

AN ECONOMETRIC ANALYSIS OF DEMAND FOR TOURISM IN THE SELECTED COUNTRIES

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Tourism sector plays an important role in economic development and therefore many countries try to develop various policies on this sector to maximize its impacts on the economy. Empirical researches on this topic provide highly valuable information for the policy makers both in public and private sectors. The aim of this study is, therefore, to empirically investigate the determinants of tourism demand for the most attractive top ten countries (France, United States, China, Spain, Italy, Turkey, Germany, United Kingdom, Russia, Malaysia) for tourists by employing the recently developed tools of panel econometrics for the period of 1995-2011. Empirical findings show that macroeconomic factors as such income, price level, supply capacity, exchange rate and political stability have statistically significant effects on the demand for tourism in the top ten countries in the world tourism sector.

Keywords: *Demand for Tourism, Tourism Sector, Panel Data, Cointegration, Determinants of Tourism*

INTRODUCTION

Tourism is a multi-dimensional issue and has impacts on economic, social, cultural and political aspects of every society. In order to assess the effects of these dimensions of tourism, researchers carried out empirical investigation for local community, firms, employee, destinations, terrorism and country. However, economic aspect of tourism sector dominates the existing literature, due to its direct relation with both improving individual living standards and overall prosperity. In particular, as one of the largest sector in the world, tourism contributes to an economy by increasing private and public investment, obtaining foreign currency, easing the balance of payment issues, creating new employment opportunities and alleviating the regional inequalities.

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In addition to interrelated nature of tourism with several subsectors, these factors make tourism sector vital for each country which tries to maximize the gains from it by all means.

The aim of this paper is, therefore, to empirically investigate the determinants of tourism demand for the top ten countries that attract most tourists in the world by employing modern econometric techniques and by utilizing annual data for the period 1995-2011. Econometric results obtained from panel cointegration analysis show that macroeconomic factors such as income, prices, supply capacity, exchange rate and political stability have statistically and significantly impacted on demand for tourism for the sample countries.

INCREASING ROLE OF TOURISM IN THE WORLD

Importance of tourism has been increasing over the years in the world economy. Table 1 presents the development in the world tourism sector and shows that number of tourist arrivals rapidly increased from 25.3 million in 1950 to 1.035 billion in 2012. Similarly, tourism income went up to \$1.075 trillion in 2012 from \$2.1 billion in 1950. However, a detailed investigation of Table 2 also shows that number of tourist arrivals and receipts from tourism started to fluctuate after 2000s, due to the terrorist attack of September 11 in the USA, Iraq war, health epidemic (SARS) and global economic stagnation.

Table 1. International Tourism Arrivals and Tourism Receipt

Year	Tourist Arrivals(Million People)	Change (%)	Receipt (Billion \$)	Change (%)
1950	25.3	-	2.1	-
1960	69.3	173,9	6.8	223,8
1970	165.8	139,2	17.9	163,2
1980	286.5	73	105.4	588,8
1990	455.9	159,1	264.1	250,5
1991	461.1	1,1	277.9	5,2
1992	502.2	8,9	317.1	14,1
1993	515.3	2,6	322.9	1,8
1994	535.8	4	356	10,2
1995	550.4	2,7	404.6	13,6

1996	580.2	5,4	438.8	8,4
1997	601.5	3,7	442.9	0,9
1998	621.4	3,3	445.2	0,5
1999	643.3	3,5	455	2,2
2000	687.3	6,8	473.4	4
2001	684.1	-0,5	459.5	-2,9
2002	702.6	2,7	474.2	3,2
2003	691	-1,5	525	10,7
2004	763	10,7	622	18,4
2005	802	5.1	680	9.3
2006	847	5.6	745	9.5
2007	901	6.4	858	15.1
2008	919	2.0	941	10.1
2009	892	-2.9	852	-9.4
2010	949	6.4	930	8.7
2011	995	4.8	1.042	12
2012	1.035	4	1.075	3.1

Source: UNWTO (2013)

Distribution of tourists shows that each geographic region does not evenly benefit from tourism sector (Table 2). It can be seen that shares of Europe, Asia and Pacific, Americas, Middle East and Africa are %52, %23, %17, %3 and %3 respectively in 2012. Additionally, while number of tourist arrivals between 1990 and 2012 increased from 252 million to 540 million in Europe, from 59 million to 236 million in Asia and Pacific, from 8 million to about 32 million in the Middle East and from about 10 million to 30 million in Africa, growth rate is higher in developing countries and in particular Asia and Pacific has a highest share in this growing sector in terms of tourist arrivals.

Table 2. Regional Share of International Tourism in the World (2012)

	International Tourist Arrivals by region of Market origin (Million)									Change Share(%) (%)		Average annual (million) 05–12
	1990	1995	2000	2005	2009	2010	2011	2012	2011	11/10	12/11	
World	436	529	677	807	892	949	995	1.035	100	4,8	4,0	3,6
Europe	251.9	303.4	388.8	449.7	477.6	497.1	520.5	539.8	52,1	4,7	3,7	2,6

Asia and Pacific	58.7	86.4	114.	153.	181.	206.	222.	236.	22,8	7,8	6,3	6,4
Americas	99.3	108.	130.	136.	147.	156.	164.	171.	16,6	5,1	4,4	3,3
Middle East	8.2	9.3	14.1	22.9	32.2	34.5	33.8	31.7	3,1	-2,1	-6,2	4,8
Africa	9.8	11.5	14.9	19.3	25.6	28.1	29.8	30.8	3,0	6,1	3,3	6,9
Origin not specified	7.9	10.3	14.0	25.4	28.2	26.5	24.1	25.0	2,4			
Same Region	350.	423.	532.	630.	688.	728.	769.	799.	77,3	5,6	4,0	3,5
Other Regions	77.6	95.7	130.	151.	175.	194.	201.	210.	20,3	3,8	4,4	4,9

Source: UNWTO (2013)

Furthermore, World Tourism Organization (UNWTO) (2011) reports that share of developing countries will further increase in the future and especially Asia and Pacific will get the highest share in its 2030 projections. Table 3 presents the tourist arrivals for the most ten attractive countries in the world.

Table 3. International Tourist Arrivals (2012)

	Rank	Million		Change (%)	
		2011	2012*	11/10	12*/11
1	France	81.6	83.0	5,0	1,8
2	USA	62.7	67.0	4,9	6,8
3	China	57.6	57.7	3,4	0,3
4	Spain	56.2	57.7	6,6	2,7
5	Italy	46.1	46.4	5,7	0,5
6	Turkey	34.7	35.7	10,5	3,0
7	Germany	28.4	30.4	5,5	7,3
8	UK	29.3	29.3	3,6	-0,1
9	Russia	22.7	25.7	11,9	13,4
10	Malaysia	24.7	25.0	0,6	1,3

Source: UNWTO (2013)

EXISTING LITERATURE AND EMPIRICAL MODEL

Determinants of demand for tourism have been a research question for various researches. Table 4 classifies the existing empirical literature by the author(s), sample, period, variables, model and methodology. As far as the summary of this literature (Table 4) is concerned, the econometric models, methodology, variables and samples show differences from study to study and these makes difficult to reach a consensus in the empirical findings. It

can be easily said that the findings of these studies show that determinants of tourism demand is an empirical issue for each group of country.

Following the theoretical and empirical literature, this paper proposes the below implicit model to empirically investigate demand for tourism:

$$TA = f(CPI, GDP, RER, BN, PSI) \quad (\text{Equation 1})$$

Where TA, CPI, GDP, RER, BN, PSI denote tourism demand (tourist arrivals), consumer price index, gross domestic product, real exchange rate, bed numbers and political stability index.

Table 4. A Literature Survey on the Demand for International Tourism

<i>Authors</i>	<i>Samples</i>	<i>Period</i>	<i>Independent variables</i>	<i>Dependent Variable</i>	<i>Research techniques and methods</i>
Eilat and Einav (2004)	All countries, High GNP Destinations, Low GNP Destinations	1985-1998	Trade, Distance, gross national product, land, political stability, common border and same lang.	destination cost/origin cost	Multinomial Logit Estimation
Martin, Morales and Scarpa (2004)	21 Latin American country	1985-1998	Growth of tourists per capita, gross domestic investment (percentage of GDP), public expenditure on education(percentage of GDP), political stability	Per capita GDP	Dynamic panel data analysis
Campos and Sequeira (2005)	509 observations	1980-1999	Tourist arrivals and tourism receipt, secondary male enrollment, investment-output ratio, government consumption-output ratio, openness, black market premium, tourist arrivals as	PGDP Ratio	Static panel Data Analysis

			population proportion, tourism receipts in % of Exports, Tourism receipts in % of GDP		
Lee and Chang (2008)	23 OECD countries and 32 non-OECD countries	1990-2002	Tourist arrivals, real effective exchange rate , per capita tourist arrivals, per capita real tourism receipts	GDP	Panel unit root and co-integration analysis
Kareem (2009)	20 countries	1995-2003	Real world income, CPI, crime rate, political instability and fixed and mobile telecommunication services	Total tourist arrivals	Panel GMM
Allen and Yap (2009)	7 Australian states	1999-2007	Domestic household income, tourism prices, transportation costs , the price of overseas holidays and seasonality	Demand for domestic tourism	Static panel Data Analysis
Korkmaz et. al. (2009)	10 countries that have most tourism expenditures in the world	1995-2007	Unemployment Rate, GDP, Gross Domestic saving Rate, inflation rate	Tourism expenditure	panel data regressions
Görmüş and Göçer, (2010)	32 countries	2000-2006	Real income, relative prices and competitive prices, distance, accommodation capacity and marketing expenditure, real exchange rate, population	Tourist arrivals	Panel OLS and SUR
Saray and Karagöz (2010)	48 countries	1992-2007	Model I: GDP, population, distance Model II: PGDP, population, distance	Total tourist arrivals	Panel Gravity

					Model
Dritsakis (2012)	7 Mediterranean countries	1980 – 2007	Per capita tourism receipt, per capita tourist arrivals, real exchange rate	Real PGDP	Panel FMOLS
Gallego et al. (2011)	OECD countries	1980–2006	Total trade, export and import	Model I: Tourist arrivals, Model II: Tourist departures	Panel FMOLS, DOLS, PMG, MG
Massidda and Etzo (2012)	20 destination in Italy	2004–2007	Previous year tourist arrivals, population density , population density at destination, public expenditure for culture activities, distance, PGDP, CPI, index of endowment of touristic places, number of kilometers of highways, crime rate, air pollution	Tourist Arrivals	Panel GMM
Chou (2013)	10 Transition economy	1988–2011	Inbound tourism expenditure	RPGDP	Panel causality analysis
Che (2013)	14 Countries	1998 – 2011	CPI	Tourist arrivals	Panel threshold model
Škuflić and Štoković (2013)	4 tourism destination in Croatia	1998–2008	price per night in hotels, sending country per capita GDP, per capita GDP , hostels quality, number of internet booking	Number of nights spent in accommodations	Panel GLS
Gholipour et. al (2014)	80 countries	1999–2011	disposable income, exchange rate, index of air travel prices and cost, personnel freedoms	Number of outbound travelers	Panel GMM

Source: Authors

ECONOMETRIC ANALYSIS

Logarithmic form of the Equation 1 can explicitly be rewritten in Equation 2 as follows:

$$\ln TA_{it} = \alpha_0 + \alpha_1 \ln CPI_{it} + \alpha_2 \ln GDP_{it} + \alpha_3 \ln RDK_{it} + \alpha_4 \ln BN_{it} + \alpha_5 PST_{it} + \varepsilon_{it} \quad (2)$$

where $i = 1, \dots, N$ and $t = 1, \dots, T$ represents the dimension time.

The expected signs of independent variables in the Equation 2 can be expressed as follows:

- $\alpha_1 > 0$: The increase at general price level is expected to reduce tourism demand (TA) (Eita et al., 2011; Proenca and Soukiazis, 2005; Ibrahim, 2011; Surugiu Leitão, 2011).
- $\alpha_2 > 0$: An increase occurring in income (GDP) has a positive effect of tourism demand (TA) (Garin-munoz and Montero-martin, 2007; Aslan, Kaplan and Kula, 2008; Walle, 2010; Jackman and Lorde, 2012; Petrevska, 2013).
- $\alpha_3 > 0$: The increase in real exchange rate (RER) will reduce tourism demand. Since tourism demand expresses that national currency gains value compared to foreign currencies, it is expected that it negatively affects tourism demand (Maloney and Rojas, 2013; Webb and Chotithamwattana, 2013).
- $\alpha_4 > 0$: It is expected that an increase in bed number (supply of touristic goods and services) lead the amount of goods and service presented to increase, thus, product diversity to increase, and totally, tourism demand to rise. The sign of coefficient is expected to be positive directional (Proenca and Soukiazis, 2005; Aslan, Kaplan and Kula, 2008).
- $\alpha_5 > 0$: The rise in political stability index (PSI) is expected to increase tourism demand i.e. to reveal a positive effect (Naude and Saayman, 2005; Webb and Chotithamwattana, 2013).

In the empirical analysis, annual data for the period 1995-2011 are used from the top ten most attractive tourist destination countries (France, United States, China, Spain, Italy, Turkey, Germany, United Kingdom, Russia, Malaysia respectively) the world. Measurement of the variables and their sources can be find in Table 5.

Table 5. Data, Measurement and Sources

Variables	Explain of Variables	Source	Period
TA	Tourism Demand (Tourist Arrivals)	World Development Indicators (WDI) and United Nations World Tourism Organization (UNWTO)	1995–2011
CPI	Consumer Price Index	World Development Indicators (WDI)	1995–2011
GDP	Gross Domestic Product per capita	World Development Indicators (WDI)	1995–2011
RER	Real Exchange Rate	World Development Indicators (WDI)	1995–2011
BN	Bed Numbers	United Nations World Tourism Organization (UNWTO)	1995–2011
PSI	Political Instability Index	World Development Indicators (WDI)	1995–2011

Results of Panel Unit Root Tests

The first step of panel cointegration analysis is to investigate the stationarity properties and to determine the order of integration of the variables. Estimations are carried out by using the econometrical and statistical software E-views 8.0 and Gauss 10.0. To this end, we utilize three panel unit root tests developed by Levin et al. (2002, henceforth LLC), Im et al. (2003, henceforth IPS), and Breitung (2000). The former two are widely used panel unit root analysis in the literature on panel cointegration. The null hypothesis of the tests is a unit root in the panel. However, while LLC (2002) and Breitung (2000) argue that the cross-sectional units share a common unit root process, IPS (2003) assumes that the cross-sectional units have individual unit root process.

Unit root tests present important information in terms of decomposing and determining the factors determining tourism demand. Hence, before beginning cointegration analysis, the findings to be able to be obtained from stationarity analysis and their policy applications were dealt with. Results for the panel unit root tests are illustrated in Table 6. At first glance, it is not clear that the panel variables are stationary at a 99% confidence level (Erdem et al, 2010: 539).

Table 6. Panel Unit Root

		Level		Constant +Trend		First Difference		Constant +Trend	
		Statistic	P-value	Statistic	P-value	Statistic	P-value	Statistic	P-value
lnBN	LLC	-1.58	0.056	-1.10	0.133	-6.41	0.000	-7.78	0.000

	IPS	1.11	0.866	-0.81	0.207	-5.25	0.000	-6.26	0.000
	Hadri	7.32	0.000	6.49	0.000	1.20	0.113	0.69	0.243
	CADF	-2.13		-2.45**		-2.45**		-2.65**	
lnCPI	LLC	0.15	0.561	-1.16	0.122	-11.84	0.000	-8.75	0.000
	IPS	-1.12	0.130	-1.02	0.153	-9.93	0.000	-7.10	0.000
	Hadri	3.05	0.001	9.26	0.000	0.83	0.200	-0.17	0.958
	CADF	-2.02		-2.59		-		-	
						3.30***		3.44***	
lnGDP	LLC	-0.92	0.179	-0.22	0.410	-3.88	0.000	-4.67	0.000
	IPS	0.49	0.69	2.93	0.998	-3.12	0.000	-3.42	0.000
	Hadri	6.88	0.000	5.89	0.000	1.95	0.025	1.34	0.090
	CADF	-		-2.33		-1.57		-	
			2.67***					4.36***	
lnPSI	LLC	-0.84	0.198	-1.30	0.096	-7.34	0.000	-9.08	0.000
	IPS	-1.05	0.146	-3.16	0.000	-8.67	0.000	-7.78	0.000
	Hadri	3.34	0.000	6.88	0.000	-0.12	0.547	0.720	0.235
	CADF	-1.261		-1.40		-		-	
						2.71***		3.135**	
lnRER	LLC	-2.11	0.017	-2.69	0.003	-8.21	0.000	-8.49	0.000
	IPS	-1.18	0.117	-0.62	0.266	-6.29	0.000	-5.59	0.000
	Hadri	4.04	0.000	4.51	0.000	1.17	0.120	0.15	0.440
	CADF	-		-3.74***		-		-	
			.584***				3.38***	.572***	
lnTA	LLC	-2.58	0.004	-5.30	0.000	-8.61	0.000	-6.96	0.000
	IPS	-0.03	0.485	-2.67	0.003	-7.43	0.000	-5.42	0.000
	Hadri	7.49	0.000	4.06	0.000	0.62	0.267	0.78	0.216
	CADF	-2.12		-1.646		-2.25*		-2.29*	

Note: The critical values of CADF statistical values were accepted as -2,66 for constant, -3,24 for constant and trend at 1%; -2,37 for constant, -2,93 for constant and trend at 5%; and -2,22 for constant, -2,76 for constant and trend at 10 %

In order to investigate the stationary properties of the variables in concern, unit root tests of LLC (Levin, Lin and Chu 2002), IPS (Im, Pesaran and Shin (2003), Hadri (2000) and Pesaran (2007) CADF (Cross-Sectional Augmented Dickey-Fuller) are carried out (Table 8). The results show that the variables are not stationary at the level and include a unit root. However, their first differences are stationary. In other words, the variables are I(1) that is a precondition for cointegration tests of Pedroni (1999) and Westerlund and Edgerton (2007) applied here.

Results of Panel Cointegration Test

Cointegration procedure of Pedroni (1999) are carried out to empirically investigate the long-run relationship between variables in Equation 2 (Table 7). These results do not take into consideration the dependency between horizontal cross-sections. The test of horizontal cross-sectional dependency test (CD test), developed by Pesaran (2004) shows that there is no horizontal cross-sectional dependency in the first ten

countries attracting the most number of tourist (See, Table 8). Table 7 also provides estimations from the cointegration procedure of Westerlund and Edgerton (2007) which takes into consideration horizontal cross-sectional dependency, the probability values, obtained from “bootstrap” distribution

Table 7. Panel Cointegration Test

		Constant		Constant trend	
		Statistic	P-value	Statistic	P-value
<i>Pedroni (1999)</i>	Panel-v	-0.48141	0.6849	-1.239184	
	Panel-rho	1.60589	0.9459	2.991036	0.9986
	Panel-pp	-3.90888	0.0000***	-2.455883	0.0070***
	Panel- adf	-3.83997	0.0001***	-2.707001	0.0034***
	Group-rho	3.35910	0.9996	4.485265	1.0000
	Group- pp	-4.97337	0.0000***	-10.08239	0.0000***
<i>Westerlund and Edgerton (2007)</i>	Group - adf	-4.67352	0.8924	-3.167950	0.0008***
	LM ⁺ _N	31.009	0.375 ^b	50.678	0.620 ^b

In Pedroni (1999) test , lagging number 2, probability values reported for Westerlund and Edgerton (2007) tests were obtained from 1000 repeated bootstrap distribution.
 h: expresses the values of “bootstrap distribution probability”.

While the null hypothesis is set up as “there is no cointegration” in Pedroni (1999), that is proposed as “there is a cointegration” in Westerlund and Edgerton (2007). However estimation results obtained from both procedures developed by Pedroni (1999) and Westerlund and Edgerton (2007) show that there is a cointegration and this implies that there is a long-run relationship among the variables in the model. The prediction of the model from the three different (DOLS, FMOLS and two-step) estimation procedure is given in Table 8.

Prediction Methods of Panel-Cointegration Relationship

Table 8. Prediction of Panel-Cointegration Relationship

	DOLS		FMOLS		2- Step	
	Coefficien t	t-stat.	Coefficien t	t-stat.	Coefficien t	t-stat.
lnCPI	0.004506	0.236440	-0.017996	2.072315**	-0.131	5.038***
lnGDP	1.112844	7.975482**	1.098859	12.58285**	0.189	1.537

		*		*		
lnRER	-0.122660	-0.874944	-0.173469	-	-0.359	-
		4.714895**		2.258314**		2.805***
lnBN	0.514515	*	0.524336	*	1.177	*
				2.672991**		
lnPSI	0.064701	1.679663*	0.066706	*	0.083	1.361
CD						
Test						
Statisti	-0.855					
c						
P-	0.392					
value						

*In DOLS prediction, processor and lagging numbers were determined according to Schwarz information criteria and, in FMOLS and 2-staged predictions, lagging number was taken as 2. ***, **, * represents the statistical significance at the levels of 1%,5%, and 10%*

According to the three (DOLS, FMOLS and 2-step) estimators, the results are generally consistent and support each other. As far as the signs and significance of the variables are concerned, it can be said that there estimator gives similar results and supports each other.

While consumer price index (price level) (CPI) is insignificant in DOLS predictors, but it is significant at 1 percent significance level in FMOLS and two-step estimators. It is negatively related to tourism demand and this is consistent with the theoretical expectations. FMOLS and two stage estimators show that one percentage increase in CPI decreases tourism demand about 0.07 percent and 0.13 percent respectively.

Gross domestic product (GDP) is statistically significant at 1 percent significance level and positively affects tourism demand in both DOLS and FMOLS estimators which indicate that one percentage increase in per capita GDP increases tourism demand about 1.11 percent and 1.09 percent respectively.

The effect of the real exchange rate (RER) on demand for tourism is statistically significant at 5 percent significance level in FMOLS and at 1 percent significance level in two step estimators indicate that one percentage increase in real exchange rate reduces demand for tourism about 0.17 percent and 0.35 percent respectively.

Capacity of bed (bed number, BN) is statistically significant at 1 percent significance level and has a positive impact on tourism demand in the three estimators which show that one percentage increase in bed number increases demand for tourism about 0.51, 0.52 and 1.17 percent respectively.

Finally, political stability index (PSI) is significant at 10 percent level in determining tourism demand in DOLS and FMOLS estimators and

positively affects tourism demand. The results from both estimators show that one percentage increase in political stability index increases tourism demand about 0.06 percent.

As far as the magnitude of the explanatory variables is concerned, gross domestic product (lnGDP) and bed capacity (lnBN) are higher than the others and this implies that gross domestic product and bed capacity have strong explanatory capabilities in explaining tourism demand for the selected countries. In other words, income and bed number are main determinants of tourism demand.

CONCLUSION

This paper tries to empirically investigate the determinants of demand for tourism for the top ten most attractive destinations (countries) for tourists for the period 1995-2011 by using the panel cointegration procedures. Before applying cointegration analysis, stationary properties of the variables are investigated by utilizing panel unit root tests. The results of these tests show that the series are I(1). In order to determine a long-run relation among variables in the model, Pedroni (1999) and Westerlund Edgerton (2007) cointegration procedure are applied and the results show that there is a cointegration.

Empirical findings obtained by three different (DOLS, FMOLS and two-step) estimators supports to theoretical expectation. In particular, gross domestic product, bed capacity and political stability are statistically significant and positively affect tourism demand and, on the other hand, price level and real exchange rate are statistically significant and negatively affect tourism demand in the sample countries.

It is possible to develop the various policy recommendations based the findings obtained from the empirical part of the study. Firstly, economic and financial stability is very important for the stability of tourism demand. Elimination of shocks plays an important role in this process. Secondly, supply capacity (in terms of bed number) is also very important to attract more tourists and tourism policies should simultaneously consider these supply conditions and infrastructure investments as well. Thirdly, income plays a vital role in determining tourism demand. Elimination of shocks and cycles in the income level is very important. Economic crisis and stagnation or depression negatively affect the tourism demand. Considering the globalization and interconnectedness of the economies, global growth rate should be kept stable to have a stable tourism demand.

Acknowledgements

We would like to thank Assoc Prof. Dr. Şaban Nazlıoğlu, Pamukkale University, for providing us with his codes for the SPSM procedure.

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