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Investigating The Impact Of Political Risk On Tourism Demand: Applying Dynamic ARDL simulation method

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Abstract:

Objective:
The tourism sector, a significant component of the global service industry, is vital for a nation’s economic development and income generation. Therefore, it is essential to ascertain the factors influencing the demand for this type of service. The main aim of this study is to examine the impact of exchange rates on tourism demand in Iran.

Methods:
This study examined the long-term and short-term relationships between Iran’s tourism arrivals and variables such as the exchange rate, political risk, and other factors influencing tourism demand, including inflation, foreign investment, oil revenue, GDP, and population, employing time series data from 1995 to 2024 and the Dynamic ARDL simulation method. **Results**:
The results indicate that political risk significantly detrimentally affects Iran’s tourism demand, whereas the exchange rate has a notable positive influence. Since 2010, when the fourth round of sanctions began, political risk has escalated owing to internal and external conflicts, negatively impacting international tourism demand.

Conclusions:
The interplay between exchange rate variables and political risk was found to positively influence tourism demand. The increase in the exchange rate decreases the costs of tourism services, and also stimulates creative business endeavors in the tourism industry.

1. Introduction

In many nations, tourism is progressively becoming a crucial economic sector. This activity positively impacts foreign exchange gains, infrastructure development, investment, and employment generation (Habibi and Amani,

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2022). The World Tourism Organization predicts that 1.4 billion international tourists traveled to the country in 2018. Tourism exports grew at a faster rate of 4 percent, in contrast to trade exports, which expanded by 3 percent. International tourist numbers are anticipated to attain 1.8 billion by 2030 as a result of this swift expansion (Calderwood and Soshkin, 2019). As a result, several countries have successfully recovered due to the significant expansion of the tourism sector, notwithstanding the volatility of the global economy. Many countries view the promotion of tourism as a strategy for achieving greater growth, given its correlation with economic benefits and its role in future economic development. Tourism is frequently acknowledged as an essential passport for development (Divisekera, 1995, 2003). Furthermore, tourism as a service exhibits distinct characteristics, and unlike most commodities, it is consumed concurrently with its delivery. Therefore, to access tourism services, passengers must travel to the tourist destination. Scholars typically concentrate on the factors driving tourism demand at particular places and the underlying causes of such desire (A Tisdell, 2013). Numerous studies indicate that exchange rates, transportation infrastructure, national legislation, and both natural and cultural resources substantially influence tourism demand (Calderwood and Soshkin, 2019). Tourism is evidently affected by factors such as terrorism and political instability, as tourists inherently want to visit secure and safe destinations (Akadiri et al., 2020). Furthermore, fluctuations in exchange rates influence tourist’s purchasing power. Countries with depreciated exchange rates, such as Iran, Algeria, Egypt, and Tunisia, have augmented the purchasing power of tourists. In recent years, these nations have enhanced their competitiveness owing to decreased air travel expenses, ticket levies, and lodging costs (Calderwood and Soshkin, 2019). Thus, fluctuations in exchange rates affect the demand for both domestic and foreign tourism. This study examines the influence of exchange rate fluctuations on tourism demand in Iran from 1995 to 2024, employing three models. The preliminary model evaluates the impact of exchange rates, foreign investment, inflation and GDP on tourism demand. The second model evaluates the influence of political risk, inflation and population on tourism demand. The third model evaluates the interaction impacts of exchange rate and political risk, real oil revenue, and real foreign investment on tourism demand.

2. Literature review

International tourist flow variations are affected by exchange rate fluctuations, relative inflation of tourism-related products and services, and global instability. Therefore, analyzing the impact of these factors, particularly the exchange rate, is essential. A plethora of studies has been conducted in this field, with the most notable research outlined in the table, classified into foreign and domestic studies.

Table 1: A summary of foreign studies

paper	Methodology	Main results
Seifollahi and Dehghani Ghahnavieh (2024)	structural equation modeling techniques	Effective experience, behavioral experience, and brand value congruence have a positive and significant effect on Customer as tourist and also on productivity in tourism.
Asadpour Kordi et al. (2023)	the analysis technique of fuzzy data envelopment and the stochastic Tobit panel model	They examine the economic, social, and environmental elements, such as GDP per capita, inflation, social security, and population, within the tourist sector throughout 31 provinces of Iran from 2011 to 2017.
Kamali et al.(2022)	the almost ideal demand method	They demonstrated the sensitivity of foreign tourists to various factors such as inflation and exchange rates.
Habibi and Amani (2022)	Wavelet coherence (WC) method	Enhancing bilateral diplomatic relations, safety, and security will mitigate political risk in Malaysia.
Irandoust (2019)	Hidden cointegration analysis within a likelihood-based panel framework	He demonstrated a sustained relationship between tourism demand and exchange rate fluctuations.
Dogru et al. (2019)	Cointegration of linear and nonlinear autoregressive distributed lag models (ARDL)	They demonstrated the correlation between the US tourism trade balance and the dollar.
Soofi et al. (2018)	a Generalized Least Squares Model	Their analysis examines the beneficial impacts of Gross Domestic Product, trade openness, population, and exchange rate on tourism demand.
Muzindutsi and Manaliyo (2016)	Autoregressive distributed lag models (ARDL)	They showed that political risks have a long-run effect on real revenue from the tourism industry.
Zeki Dincer et al. (2015)	Dickey-Fuller's test	They analyze the correlation between tourism industry revenues and the real effective exchange rate from 2002 to 2014.
Habibi (2015)	autoregressive distributed lag (ARDL) 'Bound test' approach	The influx of Iranian tourists to Malaysia is positively affected by tourism prices adjusted for exchange rates, and trade value.
De Vita (2014)	GMM	He demonstrated a rising number of tourists to 27 OECD and non-OECD member countries, marked by a relatively stable exchange rate from 1980 to 2011.
Mohd Hanafieh and Mohd Haroon (2010)	The modified gravity model	The data reveal a decrease in tourist arrivals in Malaysia associated with escalating inflation and the consumer price index, whereas an increase in population growth correlates with a rise in tourist numbers in Malaysia.
Durbarry (2008)	a panel data model utilizing fixed and random effects	He illustrated the beneficial effect of tax reduction on the increase in tourist numbers in England.
D. Bond et al. (1977)	Method of approximating	They revealed that fluctuations in exchange rates have considerably impacted both long-term and cyclical patterns in international travel behavior.

Table 2: A summary of domestic studies

paper	Methodology	Main results
Dashtban Farooji et al. (2019)	a mixed data sampling method with different frequencies (MIDAS).	Their analysis demonstrated the effects of exchange rate fluctuation on tourism number in Iran.
Tamizi and Shahbazi (2019)	ARCH/GARCH models and the ARDL model	A significant correlation was identified between exchange rate volatility and tourism in Iran.
Masoomzadeh and Shirafkan Lemsoo (2018)	The gravity method and panel data	They demonstrate the advantageous effect of a constant exchange rate on tourism patterns, emphasizing the essential need of exchange rate stability in drawing international visitors.
Seifollahi et al. (2016)	the panel data approach	They demonstrate a negative association between inflation and tourism.
Khoshnavis Yazdi and Gomami (2016)	the ARDL approach	The official exchange rate and oil price positively influence tourism demand in Iran.

3. Theoretical foundations

The consumption of a varied range of goods and services is a hallmark of visitors (Copeland, 1991). Thus, all goods and services utilized by a traveler in a tourist destination comprise tourism (Divisekera, 1995, 2003). The tourism demand function is derived by optimizing the utility function according to the budget constraint, consistent with microeconomic principles. The consumer has a utility function influenced by multiple factors, such as foreign investment, inflation, exchange rates, political risk, and oil revenue, as outlined in Lancaster's (1971) demand function.

$$U = U(\mathrm{finv}, \mathrm{inf}, \mathrm{er}, \mathrm{pr}, \mathrm{oir}) \quad (1)$$

The tourism demand function is established using Lagrange's theorem:

$$q = q(\mathrm{finv}, \mathrm{inf}, \mathrm{er}, \mathrm{pr}, \mathrm{oir}) \quad (2)$$

In the aforementioned relationship, finv means foreign investment, inf suggests inflation, er represents exchange rate, pr refers to political risk, and oir indicates oil revenue. Consequently, various factors influence Iran's tourism demand. A vital element in improving tourism in the destination country is foreign investment in the sector, including infrastructure improvements such as hotels, airports, roads, and trains. Foreign investment increases in conjunction with the influx of tourists. There is a causal relationship between the number of tourists and foreign investment (Behbudi and Bastan, 2010). In the tourism business, information causes a negative externality. The desire for tourism elevates a nation's price level, reduces its price competitiveness, and diverts travel to other nations (Martin and Witt, 1988). The exchange rate, determined by national government, affects tourism demand (Crotti and Misrahi, 2017). A nation's exchange rate system affects tourism demand; currency depreciation reduces costs for goods and increases visitor numbers, while currency appreciation leads to a decline in visitors. Pr refers to the policies implemented by the host government that restrict the operations of foreign investors (Schmidt, 1986). Furthermore, Iran's reliance on oil revenue affects the country's appetite for tourism. The demand for tourism declines during oil shocks and periods of instability (Khoshnevis Yazdi and Gomami, 2016). The primary method for assessing tourism demand is through the count of tourist arrivals, with the demand model typically expressed as a logarithmic-linear function:

$$lnD_t^i = \beta_0 + \beta_1 lny_t^i + \beta_2 \ln(e_t^{is}p_t^s) + \beta_3 \ln(e_t^{ic}p_t^c) + \beta_4 lnp_t^i + \acute{a}z_t + u_t \quad (3)$$

When *t* denotes the time index, the demand for tourism from country (country of origin) i to the host country is denoted by D^i. Y^i represents the nominal disposable income of the country of origin. The total expenditure by tourists to the host country is termed to as $e^{is}p^s$ with the currency of the country of origin represented in this format (*e* denotes the exchange rate), whereas $e^{ic}p^c$ is the total expenditure of tourist in destination is shown in the currency of the country of origin. $\acute{z} = (z_1, \dots, z_k)$ represents a vector of pertinent variables, while p^i denotes the total expenditure by visitors, quantified by the number of visits originating from their home country. The demand for the product dictates the value of equation (3). The cost of substitute goods and the price impacts are quantified by price variables. The anticipated parameters are $\beta_1 > 0$, $\beta_2 < 0$, $\beta_3 > 0$ and $\beta_4 > 0$, consistent with the behavior of a typical commodity (Khan and Tan Tat Teck, 1998). Under the constraint of homogeneity $(\beta_1 + \beta_2 + \beta_3 + \beta_4) = 0$, the subsequent equation can be restructured:

$$lnD_t^i = \beta_0 + \beta_1 \ln(y_t^i / p_t^i) + \beta_2 \ln\left(e_t^{is}p_t^s / p_t^i\right) + \beta_3 \ln\left(e_t^{ic}p_t^c / p_t^i\right) + \acute{a}z_t + u_t \quad (4)$$

Price determinants refer to the expenses associated with going to a destination. The trip cost index must be a weighted composite of expenses from origin to destination, including ground transportation, lodging, meals, retail prices, and fees for attractions. p_c represents the trip expenses. Witt and Witt (1992) employ a weighted average of price indices from several destinations frequented by travelers from origin i. The weights represent the share of international tourists. The price index for alternative destinations, derived from the weighted average of prices denominated in the currency of the country of origin, is established as follows:

$$\prod_{j=1}^{k}(e_j p_j)^{w_j} = \left(\prod_{j=1}^{k} e_j^{w_j}\right)\left(\prod_{j=1}^{k} p_j^{w_j}\right) = e^{iC}p^C \quad (5)$$

w_j specifies the weights, e_j represents the exchange rate between the origin and the jth destination, and p_j indicates the price of the jth destination. Thus, the exchange rate is a crucial factor influencing tourism expenses (Witt and Witt, 1992). The exchange rate may be included as an autonomous explanatory variable. Only one issue arises: the effect of prices cannot be differentiated from the impact of the exchange rate. Equation (4) can be expressed to differentiate price effects from exchange rate effects.

$$lnD_t^i = \beta_0 + \beta_1 \ln\left({y_t^i}/{p_t^i}\right) + \beta_2 \ln\left({p_t^s}/{p_t^i}\right) + \beta_3 \ln\left({p_t^c}/{p_t^i}\right) + \beta_2^{*} lne_t^{is} + \beta_3^{*} lne_t^{ic} + \acute{a} z_t + u_t \quad (6)$$

Equation (4) is utilized due to significant collinearity issues, notwithstanding the preference for equation (6) for estimate.

4. Research Methodology

The Dynamic ARDL simulation technique is utilized to estimate the models in this research. The dynamic ARDL simulations method is effective for examining cointegration, encompassing both long-term and short-term equilibrium relationships in levels and differences. The dynamic ARDL Simulations method effectively analyzes potential counterfactual alterations in the desired variable under the assumption of ceteris paribus by stochastic simulations and counterfactual shocks (Sarkodie and Owusu, 2020). Consequently, this strategy is beneficial and enhances time series methodologies for policy development. Arellano and Bond (1991) established that in panel data models, improved relationships can be achieved by the orthogonality condition between the lagged values of the dependent variable and the disturbance term. An elementary autoregressive model is defined as follows:

$$y_{it} = \delta y_{i,t-1} + u_{it} \qquad i = 1, \dots, N \qquad t = 1, \dots, T \qquad (7)$$

In equation (7), $u_{it} = \mu_{it} + v_{it}$, where μ_{it} follows an IID distribution with mean 0 and variance $\sigma^2{}_\mu$, and v_{it} follows an IID distribution with mean 0 and variance $\sigma^2{}_v$. To attain a consistent estimation of σ, the first-order difference is employed:

$$(y_{it} - y_{i,t-1}) = \delta(y_{i,t-1} - y_{i,t-2}) + (v_{it} - v_{i,t-1}) \qquad (8)$$

In equation (8), $(v_{it} - v_{i,t-1})$ represents the first-order moving average. Consequently, The Dynamic ARDL simulation method is employed to examine long-term relationships, with all variables exhibiting the trend stationary. The Dynamic ARDL simulation method, DYNARDL(p,q) model, is articulated as follows:

$$y_t = \alpha_0 + \alpha_1 t + \sum_{i=1}^{p} \phi_i y_{t-i} + \acute{\beta} x_t + \sum_{i=0}^{q-1} \acute{\beta}^{*}{}_i \Delta x_{t-i} + u_t \qquad (9)$$

$$\Delta x_t = P_1 \Delta x_{t-1} + P_2 \Delta x_{t-2} + \cdots + P_s \Delta x_{t-s} + \varepsilon_t \qquad (10)$$

Cointegrated variables originate from the first order of K dimensions and do not have cointegration. The components u_t and ε_t are uncorrelated disturbances with a mean of zero and constant variance. P_is are the coefficients matrix in which the autoregressive process Δx_t exhibits stationarity (Hashem Pesaran, 1997). In this test, the null hypothesis posits the absence of a long-term relationship between the variables, while the alternative hypothesis asserts the presence of such a relationship, defined as follows:

$$H_0: \phi_1 = \phi_2 = \cdots = \phi_i = 0 \quad (11)$$
$$H_1: \phi_1 = \phi_2 = \cdots = \phi_i \neq 0$$

The last stage in model estimation is examining short-term relationships to extract long-term relationships (Tamizi and Shahbazi, 2019). The bounds test is performed regardless of whether the model variables are I(0) or I(1).

5. Model estimation and results

5.1 Model Specification

This section will evaluate the experimental model using research data. The results of the estimation are examined. The designated model is evaluated using time series data from 1995 to 2024. The coefficients of this model were estimated utilizing time series data from the Central Bank, the World Bank, and the International Country Risk Guide website. The Dynamic ARDL simulation method is utilized to analyze the influence of the exchange rate and other explanatory variables on tourism demand in Iran. The experimental model utilizes the following variables: ARR for tourism arrivals, ER for exchange rate, PR for political risk, INF for inflation, FINV for foreign investment, OIR for oil revenue, POP for population, and GDP for gross domestic product. Table 3 delineates the many components of the political risk variable. The average of these elements was utilized to assess the influence of the political risk index (Muzindutsi and Manaliyo, 2016):

Table 3: Introduction of political risk components

sequence	component	Maximum points(score)
A	Government Stability	12
B	Socioeconomic Conditions	12
C	Investment Profile	12
D	Internal Conflict	12
E	External Conflict	12
F	Corruption	6
G	Military in Politics	6
H	Religious Tensions	6
I	Law and Order	6
J	Ethnic tensions	6
K	Democratic Accountability	6
L	Bureaucracy Quality	6
Total		100

Source: ICRG, 2024

This research evaluates three models. In all these models, ARR functions as the dependent variable, however the independent variables differ. The Dynamic ARDL simulation method is suitable for variables that are I(0) and I(1), but not for those categorized as I(2). The Dickey-Fuller unit root tests were performed on the variables of the model. The framework for analyzing the influence of LER, LPR, LINF, LFINV, LOIR, LGDP, and LPOP on LARR is delineated as follows:

$$\Delta lnARR_t = \alpha_0 + \sum_{j=1}^{33} \beta_j \Delta lnARR_{t-j} + \sum_{j=1}^{33} \gamma_j \Delta lnER_{t-j} + \sum_{j=1}^{33} \delta_j \Delta lnPR_{t-j} + \sum_{j=1}^{33} \varepsilon_j \Delta lnINF_{t-j} + \sum_{j=1}^{33} \theta_j \Delta lnFINV_{t-j} + \sum_{j=1}^{33} \epsilon_j \Delta lnOIR_{t-j} + \sum_{j=1}^{33} \vartheta_j \Delta lnGDP_{t-j} + \sum_{j=1}^{33} \mu_j \Delta lnPOP_{t-j} + \varphi_1 lnARR_{t-1} + \varphi_2 lnER_{t-1} + \varphi_3 lnPR_{t-1} + \varphi_4 lnINF_{t-1} + \varphi_5 lnFINV_{t-1} + \varphi_6 lnOIR_{t-1} + \varphi_7 lnGDP_{t-1} + \varphi_8 lnPOP_{t-1} + u_t \quad (12)$$

$\Delta lnARR_t$ indicates the variation in the natural logarithm of the number of tourism arrivals in Iran at time t. α_0 represents the intercept, the examined duration spans 30 years, and u_t denotes the disturbance. β_j, γ_j, δ_j, ε_j, θ_j, ϵ_j, ϑ_j and μ_j represent the model's short-term dynamics. φ_1, φ_2, φ_3, φ_4, φ_5, φ_6, φ_7, and φ_8 illustrate the long-term relationship between the model's explanatory variables and the dependent variable. The subsequent hypotheses were employed to support the presence of cointegration:

$$\varphi_1 = \varphi_2 = \varphi_3 = \varphi_4 = \varphi_5 = \varphi_6 = \varphi_7 = \varphi_8 = 0 \quad H_0{:}\ no\ cointegration$$

$$\varphi_1 \neq \varphi_2 \neq \varphi_3 \neq \varphi_4 \neq \varphi_5 \neq \varphi_6 \neq \varphi_7 \neq \varphi_8 \neq 0 \quad H_1{:}\ cointegration$$

Bounds cointegration tests were utilized to assess this idea. If the value of F surpasses the critical value from the table, the null hypothesis is rejected, signifying cointegration between the variables (Pesaran et al., 2001). The models were calculated using Stata 17 software, and the ideal Dynamic ARDL simulation model was selected based on information criteria. The multiplication of LPR and LER was utilized to analyze their cross-sectional impacts. The resulting variable is referred to as the interaction variable. Should the initial equation be as follows:

$$LARR = \alpha + \beta_1 LER + \beta_2 LPR + error \quad (13)$$

To examine the interaction effects, the subsequent equation is proposed:

$$LARR = \alpha + \beta_1 LER + \beta_2 LPR + \beta_3 (LER * LPR) + error \quad (14)$$

$error$ is a stochastic variable that results in the actual value of ARR deviating from its anticipated value (Cox, 1984). Furthermore, the real costs of the explanatory variables were also acquired. Nominal explanatory variable FINV was adjusted for inflation by dividing by the CPI, so converting it to real values (O'Donnell, 1987). The models were delineated as follows:

$$LARR = f(\mathrm{LER, LFINV, LGDP, LINF}) \quad (15) \quad First\ model$$

$$LARR = f(\mathrm{LPR, LINF, LPOP}) \quad (16) \quad The\ second\ model$$

$$LARR = f\left(LERPR, L\frac{FINV}{CPI}, L\frac{OIR}{CPI}\right) \quad (19) \quad The\ third\ model$$

The third model can be expressed as follows:

$$LARR = f(LERPR, LRFINV, LROIR) \quad (20)$$

5.2 Estimation Results

The estimation utilizes the true exchange rate, necessitating no modification. The third model ultimately investigates the interaction or cross-sectional effect of exchange rate and political risk (LERPR), real foreign investment (LRFINV), and real oil revenue (LROIR) on LARR. As the data employed in the research is a time series, it is crucial to confirm its stationarity (Brooks, 2014). Dickey-Fuller unit root tests were utilized for this objective. The findings of the descriptive statistics in Table 4 and the Dickey-Fuller test results in Table 6 demonstrate that the null hypothesis is rejected for all variables, with LARR, LINF, LFINV, LPOP, LRFINV, LPR, and LOIR exhibiting statistical stationarity. The LER, LGDP, LERPR, LPOP, LOIR, and LROIR variables are obtained from the first order. Thus, the variable level values are employed for estimate.

Table 4: Results of descriptive statistics for study variables

variables	observation	Mean	Standard deviation	Min	Max
LARR	30	14.737	0.774	13.021	16.024
LER	30	9.277	1.186	7.46	10.64
LFINV	29	4.438	1.336	0.693	7.212
LGDP	30	26.324	0.6119	25.291	27.1909
LINF	30	2.992	0.546	1.98	3.905
LOIR	30	4.067	0.493	3.005	4.852
LPOP	30	18.147	0.1208	17.94	18.32
LPR	30	-0.1303	0.952	-0.696	1.733
LERPR	30	9.264	0.612	8.431	10.116
LRFINV	29	1.425	1.47	-3.204	3.792
LROIR	30	1.063	0.694	-0.534	2.037

Source: research findings

Table 4 displays the indices of dispersion and central tendency. The average number of tourists is 14.737, with the minimum and maximum figures being 13.021 and 16.024, respectively. A preliminary lag length order selection criteria test is conducted for the all three models, with results confirming a lag for estimations in Appendix 1.

Table 5: Results of the ADF test

variable	T statistics	Levin, Lin & Chu
	Probability	
ARR	-5.15	0.0013
ER	-3.125	0.03
FINV	-4.394	0.001
GDP	-3.805	0.007
INF	-2.62	0.1003
OIR	-5.164	0.0002
POP	-2.79	0.07
PR	-2.183	0.0301
ERPR	-2.928	0.05
RFINV	-4.252	0.002
ROIR	-5.419	0.0001

Source: research findings

The results of assessing the long-term relationship of variables are displayed in the subsequent tables. dynardl is currently creating 1000 simulations across 20 time points in all three models.

Table 6: Dynardl with the shock variable LER(first model)

Source	ss	df	Ms
model	4.76	5	0.95
residual	1.83	16	0.114
total	6.59	21	0.31

variables	Coefficient	Std. err	t	$P > \|t\|$	95% conf. interval
LARR	-0.44	0.46	-0.95	0.35	-1.43 0.54
LER	0.19	0.273	0.71	0.488	-0.385 0.774
LFINV	0.029	0.056	0.53	0.605	-0.0903 0.1501
LGDP	0.752	0.275	2.73	0.015	0.168 1.337
LINF	-0.315	0.191	-1.65	0.119	-0.722 0.0906
_cons	0.678	5.28	0.13	0.899	-10.51 11.87

Source: research findings

The results of the initial model demonstrate that LER positively influences LARR, as substantiated by De Vita (2014). De Vita (2014) suggested that improved exchange rate stability positively affects tourism in oil-exporting countries. Additionally, the LFINV and LGDP variables have a positive impact on tourism demand, whereas LINF has a negative effect on tourism demand. In accordance with the findings of Behbudi and Bastan (2010), foreign direct investment positively influences tourism growth, as heightened investment in the host nation amplifies tourist demand.

Table 7: Dynardl with the shock variable LPR(second model).

Source	ss	df	Ms
model	3.77	4	0.944
residual	2.219	17	0.130
total	5.99	21	0.285

variables	Coefficient	Std. err	t	$P > \|t\|$	95% conf. interval
LARR	-0.033	0.44	-0.07	0.942	-0.969 0.903
LPR	-0.24	0.135	-1.78	0.093	-0.526 0.044
LINF	-0.157	0.192	-0.82	0.42	-0.562 0.248
LPOP	1.94	3.41	0.57	0.576	-5.24 9.14
_cons	-19.18	55.92	-0.34	0.736	-137.17 98.79

Source: research findings

In the second model, LPR demonstrates a negative and significant impact on LARR. An analysis of the results from all three models in conjunction with those of Muzindutsi and Manaliyo (2016) demonstrates that the outcomes of the second model closely align with those of Muzindutsi and Manaliyo, suggesting that in the second model, LPR maintains a negative and significant impact on tourism demand. Muzindutsi and Manaliyo (2016) shown that a political crisis, coupled with internal and external sanctions and conflicts, reduces the number of tourists to a destination. LINF adversely affects tourism demand, as demonstrated by the research of Mohd Hanafiah and Mohd Harun (2010), which reveals that increased inflation leads to a reduction in tourism demand. The population's positive effect on tourist numbers is seen in the research conducted by Mohd Hanafieh and Mohd Haroun (2010).

Table 8: Dynardl with the shock variable LERPR (third model)

Source	ss	df	Ms
model	4.31	4	1.079
residual	2.276	17	0.133
total	6.59	21	0.314

variables	Coefficient	Std. err	t	$P > \|t\|$	95% conf. interval
LARR	-0.121	0.247	-0.49	0.629	-0.643 0.399
LERPR	0.297	0.165	1.79	0.091	-0.052 0.646
LRFINV	0.0616	0.059	1.03	0.318	-0.064 0.188
LROIR	0.47	0.202	2.37	0.030	0.052 0.906
_cons	13.42	2.972	4.52	0.000	7.15 19.69

Source: research findings

The third model's findings demonstrate that the interaction between LER and LPR positively influences LARR. The interplay between LER and LPR alleviated the adverse effects of LPR on LARR. Moreover, LRFINV positively influences tourism demand, exhibiting a greater effect on LARR. The results demonstrate that LROIR positively influences tourism demand. The escalation of oil revenues favorably affects tourism, resulting in a surge in tourist numbers, as indicated in the article by Rafiy et al. (2018).

The research also utilizes the bounds test established by Pesaran et al. (2001) to empirically examine the long-term relationship among the variables under consideration. The results of the bounds cointegration test are presented in Tables 9-11. This method evaluates the presence of a long-term relationships among the variables of all three models by comparing F statistics with critical values. If the calculated statistic surpasses the upper critical value, the null hypothesis positing the lack of a long-term relationship is rejected. If the test statistic falls below the lower critical value, the null hypothesis is not rejected. If the test statistic lies between the upper and lower thresholds, the bounds test is unable to determine the presence of a long-term relationship. In all tables, the F statistic surpasses the critical value of the upper limit at the 10% and 5% significance levels. Therefore, the null hypothesis, which asserts the lack of cointegration, is rejected. The results demonstrate a cumulative relationship between tourist numbers in Iran and factors such as the exchange rate, political risk, foreign investment, inflation, oil revenue, GDP and population size.

Table 9: Pesaran, Shin and Smith Cointegration test (first model)

F test	
	I(1)
10% critical value	3.350
5% critical value	3.790
1% critical value	4.680
F-stat. = 3.830	

F-statistic note: Asymptotic critical values used.

Table 10: Pesaran, Shin and Smith Cointegration test (second model)

F test	
	I(1)
10% critical value	3.090
5% critical value	3.490
1% critical value	4.370
F-stat. = 3.830	

F-statistic note: Asymptotic critical values used.

Table 11: Pesaran, Shin and Smith Cointegration test (third model)

F test	
	I(1)
10% critical value	3.090
5% critical value	3.490
1% critical value	4.370
F-stat. = 3.830	

F-statistic note: Asymptotic critical values used.

5.3 Impulse response functions Results

In Figures 1-3, we introduce a straightforward framework for LER, LPR as well as LERPR shocks within the model. Models indicate that LER shock results in an increase in the LARR, demonstrating that tourism demand is responsive to exchange rate shock. The results are also largely aligned with the LPR effect, wherein a significant change in political risk occurs following a change in political risk components, leading to a decrease in LARR. Thus, according to Muzindutsi and Manaliyo (2016) illustrated that political risk play an important role in tourism, we show the negative reactions of tourism demand to LPR shock. Consequently, LERPR shock is associated with an increase in tourism demand.

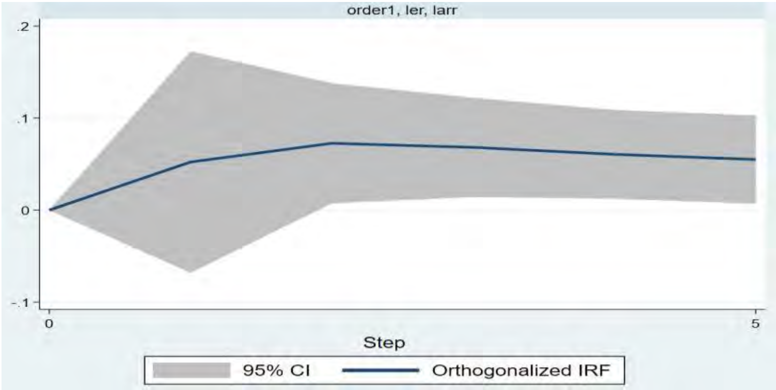

Figure 1: IRFs of LARR to LER shocks

Source: research findings

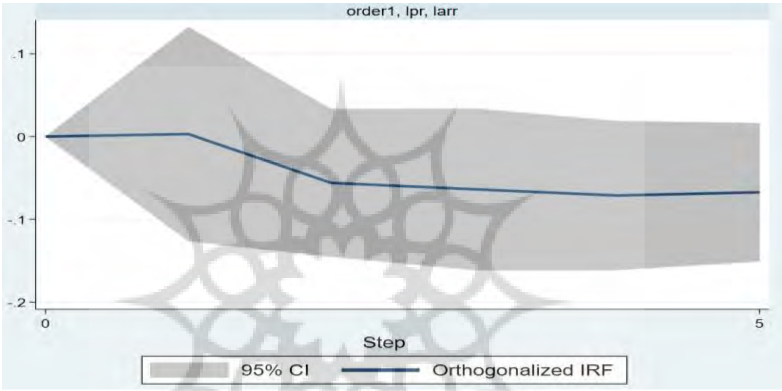

Figure 2: IRFs of LARR to LPR shocks

Source: research findings

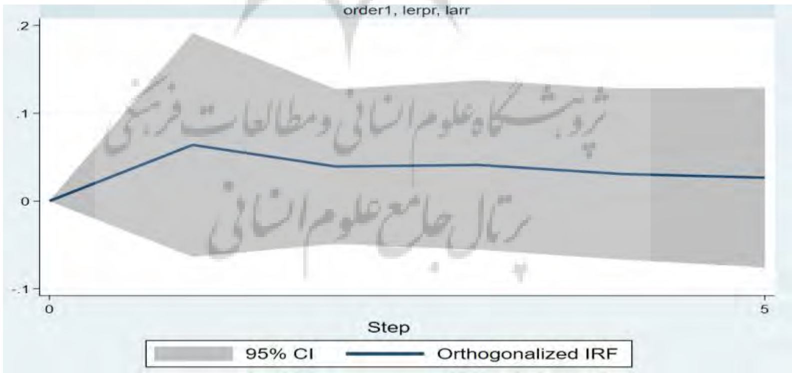

Figure 3: IRFs of LARR to LERPR shocks

Source: research findings

6. Conclusion and Recommendations

The study sought to analyze the influence of exchange rates on tourism demand in Iran. The preliminary assessment of the tourism demand function revealed that the exchange rate positively influences tourism demand. An increase in the exchange rate enhances the demand for tourism in Iran. An increase in the exchange rate reduces the value of the national currency, hence decreasing the cost of tourism services for travelers. The incorporation of the political risk index into the model negatively affected Iran’s tourism demand. In conclusion, the interplay between exchange rate variables and political risk was found to positively influence tourism demand. The increase in the exchange rate decreases the costs of tourism services, and also stimulates creative business endeavors in the tourism industry. Thus, it improves the investment outlook, due to the advancement of the tourism host country, the resolution of internal and external problems, and governmental stability. It promotes continuous economic expansion and improves the efficacy of bureaucracy and law enforcement as elements of political risk. Improving bureaucratic quality requires the creation of a systematic framework in the tourism sector to alleviate the negative effects of political risk in recent years. Considering the detrimental effects of political risk and inflation, alongside other factors in the models, policymakers and economic strategists must prioritize the reduction of inflation and the resolution of ethnic and religious conflicts through the adoption of appropriate monetary and financial policies. The negative effect of the political risk index on tourism arrivals in Iran will be alleviated. Therefore, Iran must resolve internal and foreign conflicts and improve the political risk index to stimulate heightened tourism demand. Considering that genuine foreign investment positively influences tourism demand, it is essential to augment foreign investment by promoting innovation and creativity in infrastructure, including the development and building of hotels, airports, and trains. Moreover, the implementation of regulations like discount cards and tax breaks for tourists in the tourism sector is crucial. The increase in oil revenue in Iran boosts wealth, enables the development of tourism infrastructure, and draws tourists, so elevating the nation’s income. Therefore, it is essential to establish policies designed to increase oil revenue to improve the tourism sector.

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Appendix 1:

Table 1-1: results of Test for Lag Length Selection (first model)

lags	logL	LR	df	P	FPE	AIC	HQ	SC
0	-29.7209	-	-	-	0.00014	5.34	5.29	5.55
1	26.04	111.53	25	0.000	1.8e-06	0.608	0.34	1.911
2	-	-	25	-	-6.4e-53*	-	-	-
3	2049.14	-	25	-	-	-305.253	-305.833	-302.42
4	2088.83	79.371*	25	0.000	-	-311.35	-311.93	-308.533
5	2090.82	3.989	25	1.000	-	-311.66	-312.24	-308.84
6	-	-	25	-	-	-	-	-
7	2123.25	-	25	-	-	-316.65*	-317.23*	-313.83*
8	-	-	25	-	-	-	-	-

Source: research findings

Table 1-2: results of Test for Lag Length Selection (second model)

lags	logL	LR	df	P	FPE	AIC	HQ	SC
0	26.130	-	-	-	1.6e-06	-2.01	-1.96	-1.81
1	104.13	156.01	16	0.000	5.8e-09	-7.64	-7.41	-6.65
2	119.39	30.506	16	0.016	7.3e-09	-7.58	-7.160	-5.79
3	152.23	65.68	16	0.000	2.6e-09	-9.112	-8.504	-6.53
4	245.19	185.91	16	0.000	9.1e-12	-16.108	-15.313	-12.735
5	1545.24	2600.1	16	0.000	3.9e-60*	-132.84	-131.85	-128.67
6	2446.16	1801.8	16	0.000	-	-214.37	-213.35	-210.014
7	2772.78	653.24	16	0.000	-	-244.07	-243.043	-239.707
8	2795.17	44.772*	16	0.000	-	-246.106*	-245.07*	-241.74*

Source: research findings

Table 1-3: results of Test for Lag Length Selection (third model)

lags	logL	LR	df	P	FPE	AIC	HQ	SC
0	-42.198	-	-	-	0.0143	7.107	7.071	7.281
1	-11.212	61.972	16	0.000	0.0016	4.801	4.623	5.671
2	21.57	65.57	16	0.000	0.00038*	4.219	1.89	3.78
3	1597.54	3151.9	16	0.000	-	-237.775	-238.24	-235.516
4	1607.64	20.197	16	0.211	-	-239.32	-239.79	-237.06
5	1636.44	57.603	16	0.000	-	-243.76	-244.22	-241.5
6	1646.4	19.92	16	0.224	-	-245.29	-245.75	-243.03
7	1684.79	76.78*	16	0.000	-	-251.19*	-251.66*	-248.93*
8	1682.9	-3.77	16	-	-	-250.90	-251.37	-248.64

Source: research findings

بررسی تاثیر ریسک سیاسی بر تقاضای گردشگری: به کارگیری روش شبیه‌سازی ARDL پویا

چکیده:

هدف:

بخش گردشگری، به عنوان جزء مهمی از صنعت خدمات جهانی، برای توسعه اقتصادی و تولید درآمد یک کشور حیاتی است. بنابراین، تعیین عوامل موثر بر تقاضا برای این نوع خدمت ضروری است. هدف اصلی این پژوهش بررسی تاثیر نرخ ارز بر تقاضای گردشگری در ایران است.

روش پژوهش:

این مطالعه به بررسی روابط بلندمدت و کوتاه‌مدت بین ورودی‌های گردشگری ایران و متغیرهایی مانند نرخ ارز، ریسک سیاسی و سایر عوامل مؤثر بر تقاضای گردشگری از جمله تورم، سرمایه‌گذاری خارجی، درآمد نفتی، تولید ناخالص داخلی و جمعیت، با استفاده از داده‌های سری زمانی از سال ۱۳۷۴ تا ۱۴۰۳ و روش شبیه‌سازی ARDL پویا پرداخته است.

یافته‌ها:

نتایج حاکی از آن است که ریسک سیاسی به طور معناداری بر تقاضای گردشگری ایران تأثیر منفی می‌گذارد، در حالی که نرخ ارز تأثیر مثبت قابل توجهی دارد. از سال ۲۰۱۰، زمانی که دور چهارم تحریم‌ها آغاز شد، ریسک سیاسی به دلیل تناقضات داخلی و خارجی تشدید شد و بر تقاضای گردشگری بین‌المللی تأثیر منفی گذاشت.

نتیجه گیری:

اثر متقابل بین متغیرهای نرخ ارز و ریسک سیاسی به طور مثبت بر تقاضای گردشگری تأثیر می‌گذارد. افزایش نرخ ارز هزینه‌های خدمات گردشگری را کاهش می‌دهد و همچنین تلاش‌های تجاری خلاقانه در صنعت گردشگری را تشویق می‌کند.

کلمات کلیدی: روش شبیه سازی ARDL پویا، نرخ ارز، ریسک سیاسی، تقاضای گردشگری، سری‌های زمانی.