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Hadi Rafiei Darani, Hadi Asghari,

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## Study of international tourism demand in Middle East by panel data model

*Key Words: Tourism Demand, Foreign Tourist, Middle-East, Panel Data*

### Introduction:

Tourism as a developing industry has gained momentum in many countries in recent decades such that the total number of tourists reached to 436million people in 1990 and with 137% growth to 1035 million in 2012, which has brought 1075 billion dollars income for different countries in 2012. It is estimated that international tourists number increase by 1.8 billion people in 2030 with average growth of 3.3% per year. (UNWTO, 2013) Tourism industry has obtained an outstanding position in different countries and different regions of the world by its positive impact upon income increase, job opportunities, balance of foreign trade as well as cultural influences that its development lead to in societies. This important economic sector has also an undeniable effect on investment in various infrastructural areas of the country. As the industry develops, the demand for development and improvement of tourism infrastructures, which are mainly considered as state infrastructures, increase and this in return, leads to motivation and further encouragement in infrastructural investment. According to another point of view, tourism is viewed as an activity which demands product and service from many economic sectors. As a result, it enjoys a high market power in accumulating product and service demand of different economic sectors.

According to the evidences and facts, tourism plays an important role in gross domestic product of many countries. Thus, its development and share in relation to the whole economy is deemed very important by policy makers and planners. Middle East region has played main role in attracting international tourists by enjoying different colorful climates in recent years such that number of tourists between 1990 till 2012 in Middle East region has increased from 9.6 million people to about 52 million which means 442 percent increase. Tourism market share has also increased from 2.2percent in 1990 to 5 percent in 2012. It is estimated that it claims for most growth rate in comparison with other regions in terms of tourist attraction. (2013 UNWTO) Thus, the main purpose of this paper is to study influential factors on travel and tourism demand in Middle East region as a highly attractive zone by employing inter-state data.

Regarding the issue, various studies concerning tourism demand have been executed by focus on single state or a particular zone. Crouch (1995) has carried out meta-analysis on empirical results of 80 studies about tourism. Results prove that research identity of tourism demand in different studies rely highly upon the zone under scrutiny as well as tourists` nationality and tourism destination. Hence, in spite of important results researchers have found in previous studies, they can hardly be generalized to a wide scope. De Mello et al (1999), employing almost ideal demand system, studied tourism demand of England to its southern neighbors

(France, Spain, and Portugal) between 1970-1993. Researches showed that tourists' expenditure in Spain has increased in comparison with two other countries in the time period in question. Lyssiotou (2000) studied how preferences impacted tourism expenses in England in a time period between 1979-1991 by applying space-shape model and seasonal time series data. Results proved that preferences have important effect upon tourism expenses. Chen (2011) predicted tourism demand in Taiwan by applying linear and non-linear models. Results of the predictions were compared with three individual and six integrative models. The results of the modeling proved the least efficiency in predictions for normalized mean square error (NMSE) and mean absolute percentage error (MAPE) models. And in general, the integrative models are more comprehensive. Applying bounds test about foreign tourism demand in Turkey between 1960-2000, Halicioglu (2004) concluded that the income as a variable is among the important determining factors (variables) in tourism arrivals demand in Turkey. Hanly and Wade (2007), studying tourism demand of North America to Ireland between 1985-2004 concluded that the real exchange rate as a variable has a significantly positive impact upon tourism demand to Ireland. Mervar and Payne (2007), studying foreign tourism demand of EU countries to Croatia during years 1994-2004 concluded that income variable has a direct relationship with tourism demand to Croatia. They concluded it also had inverse relationship with political turbulence. Allen et al (2009) employed co-integration approach to study and make patterns as regards inter-provincial tourism demand in Australia. Results proved that family income, recreation and restaurants costs indicator as well as airlines price have a significant impact upon tourism demand in short term. However, as regards long term, some of the coefficients are Contradictory with consumer demand theory. Applying ARMAX pattern, McAleer and Min (2009) studied international tourism demand of Japan to New Zealand and Taiwan. Results showed that ARMAX pattern proves the theory of economics in which demand for international travel has a positive relationship with the income of tourist's native country. Cho (2011) predicted and made pattern for tourism demand of Macao on monthly basis by employing piecewise linear approach. The piecewise linear model in this study was contrasted against autoregressive trend model, seasonal autoregressive integrated moving average and its arch-rival fractionally integrated autoregressive moving average models. Based on the results of the study, piecewise linear model in comparison with other three models is more reliable especially in case of prediction. Otero-Giráldez et al (2012) studied and estimated long term impact of socio-economic and climatic factors upon domestic tourism demand in Galicia (a region in north-west Spain). Results showed that income and holidays of Eastern region residents as well as new-year festivals have a positive impact upon tourist demand. There is also a significant positive connection between a meteorological phenomenon, the North Atlantic Oscillation (NAO), and tourism demand. Yang et al (2014) studied influential factors upon domestic tourist demand in both urban and rural areas by emphasis on income variable. In this study, domestic tourist demand in China is a function of absolute income, relative

income, products price rate and domestic tourist services as well as substitute price. According to the results concluded from multi-level models study, the study proves the impact of relative income upon tourism demand in some areas of China. Besides, regional differences concerning residents and different patterns between urban and rural residents are among other influential factors of domestic tourism demand in China.

Different studies have been executed about tourism demand in Iran. Maraseli (1996) in a study on foreign tourists in Iran concluded that variables of per capita income, relative prices and virtual variable of war and revolution have the most significant effect on foreign tourism demand in Iran. Nouri (1997) in a study about international tourism in Iran concluded that Iran tourism demand is elastic in relation to per capita income and inelastic in relation to products price and domestic services. There is also an inverse relationship between nominal exchange rate and tourism. Abdi (2004), applying Fuzzy Regression and Artificial Neural Network models for foreign tourism demand in Iran concluded that Artificial Neural Networks are more efficient a system for predicting foreign tourism demand in Iran in comparison to Fuzzy Regression and Time Series models. Mousaie (2005), concerning tourism demand, showed one percent increase in products and consumption services price index ratio to global products and consumption services index leads to 0.25% decrease in tourism demand and a percent increase in gross global product causes 0.45% increase in Iran tourism demand. Travel demand and accordingly state exchange revenue in the same time period is strongly influenced by security issues and domestic conditions. Abbasnezhad and Habibi (2006), regarding the Iran tourism demand function, proved that per capita income and relative prices as the variables have the greatest impact upon tourism demand. Khosrowabadi (2005) displayed the importance of promotion, revolution and war as influential variables upon Iran tourism demand.

A cursory glance on various studies clarify that most studies were executed in a state scale and inter-state and regional studies claim the smallest chunk of share in the studies. However, considering regional and inter-state issues is important in international tourism.

## Methodology

Literature review of previous studies and current theoretic foundations clearly reflect the bulk of studies executed regarding tourist demand. The application of micro theoretical foundations and obtainment of people's utility function are among issues which are particularly examined by researchers. Among these studies are Moutinho et al (2008), Habibi et al (2008), Mervar and Payne (2007), Frechtling (2003), Witt and Martin (1987) and Mohammadzadeh et al (2011). It seems that the applications of these patterns are highly proportionate with domestic studies. Most of the studies done are in a state scale or a particular zone. Among other patterns which we can point to as regards tourist demand are time series model such as ARMAX, co-integration

approach, piecewise linear approach and Neural Networks, which have been employed in various studies.

Different variables were used for tourism demand in previous studies. The most important ones are: number of inbound tourists, tourists' expenditure and tourists' length of stay (Abbasinezhad and Habibi; 2006, Yap, and Shareef, 2009; Chen, 2011; Halicioglu, 2004; Mervar and Payne, 2007; Falkner; 1998, Athanasopoulos and Hyndman, 2008; Kulendran and Wong, 2005; Leitao, 2009).

In this study, we used linear function of tourist demand to Middle-eastern countries as a panel data pattern. Since tourism demand is investigated in different countries and different years (longitudinal data), panel data should be chosen for this study (Baltagi, 2005). Countries which are chosen by authors are: Iran, Turkey, Saudi Arabia, Jordan, United Arab Emirates, Bahrain, Syria, Yemen, Kuwait, Lebanon, Egypt and Oman. Other countries are removed due to the lack of data for analysis and estimation of econometric model.

Tourism demand rate is generally evaluated by either tourist arrivals number or exchange revenue of arrivals in destination country. Various variables are employed in evolutionary patterns for determining important factors on tourist demand. In this study, purchasing power parity as an indicator for determining relative expense of travel in host country is used. The higher the rate, the more expensive the travel to the country is. GDP and fixed prices of 2000 in Middle-East countries, trade freedom which is calculated as the import-export ratio to GDP and global income per capita as an indicator for purchasing power of other countries and tourism demand in Middle-East.

Variables were chosen according to previous studies (Abbasinezhad and Habibi, 2006; Yap, and Shareef, 2009; Chen, 2011; Halicioglu, 2004; Mervar and Payne, 2007; Lim, 1997; Leiato, 2011; Song, Li, Witt, and Fei, 2010; Athanasopoulos and Hyndman, (2008); Falkner, (1998); Kulendran and Wong, 2005), and it is adapted to Middle East countries specific circumstances.

Since tourism demand is studied as an inter-state status, panel data models are employed for patterns analysis. Main frame for panel data patterns is as follows:

$$y_{it} = \alpha_i + \beta_i X_{it} + \varepsilon_{it} \quad (1)$$

In which  $X_{it}$  is explanatory variables vector and difference of Cross Sections in this study is displayed by y-intercept. There are two main approaches in integrative data literature about data analysis and patterns estimation in the form of panel data:

1- Fixed Effects: It is based on the hypothesis that difference among countries can be displayed in the form of differences of y-intercepts. Thus, number one relation can be revised to be employed for pattern with fixed effects as follows:

$$y_{it} = i\alpha_i + X_i\beta + \varepsilon_i \quad (2)$$

Assessing and estimating pattern with fixed effects, the issue is raised as to whether there are evidences confirming data integration or model should be assessed as fixed effects. Chow test is employed as follows (Baltagi, 2005):

$$\begin{cases} H_0: Pooled Model \\ H_1: Fixed Effect Model \end{cases} \quad (3)$$

$$F = \frac{(R_u^2 - R_R^2)/(n-1)}{(1-R_u^2)/(nT-n-K)} \quad (4)$$

If  $H_0$  hypothesis is accepted, it means slopes and y-intercepts are equal and simple regression estimate (like OLS) are efficient. In case  $H_0$  hypothesis is rejected, it means integrative patterns are not efficient and pattern with fixed effects are accepted.

2) Random Effects: It is based on the hypothesis that fixed part which define different cross-sections has been randomly distributed among distribution units and regions. Thus, relation number one can be written for patterns with random effect as follows:

$$y_{it} = \alpha + \beta X_{it} + U_i + \varepsilon_{it} \quad (5)$$

$U_i$  in relation 5 is random effect for unit i. LM test was employed to select either general pattern or pattern with random effects. LM test is briefly explained here (Baltagi, 2005):

$$\begin{cases} H_0: Pooled Model \\ H_1: Random Effect Model \end{cases} \quad (6)$$

$$LM = \frac{nT}{2(T-1)} \left[ \frac{\sum(\sum e_{it})^2}{\sum \sum e_{it}^2} - 1 \right] \sim \chi^2(1) \quad (7)$$

If two Chow and LM tests results are significant, it means that pattern with fixed effects and random effects are preferred against general pattern. Then, Hausman Test is applied to choose one of patterns, either fixed effects pattern or random effects pattern. Hausman Test is applied as explained below (Baltagi 2005):

$$\begin{cases} H_0: Random Effect Model \\ H_1: Fixed Effect Model \end{cases} \quad (8)$$

$$h = \frac{\hat{\beta}_{FE} - \hat{\beta}_{RE(GLS)}}{\text{Var}(\hat{\beta}_{FE}) - \text{Var}(\hat{\beta}_{RE(GLS)})} \sim \chi^2(k) \quad (9)$$

In panel patterns the stationary state of variables are evaluated by the help of tests like Im, Pesaran and shin (2003),Levine ,Lin and Chu(2002), and Fischer(Chow, 2001) the null hypothesis of which is nonstationary. Hadri test (2000) is also about the study of stationary state in symmetrical panel data in which null hypothesis is the stationary state of data. In this study, Stata12 software was applied for data analysis and assessment.

#### Results:

Table 1 displays the result of stationary test of studied variables. Results prove that all examined variables are in the stationary state according to Im- Pesaran-Shin statistics, which is also required to consider process when it comes to purchasing power parity trade freedom, and GDP of other countries as other variables. According the obtained results as regards stationary test of examined variables trend variable is also considered beside the variables of previous part in tourism demand pattern.

Table 1: Stationary Test results of Examined Variables

Variable	Im- Pesaran-Shin (IPS)	Trend	Level of Significance
Purchasing Power Parity	1.3722-	With trend	0.0850
Trade freedom	2.6109-	With trend	0.0045
GDP	11.9108	Without trend	0.000
Countries GDP per capita	3.0013-	With trend	0.0013
Tourist Demand	7.8619	Without trend	0.000

Table 2 presents the results of Chow. LM and Hausman tests about selecting general pattern, pattern with fixed effects and pattern with random effects. Based on the obtained results about Chow and LM tests and their level of significance, it can be claimed that panel data patterns (fixed and random effects) are preferred against general patterns. Besides, according to Hausman test results which determined the selection of either fixed or random effects pattern, it claims that panel data pattern is confirmed with random effects.

Table 2: Selection Tests results for Panel Data Pattern Estimation

Test	Statistic	Level of Significance
Chow	51.36	0.000
LM	329.24	0.000
Hausman	5.43	0.2460

Table 3 presents results concerning tourist demand pattern estimation in Middle East countries. Base on the obtained  $R^2$  amount (overall  $R^2$ ) which is 70.27 and statistic number of parent test of whole model significance (474.62) which is significant in 99% level. It can be said that pattern fit result is of relatively high validity.

Results show that all examined variables are significant at least in 90% level (4 variables in 99% level and a variable in 90% level). As presented in table 3 Purchasing Power Parity variable is significant in 99% level .Its computational elasticity is -0.641 based on which a 10% increase in Purchasing Power Parity causes 6.41% decrease in foreign tourism demand in Middle East. Therefore, foreign tourism demand in Middle East in relation to Purchasing Power Parity has elasticity of less than a unit. Therefore, Purchasing Power parity has a significantly negative impact upon foreign tourist demand in Middle East.

Trade freedom was among the examined variable which has a positive and significant impact upon foreign tourist demand in Middle East in 99% level. In other words, trade freedom in Middle East countries causes an increase in tourist demand. According to calculated computational elasticity, 10% increase in trade freedom leads to 7% increase in tourist demand whose increase requires improvement in foreign trade regulations and paving the ground for joining international treaties. Thus, the formulation of consistent policies and plans with trade freedom in foreign trade policies has a positive impact upon tourist demand in Middle East countries.

GDP amount (fixed price) was also another examined variable which has a positive and significant (99%) impact upon tourists arrivals. Its computational elasticity was 1.755 which proves 10% increase in GDP causes 17.55 increase in foreign tourist demand in Middle East countries. It seems that positive and significant impact of GDP is rooted in countries` identity concerning this issue. In other words, higher rate of GDP which is one of indicators for countries` development leads to the increasing importance and position of tourism as well as tourists intake for their role in investment in the tourism infrastructure. Based on computational elasticity, GDP variable is of high importance regarding increase in foreign tourism demand in Middle Eastern countries.

Among other examined variables is GDP per capita in world countries, which affects foreign tourist demand with its negative and significant impact in 90% level. According to the obtained results, 10% increase in average GDP per capita leads to 39.5% decrease in tourism demand in Middle East. Average increase in purchasing power of countries has a negative and significant impact upon foreign tourism demand in Middle East. It seems that its negative impact is derived from the fact that average increase in GDP per capita or increase in purchasing power brings about the replacement of other tourism sites with Middle East. From another



perspective, increase in purchasing power and income per capita cause people with less income cannot afford to demand tourism of other countries. In current situation, they prefer other countries to Middle East countries.

Table3: Tourist Demand Pattern Estimation Results in Middle East Countries

variable	coefficient	Standard deviation	elasticity
Purchasing Power Parity	-3.82 <sup>***</sup>	1.44	-0.641
Trade freedom	2.59 <sup>***</sup>	1.12	0.7
GDP Countries	0.069 <sup>***</sup>	0.0064	1.755
GDP per capita	-2232 <sup>*</sup>	1490	-3.954
trend	4.16 <sup>***</sup>	1.27	268.375
y-intercept	-8.23 <sup>***</sup>	2.46	-
Number of Countries			
13			

R<sup>2</sup>

0.7027

Parent Statistic

474.62

Level of Significance

0.000

According to the obtained results and computational elasticity, it can be concluded that GDP and world countries GDP per capita variables have outstandingly important role in determining international tourist demand rate in Middle East countries. Hence, it is claimed that countries income per capita has considerable impact upon tourist demand in Middle East countries. In general, Middle East tourism industry is heavily affected by different countries income per capita such that Middle East countries tourism demand has positive relationship with income per capita of regional countries and negative relationship with income per capita of other countries.

## Conclusion and Suggestions:

In this study, the influential factors on foreign tourist demand in Middle-East countries by the application of panel data pattern were examined. Results proved all examined variables have significant impact upon foreign tourist demand. According to the obtained results, purchasing power parity variable has a significantly negative impact on foreign tourist demand. Thus, domestic policies of Middle-East countries especially those concerned with exchange rate changes and adjustment. Hence, it seems necessary to consider the development of tourism sect in formulating policies which affect purchasing power parity in order to support tourism industry. In other words, increasing exchange rate in countries in accordance with economic policies leads to the increase in purchasing power parity rate. Alternative incentives should be provided to develop foreign tourism.

According to results about trade freedom and its significantly positive impact upon foreign tourist demand, it seems that membership of Middle East countries in WTO and similar international treaties somehow increases trade freedom and has a strong impact upon tourism development of these countries. Henceforth, opening trading gates which includes a set of different economic policies can lead to the development of tourism industry.

Purchasing Power of other countries was among the variables studied, which had negative impact upon tourism demand of Middle Eastern countries. What carries importance is the efforts Middle Eastern countries should exert in order to introduce their places of interest, and provide facilities to international tourists so they can change their mental presupposition as regards tourism services in Middle East. It is predicted that the aforementioned deeds would introduce Middle East tourism services as a product with positive income demand elasticity rather than negative one.

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