# Factors Affecting on Tourism Demand in Iran during 1971-2010

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**Abstract:** Today tourism is considered as one of the major driving forces of economic development in many countries. Tourism is one of the industries which has taken high speed growth trend in recent years and has been become the greatest factor in creating jobs and wealth in the world and operates as an economic engine for growth in developed and developing countries. This industry can be used as a tool for developing countries to deal with the limited financial resources, high unemployment and monoculture economic. The present study seeks to investigate and identify factors that could affect tourism in Iran during 1971-2010. For this purpose the method of ordinary least squares (OLS) is used to estimate the model. Results indicate that World per capita income and exchange rate variables have significant and positive effects and relative prices, war and revolution have significant and negative effects on Iran's tourism demand function.

**Keywords:** tourism demand, relative prices, exchange rate, per capita income, war and revolution

## 1. Introduction

Todays, the tourism with a set of preferences, movement, access to more financial abilities, has possible to the masses travel. Technology progress led to an increase in the number of collective travel that it's causes was increased leisure time, rising incomes, advances in telecommunications and the creation of efficient transport. All these cases have changed the tourism to third booming, dynamic and developing economic phenomena that take place after oil and automobile industries. According to the World Tourism Organization estimates, the value of proceeds of the tourism and travel is became more than export items in other economic sectors in the coming decades. During the last 60 years, tourism has enjoyed continuous growth and has become one of the economic sectors with high growth rates in the world. During 1950 – 2005 years, the foreign tourism with an annual growth rate of 6.5 percent, from 25 million tourists in 1950 has increased to 806 million in 2005. Also during 2010 has reached to 935 million with 6.7% increase compare with 2009 year. According to the official predicts of World Tourism Organization, the number of tourist arrivals worldwide will reach to 1.5 billion until 2020 year (WTO, 2006).

Iran because having climatic variability and also the cultural and historical places, is one of the world countries that have so far failed to make good the potential capacities in this field in appropriate manner. The assessment of tourism industry in Iran and see the volume of foreign currency earnings indicate that despite the fact that Iran is one of ten important countries in the world in terms of the ancient and historical monuments but its share of global revenues from tourism, is less than one thousandth. At now, according to reliance of Iran economy on crude oil export and its many vulnerability of international sanctions, changes in oil prices and other economic and non-economic shocks, the tourism development can greatly reduce this vulnerability and help to economic policy maker to overcome the current problems, such as shortages of foreign exchange earnings, low level of income in society, low level of non-oil export and unemployment problem. (Mousaei, 2004) Thus, identification of affecting factor on Iran's tourism demand can help to recognition of potential capacities in tourism field in order to achieve advantages such as diversification of economic grows resources and foreign exchange earnings as well as create new job opportunities in the country, reduction of unemployment, lower influenced during the financial and economic

crises. So, the main purpose of this study is investigation of affecting factors on Iran's tourism demand during 1971-2010 years.

Butler (1980) argues that tourism destinations grow according to a special cycle and in this cycle, six stages are identifiable that are determined based on the specific characteristics of tourists and the development nature and scale. The first stage is the stage of exploration that a few tourists come to destination and there is no tourism specific development at this stage. The second stage (involvement) is investment stage that is provided facilities for tourists but the number of tourists is low yet. At the third stage (development), expensive installations construct for tourism facilities, the number of tourists became very high, marketing is done for destination and foreign investment is attracted. At the fourth stage (consolidation), the growth rate of tourist numbers and development decreases and number of tourists reach to pick point and numbers of firms are consolidated. The Most of facilities are under control of non-residents and destination is confronted to many problems in competition with competitors. Then, it is possible that is going to fifth stage (stagnation) that can be very fast, because the investment and reconstruction are not done again and decreases the destination attractive. After the fifth stage, different scenarios can exist, which is included continue of stagnation, rejuvenation or decline. This cycle has begun in figure (1).
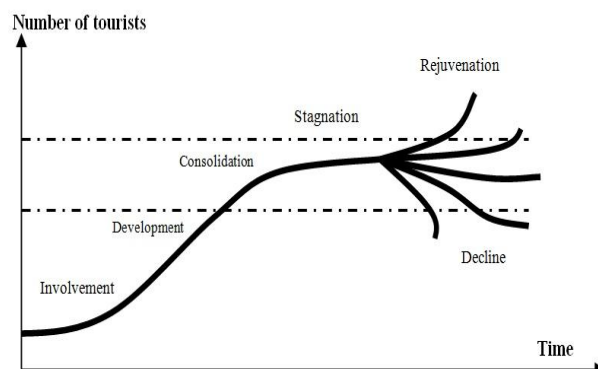


**Figure (1):** Tourism cycle model

De mello et al (1999) have discussed to estimation of foreign tourism demand function of England to Portugal, Spain and France

countries by using the almost ideal demand system for 1970-1993 period. The results indicate that share of England's tourism expenditure to Spain have increased in comparison of two other c ountries in the mentioned years.

Manuel and Robertico (2000) estimated the Aruba's tourism demand function (located in north of Latin America) of United States during 1975-1999. They used the variables of entered tourist numbers to region of United States, real gross domestic product (GDP) in United States, relative prices, Aruba's exchange rate and dummy variables for consideration of recession effects on tourism demand. Finally, concluded that the GDP and relative prices variables are the most important factors affecting on Aruba's tourism demand.

Helstrom (2002) assessed the foreign tourism demand function of Sweden by using the auto regressive (AR) and moving average (MA) model. The results showed that real exchange rate is the most important factors affecting on Sweden's tourism demand function.

Algieri (2006), in the study by title "An Econometric Estimation of the Demand for Tourism: The Case of Russia" investigated relationship between tourism currency earning, real exchange rate, total revenue of world and the cost of transportation for the Russia during 1985-2004 period. He proved the existence of a long run equilibrium relationship between the model variables.

Zhou et al (2007) in the one study by title "Modeling the Supply and Demand for Tourism: A Fully Identified VECM Approach" and by using the Jouhansen co-integration model and Vector Error Correction Model (VECM), estimated the foreign tourism demand function of Hawaii for 1980-2001 years. The results indicated that exist a long run equilibrium relationship between the model variables and relative prices and per capita income variables are the most important determinants factors of tourism demand.

Mountinho et al (2008) forecasted China's tourism demand to Taiwan by using the neural network model during 1995-2005 years and finally concluded that real exchange rate and per

capita income are the main factor affecting on China's tourism demand.

Nouri (1996) assessed international tourism demand function of Iran for 1969-1994 years. He considered Iran's tourism demand as the function of the tourist per capita income, prices of goods and services purchased by tourists, exchange rate in free market, average cost of accommodation per tourist in Iran.

Mousaii (2001) identified the factors affecting on travel demand to Iran. He considered the revenue earned by tourism as the function of relative prices (domestic price index divided to world price index), world gross national product, revenue earned by tourism in previous period and social and political happens. Finally, he concluded that currency revenue earned by tourism and revolution and war variables that can be considered as one index for measuring of insecurity feeling and internal transformations are more important than other variables.

Habibi and Abbasi Nezhad (2005) in one study by tithe "identification and estimation of Iran's tourism demand function (with cross section and time series data" estimated the Iran's tourism demand. Their results indicated that per capita income and relative prices variables have the most effects on tourism demand.

Mohammad Zadeh et al (2011) estimated of Iran's foreign tourism demand function during 1971-2006 periods. For this purpose, they used of Kalman-Filter method and approach of time varying parameters (TVP) for investigation of impact the world per capita, life expenditure index in Iran, nominal exchange rate and expectations and behavioral habits of tourists on total numbers of entered tourists to Iran and concluded that world per capita income, behavioral habits of tourists and life expenditure index have the most effect on the Iran's tourism demand in the desired period.

## 2. Materials and Methods

In order to estimation of Iran's tourism demand function, we have used the below equation in following the Manuel and Robertico (2000):

$$TU_t = B_0 + B_1 Y_t + B_2 RP_t + EX_t + D_1 + \varepsilon_t \quad (1)$$

Where: *TU* indicates the entered tourist number to Iran as the dependent variable of model. *Y* is the world per capita gross domestic product (GDP), *RP* is the relative prices that reached by dividing the Iran's consumer price index to world's consumer price index. *EX* indicates Iran's exchange rate and $D_1$ is the dummy variable for showing the effect of revolution for 1978 year and war during 1970-1978 years.

Since the main subject of this study is investigation of variables elasticity, all of the variables have been considered as a logarithmic. It is worth noting that the statistics and data related to total numbers of entered tourists to Iran, world per capita gross domestic product, Iran's consumer price index and world consumer price index, have been given of World development indicator (WDI) web site and statistics related to Iran's exchange rate have been given of Iran's central bank for the 1971-2010 years. Also, we have used of Ordinary Least Squares (OLS) to estimation of model and Eviews6 software.

## 3. Results and discussion

### 1.3. Examination of variables stationary

Before estimation of model, variables stationary has been examined by using of augmented Dichey-Fuller (ADF) test for ensure the absence of spurious results. According to results of ADF stationary test with intercept and with intercept and trend in accordance with table (1), the variable of number of foreign tourists that travel to Iran is stationary and variables of per capita income, exchange rate and relative prices are non-stationary that have been stationary with first time differencing.

*Table 1- Results of Augmented Dichey-Fuller (ADF) Unit Root Test*

| Variables | With intercept | | With intercept and trend | | Integration Order |
|---|---|---|---|---|---|
| | statistic | probe | statistic | probe | |
| Log (TU) | −3.395 | 0.0013 | -2.836 | 0.000 | I(0) |
| Log (GDP/P) | -6.833 | 0.000 | -4.749 | 0.000 | I(1) |
| Log (RP) | -7.410 | 0.000 | -5.687 | 0.000 | I(1) |
| Log (EX) | -3.654 | 0.000 | -6.954 | 0.000 | I(1) |

## 2.3. Co-integration analysis model variables

In the most of economical time series variables have existed tendency to moving toward one direction and it is because of existence of common trend that is seen in most of them. Generally, the economic variables that their statistical properties (like mean and variance) is a function of time, called the non-stationary variables. The regression model estimation by using the non-stationary variables is called spurious regression because citing to the results of such a model will lead to misleading results. One way to avoid spurious regression is differencing and using the difference of variables in model but this model does not provide any information about long run relationship of variables. Under such circumstances, it can be used the co-integration method and estimate the model far from being spurious and according to level of variables. The results of variables stationary test indicate that all of the variables have been stationary with first differencing. Thus, it can be used of augmented Engle and Granger (AEG) tests of co-integration for analysis the convergence between the variables model. In this test to discover whether or not variables co-integrated, at first, Ordinary Least Squares (OLS) regression was performed and must obtain the residuals (component error). Then stationary of error terms (residuals) is examined by using the augmented Dichey-Fuller (ADF) test with null hypothesis that is based on exist the unit root problem in residuals against alternative hypothesis that is based on co-integration between variables. The results of this test have shown in table (2).

The results of AEG indicates that absolute value of ADF test statistic in three different conditions of intercept and trend is more than absolute value of critical values at 1%, 5% and 10% of error levels, i.e. null hypothesis indicating non-existence of co-integration cannot be accepted; therefore, the remaining ones do not face unit root issue, and this proves stability of remaining expressions and convergence of variables. Thus, there is convergence among the variables, and the conventional regression model with regard to unstable time series data are usable and F, t, $R^2$ statistics are reliable.

### 3.3. Examination of Classic Hypotheses

After making sure the estimated regression is not spurious, the classic hypotheses must be examined so that the estimates based on classic hypotheses represent the best unbiased ones (BLUE). In the next part, the classic hypotheses are examined.

### 4.3. Normality Test of Remaining Values

One of the hypotheses examined in usual OLS method is normality of distribution of estimate's remaining values. However, in regression embedding, when the purpose of embedding the values, lack of normality of distribution of the remaining values has no effect on estimate results. Histogram test of remaining expressions and Jarque-Bera statistic for normality shows a series of simple descriptive statistics of remaining expressions [14]. In figure 1, the histogram curve related to the model is displayed. The figure indicates that distribution of the remaining values is normal at 5% level of probability, and non-normality of remaining values distribution is rejected.

Table 2- Results of AEG

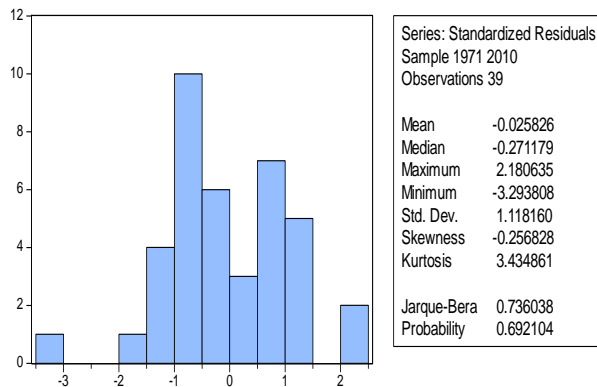| | Test type | Statistic (ADF) | Critical values at different levels of confidence | | | Integration order |
|---|---|---|---|---|---|---|
| | | | 10% | 5% | 1% | |
| Estimated equation remainders | Without intercept & trend | - 3.12 | - 2.63 | - 1.95 | - 1.61 | I(0) |
| | With intercept & without trend | - 3.69 | - 3.64 | - 2.95 | - 2.61 | I(0) |
| | With intercept & trend | - | 4.26 | - | - | I(0) |
| | | 4.97 | 3.55 | 3.20 | | |

**Figure 2**: The result of normality test

### 5.3. Non-Homogeneity of Variance

Non-homogeneity of variance causes increase of variance in estimated coefficients of intercept, and this affects other estimated independent variables, which in turn results in the fact that the estimates are not efficient. In order to examine non-homogeneity of variance of remainders, Glejser and Harvey test was used. The results of outputs of Eviews software are displayed in table 3.

**Table (3):** Glejser Test Results to Make Sure Non-existence of Non-homogeneity of Variance

| F-statistic | Obs*R-squared | Prob. F(3,39) | Prob. Chi-Square (3) |
|---|---|---|---|
| 0.6717 | 2.8610 | 0.6163 | 0.5813 |

**Table (4):** Harvey Test Results to Make Sure Non-existence of Non-homogeneity of Variance

| F-statistic | Obs*R-squared | Prob. F(3,39) | Prob. Chi-Square (3) |
|---|---|---|---|
| 0.9280 | 3.8435 | 0.4996 | 0.4278 |

The results of the test indicated that the fitted model remainders have homogeneous variances. Therefore, model estimated coefficients are efficient enough.

### 6.3. Non-autocorrelation

Prior to using estimated equation for statistical inference, remainders must be examined in order to check existence or non-existence of autocorrelation. In accordance with economic matters, existence of autocorrelation in

remainders shall result in false estimates of standard errors and incorrect statistical inferences with regard to equation coefficients. In order to avoid such errors, Breusch-Godfrey test was used. The results of Breusch-Godfrey test are displayed in table 4.

**Table (5):** Breusch-Godfrey Serial Correlation LM Test

| F-statistic | Obs*R-squared | Prob. F(1,37) | Prob. Chi-Square (1) |
|---|---|---|---|
| 0.8282 | 1.9275 | 0.4462 | 0.3815 |

In the above test, the null hypothesis indicating non-existence of autocorrelation, taking into account the probability value reported in the table, is accepted; therefore, the results of the test shows non-autocorrelation in estimated equation remainders.

### 7.3. Non-existence of Multicolinearity

Multicolinearity usually exists among independent variables of the model. If there is full multicolinearity among variables, estimating coefficients is not possible; however, if there is imperfect multicolinearity, there shall be high variance-covariance, wider confidence intervals and t insignificant ratio. Therefore, with regard to the estimated results of the model and significance of embedded coefficients, non-existence of multicolinearity among variables of the model can be inferred.

### 8.3. Model estimation by using of OLS and interpret of its results

The results of experimental model estimation by using of Ordinary Least Squares (OLS) model for Iran have been mentioned in table (6) in period of 1971-2010.

**Table (6):** The model estimation with ordinary least square (OLS): dependent variable: Log (TU)

| Variable | Coefficient | T statistic | Prob. |
|---|---|---|---|
| C | -4.12 | -4.32 | 0.306 |
| Log(GDP/P) | 0.67 | 3.16 | 0.0012 |
| Log(RP) | -0.32 | -2.74 | 0.034 |
| Log(EX) | 0.18 | 3.04 | 0.000 |
| D | -0.24 | 3.90 | 0.013 |
| D.W | 1.69 | - | - |
| $R^2$ | 0.92 | - | - |
| F statistic | 89.53 | - | 0.000 |

As it can be seen in estimates, the maximum impact on tourism demand is related to per capita income variable that the coefficient of this variable is positive (0.67). This means that one percent increase in world per capita income led to 67% increase in Iran's tourism demand. After the per capita income, the most effect is related to relative prices variable that its coefficient is negative (0.32). In other word, with one percent increase in relative prices, the number of tourists to Iran will decrease 32%. In fact, with become more expensive the Iran's goods and services than other countries, the tourists changes their destination to other countries that adopt tourist and will decrease the Iran's tourism demand. In addition, the effect of exchange rate on tourism demand is positive and its coefficient is (0.18). That is one percent increase in exchange rate led to 18% increase in tourists to Iran. In fact, with increase in exchange rate, Iran's goods and services in compared with foreign goods and services is became cheaper and this caused that tourists pay more attention to travel to Iran. Finally, the dummy variable of revolution and war has the negative effect on Iran's tourism demand. The numbers of tourists to Iran have decreased in the revolution and war period and with intensification of unrest and insecurity in the region.

## 4. Conclusion

The main purpose of this study is investigation and identification of affecting factors on Iran's tourism demand during 1971-2010 years. This study has investigated existence of relationship between the numbers of entered tourist to Iran as the independent variable of model and variables of world's per capita income, exchange rate, relative prices, revolution and war as the explanatory variables. The obtained results of estimations indicate that world's per capita income has the most effect on Iran's tourism demand during mentioned period. After the world's per capita income, the most effect is related to the relative prices. In fact, the numbers of entered tourist to Iran have been decreased by increasing in live expenditures in Iran. The variable of exchange rate has the positive effect on tourism demand and finally the dummy variables of revolution and war have the

negative effects on Iran's tourism and tourism demand. This means that war caused to decrease the foreign tourism in Iran.

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