

EFFECTIVE EXCHANGE RATE VOLATILITY AND ITS EFFECT ON TOURISM DEMAND IN INDIA: A COINTEGRATION ANALYSIS

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Abstract

Tourism has played a vital and critical role in the economy of the country since ancient times. Demand for tourism at the destination is a function of multitude of variables like the level of domestic prices, income of the tourists, foreign exchange rate, international prices, cost of travel, etc. The present study examines the relationship between effective exchange rates and foreign tourist arrivals in India based on time series data of more than two decades. The results highlight the existence of a causal relationship between the exchange rate and foreign tourist arrivals in India. Further, the results of the study suggests that in order to have higher rate of attraction of inbound tourism in the country, then along with having higher investment levels in the tourism sector, policy makers need to be highly perceptive to the idea of managing the domestic prices in the country. An intention to increase the level of investment in the tourism sector, policymakers need to highly receptive to an idea of managing the level of domestic prices in the country.

Keywords: Tourism; Foreign Exchange rate; Domestic prices; Investment.

VOLATILIDADE DA TAXA DE CÂMBIO EFETIVA E SEU EFEITO NA DEMANDA DE TURISMO NA ÍNDIA: UMA ANÁLISE DE COINTEGRAÇÃO

Resumo

O turismo tem desempenhado um papel dominante vital e crítico na economia do país desde os tempos antigos. A procura de turismo no destino é uma função de uma multiplicidade de variáveis, múltiplas variáveis coletivas, como o nível de preços internos, o rendimento dos turistas, a taxa de câmbio, os níveis de preços internacionais, o custo da viagem etc. O presente estudo examina a relação entre as taxas de câmbio efetivas e as chegadas de turistas estrangeiros à Índia com base em dados de séries temporais de mais de duas décadas. Os resultados destacam que existe uma relação causal entre a taxa de câmbio e as chegadas de turistas estrangeiros na Índia. Além disso, os resultados do estudo sugerem que, para tentarmos fazer uma observação de que uma taxa mais elevada de atração do turismo receptivo, se quisermos atrair um maior número de turistas no país, então, juntamente com níveis de investimento mais elevados no setor do turismo, os decisores políticos precisavam ser altamente perceptivos à ideia de administrar os preços internos do país. Com a intenção de aumentar o nível de investimento no setor do turismo, os decisores políticos precisam de ser altamente receptivos à ideia de gerir o nível de preços internos no país.

Palavras-chave: Turismo; Taxa de Câmbio; Preços Domésticos; Investimento.

VOLATILIDAD DEL TIPO DE CAMBIO EFECTIVO Y SU EFECTO SOBRE LA DEMANDA TURÍSTICA EN LA INDIA: UN ANÁLISIS DE COINTEGRACIÓN

Resumen

El turismo ha desempeñado un papel dominante vital y crítico en la economía del país desde la antigüedad. La demanda de turismo en el destino es función de una multitud de variables, múltiples variables colectivas como el nivel de precios internos, los ingresos de los turistas, el tipo de cambio, los niveles de precios internacionales, el costo de los viajes, etc. La relación entre los tipos de cambio efectivos y las llegadas de turistas extranjeros a la India se examinan en el presente estudio examina la relación entre los tipos de cambio efectivos y las llegadas de turistas extranjeros a la India basándose en datos de series temporales de más de dos décadas. Los resultados resaltan que existe una relación causal entre el tipo de cambio y las llegadas de turistas extranjeros a la India. Además, los resultados del estudio sugieren que para tener una mayor tasa de atracción de turismo receptor si deseamos atraer una mayor afluencia de turistas en el país, además de tener mayores niveles de inversión en el sector turístico, los responsables de la formulación de políticas Es necesario ser muy perspicaz ante la idea de gestionar los precios internos en el país. Con la intención de aumentar el nivel de inversión en el sector turístico, los responsables de la formulación de políticas deben ser muy receptivos a la idea de gestionar el nivel de precios internos en el país.

Palabras clave: Turismo; Tipo de cambio; Precios internos; Inversión.

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1 INTRODUCTION

In the present globalised world, the composition of the country's Gross Domestic Product (GDP) has witnessed structural change whereby the service sector is driving the reigns of the economy. The service sector has emerged as one of the fastest growing sector in World GDP (Azer et al, 2016). Tourism is considered as one of the prominent sub-sectors within the service sector and is ranked next to manufacturing sector in terms of contribution towards Indian

GDP (Baksi and Parida, 2020). This sector contributes significantly to GDP, employment and more importantly foreign exchange earnings. India has been a center of attraction for tourists since ancient times.

The usefulness of tourism for the Indian economy can be gauged from the fact that the share of tourism in India's total GDP and total employment stood at 5 percent and 13 percent in 2018-19, respectively (Economic Survey, 2020-21). In 2017, Foreign Tourist Arrivals (FTAs) and Foreign Exchange Earnings (FEEs) witnessed a growth of 14 percent and 19



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percent, respectively. Similarly, India ranked 23rd in terms of International tourist arrivals and 34th in the Travel and Tourism Competitiveness Index (World Economic Forum, 2019).

Many factors directly influence demand for foreign tourism at destinations as highlighted in the tourism literature like the relative price of the destination and competitor destinations, the exchange rate, income of the origin country, transport costs, etc (Stabler et al., 2009). Vieira, Andrade, and Pimentel (2023) highlighted another factor namely crime at the destinations to be a major negative factor inversely impacting both the tourist arrivals at the destinations and subsequently leading to lack of currency inflow at the destination.

Tourists visiting destinations make rational decisions for choosing and spending money on multiple occasions like accommodation, food, tours and shopping (Lee, 2012). Tyagi (2022) underlines the importance of foreign exchange as a critical determinant along with number of factors that determines tourism demand by inbound tourists.

One of the significant determinant of tourism demand is the foreign exchange rate. Appreciation and depreciation of the domestic country's currency relative to foreign currency are important factors in determining the choice to visit a destination (Sharma et al., 2022). Bhaskaran Pillai et al. (2021) do admit the destinations needs to be more proactive in attracting foreign visitors with the interdisciplinary research at the times of crisis and its future actions.

Different methodologies have been applied to understand the impact on foreign exchange on destination country import and export. How do changes in exchange rates affect t foreign tourist arrivals in the country? Is there any causal relationship between these two variables? This is one of the under-researched areas in tourism literature. More importantly, most of these studies are based on developed or high-income countries alone (Surugiu et al., 2011; Khoshnevis and Khanalizadeh, 2017).

Limited studies are available on the impact of Effective Exchange Rates (EERs) on Foreign Tourist Arrivals (FTAs), especially with reference to India. Given this background, the objective of the paper is to study and examine the impact of EERs on FTAs in India from 1993 to 2019 and to determine whether there exists any causal relationship between the two.

The structure of the paper has five sections. A review of the literature is given in Section 2 presents. Section 3 is about the data and methodology used in the present study. In Section 4, econometrics results are discussed and conclusions followed by policy implications are presented in Section 5.

2 REVIEW OF LITERATURE

2.1 Determinants of Decision regarding International travel

Zins and Ponocny (2022) emphasise the hedonic and eudaimonic factors for experiencing travel, Lim (1997) highlights factors like the income level patterns of the tourist travelling to an international destination, relative or comparable prices of goods and services to be purchased at the host destination, cost of transportation, exchange rates, dynamics to travel, trends of the destination and the qualitative factors act as a catalyst to operationalize travel in getting the best value for money.

Trade theory provides evidence that the movement of merchandise is termed international trade and the choice of people to move from one country to another is called international tourism (Keum, 2010). In a basic understanding to travel with motivation as a key determinant Dann (1977) proposed seven key dimensions creating a link with Maslow's Need Hierarchy Theory (1943) to define pull and push factors in selecting, choosing and operating the purchase process (Pizam, Mansfeld, & Chon, 1999).

The demand pattern for inbound tourism is largely set by offshore travel agents and tour operators with tourism product sales and prices set in form of travel packages to overseas clients. Further, operating at the international level and managing the tourism demand with demand forecasting (Song & Turner, 2006) is a critical element to look for more tourist arrivals at the destination.

In addition, destination image and destination competitiveness emerged as important factors in several studies (Jenkins, 1999; Stylos et al., 2016) and these two factors were projected as practical solutions for several economies all over the world in attracting visitors to their distinctive destinations (Pike & Page, 2014).

Similarly, other studies have used multidimensionality as a concept dedicated to the destinations and measured the same from the demand and supply side to further improve the future course of action for destination development, impact on decision making of the potential decision makers and repeat visits to the destination (Jenkins, 1999; Beerli, & Martin, 2004; Tasci, 2006).

2.2 Foreign Exchange Rate and Tourism Demand

The pre-eminent way to understand the dynamics of travel to a new land is mostly understood by tourists in form of exchange rates and the information available to them (Mertzanis & Papastathopoulos, 2021). Skabeeva et al. (2022) argue about the risks which directly affect the economic decisions of the tourists are linked with the fluctuations in foreign exchange rates. Loeb (1982) brings out the point that favourable exchange rates have a positive inclination giving benefit to the people in the short term as exchange rates fluctuate much more rapidly in comparison to the relative prices of inflation.

Lee (2012) affirms that the tourism sector and tourism-related firms need to be exposed to a critical hidden element in exchange rate changes along with exchange rate risks. Foreign exchange is a major determinant of the significance of the travel and tourism sector (Theobald, 2005). Inchausti-Sintes et al. (2021) explained that income elasticity has a direct impact on the brand positioning of the destination while carrying out the research on Balearic vs the Canary Islands. Craig (2019) estimated that demand for air travel increases by 4.6% to 9.3% when income changes by 1%.

Peng et al. (2015) using comparative analysis in their study of Asian and American tourists found these tourists to be more price sensitive and concluded that the appropriate marketing strategy needs to be more price sensitive in comparison to the strategic intervention for the tourists from Oceanic group and hence the promotion of unique experiences at the destination need to be promoted. Dwyer et al (2002) utilized price competitiveness index with foreign

exchange to argue that tourism operators have no control over foreign exchange fluctuations being a part of the trade-off between and among the nations but to make tourism more attractive travel agents have more control over the issues involving price.

Hui and Chi-Ching (1996) highlighted three dimensions of the travel behavior of the Japanese traveller to Canada using Exchange Rate, Income and Habit and exchange rate emerged as the significant factor. Sharma and Pal (2019) highlighted that currency devaluation and depreciation in the host country increase tourist inflow in the nation making it more attractive and vice-versa.

Chaitip et al. (2008) found that when the Indian currency becomes stronger by 1 % in comparison to that of its major inbound markets like England, Malaysia, etc. it leads to a decrease in international tourist arrivals in India between 0.003% to 0.006%. Dincer et al. (2015) studies the relationship between the tourism sector revenues and the REER in Turkey and found that there was no causal relationship between the two variables.

The number of tourist arrivals and corresponding expenditure level is positively related to the depreciation of the national currency, per capita World GDP, and decline in relative domestic prices. Martins et al (2017). Karimi et al. (2018) in their study of Malaysia showed that tourism arrival is positively related to a country's GDP.

3 METHODOLOGY

3.1 Nature and Sources of Data, Variables Defined and Methodology Used

3.1.1 Nature and Sources of Data

Secondary data is used for the study. Monthly time series data pertaining to Foreign Tourist Arrivals (FTAs), effective exchange rates i.e Nominal Effective Exchange Rate (NEER) and Real Effective Exchange Rate (REER) from 1993 to 2019 were used for the study. Effective exchange rates are an indicator of the external competitiveness of an economy and they also provide a fair value for the currency. NEER and REER are two such effective exchange rates.

NEER is an index of the weighted average of exchange rates of domestic currency with respect to a basket of currencies of trading partners. On the other hand, REER is the NEER adjusted by the inflation differential. The data for month-wise foreign tourist arrivals was collected from annual reports of the Ministry of tourism, the government of India. Data on month-wise NEER and REER of Indian rupee based on 36 currency Export and trade-based weight) is culled from Reserve Bank of India(RBI) reports.

3.1.2 Variables Defined

LogFTA is the natural log of FTAs. LogNEER and LogREER are a natural log of NEER and REER.As data on NEER and REER was based on different base years i.e. 1985, 1993-94 and 2004-05. By using the linking factor method, all the figures were harmonised to the base year

2004-05. All three variables were transformed into a Natural Logarithmic function to find the percentage relationship and changes between dependent variables i.e FTAs and independent variables (NEER and REER) used in the model.

3.1.3 Methodology

Before proceeding with empirical estimation all three variables were transformed into a Natural Logarithmic function. Transformation to logarithmic function helps the researchers to establish the percentage relationship and changes between dependent variables i.e FTAs and independent variables (NEER and REER) used in the model.

The following is the functional form of the model which is estimated:

$$\log \log FTA = \alpha + \beta_1 \log NEER_t + \beta_2 \log REER_t + \epsilon_t$$

Where;

Log FTA = Natural log of the number of Foreign Tourist Arrivals in India from 1993 to 2019

Log NEER = Natural log of NEER

Log REER = Natural log of REER

ϵ_t = error term

Stationarity of the series is one of the fundamental assumptions in time series analysis. If variables are not stationary then the computed t-statistics under OLS regression will not converge to their true values as sample size increases (Bhaumik, 2015). Therefore, all three variables are tested for stationary properties. For estimating the long-term relationship between variables, a cointegration test is applied. Error Correction mechanism is applied to combine short-run and long-run dynamics. Finally, to analyse the causal relationship Granger Causality test is applied (Konya, 2004) and best suited in the similar situations.

4 RESULTS AND DISCUSSION

4.1 Augmented Dickey-Fuller Test of Unit Root

One of the commonly used tests for checking the stationarity of the series is the Augmented Dickey-Fuller test (ADF) (Bhaumik, 2015). Under this test, the following hypothesis is tested

HO: There is the presence of a unit root

HA: There is no unit root

Table 1. Augmented Dickey-Fuller Test at First Difference.

ADFTestStastics		ADFTestStastics		
LogFTA (t-stastics)	Probability	logREER	Probability	LogNEER
-7.631327	0.0000*	-16.70713	0.000	-16.01298
1% Level		-3.451491		-3.451283
5% Level		-2.870743		-2.870651
10% Level		-2.571744		-2.571695

Source: own elaboration.

The results of the unit root test for the first difference of LogFTA, LogNEER and LogREER are provided in table Table 1 above. It is observed that the computed t-statistics (-7.631327 for LogFTA; -16.70713 for LogREER and -16.01298 for LogNEER) are lower than all critical t-statistic values. This indicates that the logFTA, logNEER and logREER series in the first difference form is stationary.

4.2 Estimate of Cointegration Regression and the Error Correction Model

In the next step, we examine the cointegration between logFTA, logNEER and logREER. For examining cointegration the results of Ordinary Least Square (OLS) regression are given in table 2.

$$ogFTA = 7.929745 - 2.480140 \logNEER + 3.450001 \logREER$$

OLS results indicate that both variables (i.e.logNEER and logREER) are significant.

LogNEER has a negative impact on foreign tourist arrivals whereas REER positively affects FTAs. Since the variables are in logs, the estimated slope coefficient (-2.480140 and 3.450001) represents the long-run elasticity of FTAs to change in NEER and REER. Once we have run OLS we need to examine whether cointegration is valid or not. It is done by diagnosing the stationarity of the residual series. For our model, the residual series was stationary.

Table 2. Cointegration between logFTA, logNEER and logREER

F-statistic	Adjusted R square	Method:Least Square	Dependent Variable: LogFTA	LOGREER	Variable	Coefficient	Standard Error
500.854	0.763889			3.450001	C	7.929745	1.944708
	Log Likelihood	R-squared	Observations	3.22493	LOGNEER	-2.48014	0.140528
	-57.7018	0.76542	310	10.6979	Variable	Coefficient	Standard Error
				0.0000	C	7.929745	1.944708

Source: own elaboration.

4.3 ErrorCorrection Model

Table 2 highlights that cointegration is valid for our model. The validity of cointegration implies that there exists a long-run relationship between the variables. However, we need to check whether there are short-term dynamics which are responsible for keeping the long-run relationship. The

Error Correction Method (ECM) estimates both short-term and long-term effects of one-time series on another.

The equation for ECM is given below

$$\Delta \logFTA = \varphi + \gamma \Delta \logREER + \alpha \Delta \logNEER + \lambda(res)_{t-1} + \varepsilon_t$$

Table 3: Estimated Error Correction Model results.

F-statistic	Adjusted R square	Method:Least Squares	Dependent Variable: D(LogFTA)	RESIDLOGFTALOG NEERLOGREER(-1)	D(LOGREE R)	D(LOGNEER)	Constant	Variable
12.90956	0.104248			-0.15501	-2.609151	3.804553	0.011525	Coefficient Estimate
Prog(F-stastic)	Log Likelihood	R-squared	Observation: 308 after adjustments	0.031185	1.191162	1.232878	0.009296	Standard Error
0.0000	132.5	0.113001		-4.97071	-2.190425	3.08591	1.239832	t-statistic
				0.0000	0.0293	0.0022	0.216	Porobability

Source: own elaboration.

$$\Delta \logFTA = 0.011525 - 2.609151 \Delta \logREER + 3.804553 \Delta \logNEER - 0.155010(res)_{t-1}$$

From the above table and equation it is evident that the coefficient of residual is -0.155010. The coefficient statistic is significant statistically and has a negative impact, which implies that if there were any short-term disturbances from the long-run relationship such disturbance would be corrected overtime.

To examine whether there exists any causality between the variables in our model Granger Causality test is applied. The results of the Granger Causality Test are presented in Table 4.

4.4 Granger Causality Test

Table 4. Granger Causality Tests (Pairwise)

NullHypothesis	Number of Lags: 2		
	Number of observations	F-Statistics	Prob
LOGNEER does not Granger Cause LOGFTA	310	17.788	5.00E-08
LOGFTA does not Granger Cause LOGREER	5	6.9280	0.0011
LOGREER does not Granger Cause LOGFTA	307	6.8937	0.0012
LOGFTA does not Granger Cause LOGREER	6	5.1496	0.0063
LOGREER does not Granger Cause LOGNEER	307	6.4764	0.0018
LOGNEER does not Granger Cause LOGREER	3	5.1101	0.0066

Source: own elaboration.

Results of the table exhibit that Granger Causality exists between logFTA and logNEER; logFTA and logREER; logREER and logNEER. Further, bidirectional causality runs from logFTA and logREER and logREER and logNEER. Fluctuations in the real exchange rate do have an impact on the number of foreign tourist arrivals in India and further fluctuations in Foreign tourist arrivals do affect the real effective exchange rate. This relationship indicates that higher rates of inflation not only affect internal economic indicators like GDP, employment, and savings but foreign tourist arrivals to

5 CONCLUSION AND POLICY IMPLICATION

In recent years development of tourism has taken center stage in the economic growth of the country. Slogan like "Incredible India- Atulya Bharat" is given with an aim to boost tourism with a promotional campaign to create attractiveness towards a diverse range of tourism products.

Government of India has announced many schemes and programmes to boost domestic tourism along with International and we aim to provide a safe, secure, and spectacular experience for international tourist visiting India. Exchange rate fluctuations not only affect significantly economic indicators like GDP, trade, and employment but significantly affect tourism demand.

Time series data pertaining to nearly two and half a decade from 1993-2019 was used to examine the relationship between effective exchange rate and foreign tourist arrivals in India. After checking for the stationarity of the variables, the long-run relationship among the variables was examined via cointegration analysis.

Finally, the causality test revealed that both nominal and real effective exchange rates affect the tourism demand in India. Further, a causal relationship existed between foreign tourist arrivals and real effective exchange rates. These results provide an important policy implication.

First, the policymakers should keep a close watch on the inflation level in the country as it is not only determinantal from the economic point of view but also for tourism demand. Second, as FTAs also impact exchange rates policies and programmes need to develop to increase/attract foreign tourists to India along with impetus to investment and spending in the tourism sector with a tunnel vision approach is needed.

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CRediT author statement

Term	Definition	Author 1	A2	A3
Conceptualization	Ideas; formulation or evolution of overarching research goals and aims	x	X	
Methodology	Development or design of methodology; creation of models	x	x	x
Software	Programming, software development; designing computer programs; implementation of the computer code and supporting algorithms; testing of existing code components	x		
Validation	Verification, whether as a part of the activity or separate, of the overall replication/ reproducibility of results/experiments and other research outputs	x	x	
Formal analysis	Application of statistical, mathematical, computational, or other formal techniques to analyze or synthesize study data	x	x	x
Investigation	Conducting a research and investigation process, specifically performing the experiments, or data/evidence collection	x	x	
Resources	Provision of study materials, reagents, materials, patients, laboratory samples, animals, instrumentation, computing resources, or other analysis tools	x	x	
Data Curation	Management activities to annotate (produce metadata), scrub data and maintain research data (including software code, where it is necessary for interpreting the data itself) for initial use and later reuse	x	x	
Writing - Original Draft	Preparation, creation and/or presentation of the published work, specifically writing the initial draft (including substantive translation)	x	x	x
Writing - Review & Editing	Preparation, creation and/or presentation of the published work by those from the original research group, specifically critical review, commentary or revision – including pre- or post-publication stages	x	x	x
Visualization	Preparation, creation and/or presentation of the published work, specifically visualization/ data presentation	x	x	x
Supervision	Oversight and leadership responsibility for the research activity planning and execution, including mentorship external to the core team	x	x	
Project administration	Management and coordination responsibility for the research activity planning and execution		x	
Funding acquisition	Acquisition of the financial support for the project leading to this publication	x	x	x

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