment in tourism marketing and promotion, particularly in the identified source markets. This includes participating in international tourism fairs, developing targeted digital marketing campaigns, and leveraging social media to reach potential tourists.
7. **Monitor Economic Conditions in Source Markets:** Tourism authorities should continuously monitor economic conditions in major source countries to guide timely tourism promotion and investment

decisions. This requires establishing a tourism monitoring system that tracks economic indicators in source markets and assesses their potential impact on tourist arrivals.

15. IMPLICATIONS OF THE STUDY

15.1 Theoretical Implications

The study contributes to the theoretical understanding of tourism demand by demonstrating the relevance of the Tourism Destination Competitiveness (TDC) Theory, Utility Theory, and Push-Pull Theory in the context of a developing country. The findings support the proposition that destination competitiveness is influenced by both destination-specific factors (such as attractions and infrastructure) and external economic conditions (such as source-country income and exchange rates).

The differential effects of REER across time horizons provide empirical support for the dynamic nature of tourism demand, a concept that is central to the TDC framework. The study demonstrates that while exchange-rate competitiveness is important in the short run, its long-run effects are less pronounced, suggesting that destination managers should adopt different strategies for managing short-run volatility versus long-run competitiveness.

The significant income effects across all three source markets support Utility Theory, which posits that consumers maximize utility subject to income constraints. The finding that income elasticities differ across source markets underscores the importance of disaggregating source markets when analysing tourism demand, a proposition that aligns with recent advancements in tourism economics.

15.2 Practical Implications

The study has practical implications for tourism policymakers, destination marketers, and tourism industry stakeholders in Tanzania. The findings highlight the importance of market intelligence and targeted marketing strategies that recognize the heterogeneity of source markets. The strong income elasticities for Chinese and Canadian markets suggest that these markets offer significant growth potential, provided that marketing efforts are appropriately tailored to their preferences and economic conditions.

The significant short-run REER effects indicate that tourism businesses should monitor exchange-rate movements closely and adjust pricing strategies accordingly. This is particularly important for businesses that rely heavily on international tourists, as exchange-rate fluctuations can significantly affect demand.

15.3 Policy Implications

The policy implications of the study are substantial. The significant short-run effects of REER on tourism demand underscore the importance of macroeconomic stability for tourism development. Policymakers should prioritize stability in the macroeconomic environment to maintain Tanzania's international price competitiveness. This includes maintaining low and stable inflation, avoiding excessive currency

appreciation, and implementing policies that support a competitive exchange rate.

The strong income effects suggest that policies that promote economic growth in source markets may indirectly benefit Tanzania's tourism sector. This implies that Tanzania should maintain strong diplomatic and economic ties with its major source markets to facilitate tourism growth.

The rapid adjustment toward equilibrium, as indicated by the error-correction coefficient, suggests that Tanzania's tourism sector is resilient and can recover quickly from economic disturbances. This has implications for crisis management and tourism recovery strategies, indicating that well-designed interventions can effectively support tourism recovery following shocks.

16. LIMITATIONS OF THE STUDY

While this study provides valuable insights into the determinants of tourism demand in Tanzania, several limitations should be acknowledged:

1. **Generalizability:** The study is limited to Tanzania and cannot be generalized to other developing countries without further empirical investigation. Different destinations may exhibit different tourism demand patterns due to variations in attractions, infrastructure, and economic conditions.
2. **Data Limitations:** The study relies on secondary time-series data, which may suffer from measurement errors and limited availability of certain variables. The data period (1995-2024) was constrained by the availability of consistent time-series data for all variables. Additionally, quarterly data for some variables may not be available for the entire study period, which could affect the accuracy of the analysis.
3. **Variable Selection:** The study focused on economic determinants (income and REER) and did not include other potentially important determinants of tourism demand, such as tourism infrastructure, marketing expenditure, travel costs, geopolitical factors, and health-related factors. Future research could incorporate these variables to provide a more comprehensive understanding of tourism demand determinants.
4. **Structural Breaks:** The study does not account for structural breaks in the tourism demand series, which could affect the long-run relationships among variables. Events such as the global financial crisis, the COVID-19 pandemic, and policy changes could have caused structural changes in tourism demand patterns.
5. **Measurement Issues:** Tourism demand is measured using international tourist arrivals, which may not fully capture tourism expenditure or the economic impact of tourism. Alternative measures such as tourism receipts or tourist nights could provide additional insights.

6. **Model Limitations:** While the ARDL approach is robust for analysing cointegration relationships, it is subject to limitations, including the assumption of a single cointegrating relationship and the need for appropriate lag selection. The presence of I(0) and I(1) variables also imposes certain restrictions on the model specification.
7. **Exchange Rate Measurement:** The study uses the Real Effective Exchange Rate (REER) as a measure of price competitiveness. While REER provides a more comprehensive measure than nominal exchange rates, it may not fully capture all aspects of price competitiveness, particularly for tourism services that have specific price dynamics.
7. **Forecasting Studies:** Future research could employ the estimated ARDL model for forecasting tourism demand in Tanzania, which would be valuable for tourism planning and policy formulation.
8. **Qualitative Research:** Qualitative studies could complement the quantitative findings by exploring tourism decision-making processes, tourist motivations, and perceptions of Tanzania as a destination. This could provide deeper insights into the factors that influence tourist choices.
9. **Nonlinear and Asymmetric Analysis:** Future research could explore whether the effects of REER on tourism demand are asymmetric (i.e., whether appreciation and depreciation have different effects) using nonlinear ARDL or threshold regression approaches.

17. FUTURE RESEARCH DIRECTIONS

Based on the findings and limitations of this study, several avenues for future research are suggested:

1. **Incorporation of Additional Variables:** Future research should extend the model by incorporating additional determinants of tourism demand, such as tourism infrastructure investment, marketing expenditure, transportation costs, visa requirements, political stability, and health-related factors. This would provide a more comprehensive understanding of tourism demand determinants in Tanzania.
2. **Inclusion of Structural Breaks:** Future studies should consider incorporating structural breaks in the analysis to account for major events that may have altered tourism demand patterns. This could be achieved using the ARDL model with structural breaks or the Gregory-Hansen cointegration test.
3. **Alternative Proxies for Tourism Demand:** Future research could use alternative measures of tourism demand, such as tourism expenditure, tourist nights, or tourism receipts, to examine whether the results are robust to different specifications of the dependent variable.
4. **Disaggregated Source Market Analysis:** Future studies could conduct a more disaggregated analysis of source markets, examining the effects of income, exchange rates, and other variables on tourism demand from individual source markets using separate models. This would help identify market-specific determinants and develop more targeted marketing strategies.
5. **Sectoral Analysis:** Future research could examine tourism demand determinants across different tourism segments (e.g., beach tourism, wildlife tourism, cultural tourism) to identify segment-specific factors and develop tailored strategies for each segment.
6. **Comparative Studies:** Comparative studies examining tourism demand determinants across multiple destinations in Africa could provide insights into regional patterns and identify best practices for tourism development.
10. **Tourism Competitiveness Analysis:** Future studies could conduct a comprehensive analysis of Tanzania's tourism competitiveness, examining not only price competitiveness but also other dimensions such as infrastructure, human resources, environmental sustainability, and technological readiness.

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