AN ECONOMETRIC ANALYSIS OF DETERMINANTS FOR TOURISM DEMAND IN TURKEY

[1]CEYHUN CAN OZCAN, [2]MUHSIN KAR

[1]Assist. Prof. Dr., Department of Tourism Management, Necmettin Erbakan University, Konya, Turkey
[2]Prof. Dr., Department of Economics, Yıldırım Beyazıt University, Ankara, Turkey
E-mail:[1]ccozcan@konya.edu.tr, [2]mkar@ybu.edu.tr.

Abstract- The aim of this paper is to empirically investigate the determinants of tourism demand by utilizing panel data for the period of 1995-2011 from top 20 countries sending tourists to Turkey. Econometric results obtained from panel cointegration analysis show that macroeconomic factors as such income, prices, supply capacity, exchange rate and political stability play a significant role in determining the demand for tourism in Turkey.

Keywords- Demand for Tourism, Panel Data, Cointegration, Determinants of tourism, Turkey.

I. INTRODUCTION

Tourism plays an important role in economic development and has been attracting an increasing attention with the process of globalization, especially after the 1990s. Tourism is a multi-dimensional sector with its economic, social, political and cultural aspects, however its economic side stands in the forefront. Whatever their development level, each country tries to attract more tourists to their countries, because of especially importance for the contributions of tourism to the balance of payments, employment and economic activities. For these reasons, development and growth plans in many countries involve the utilization of tourism sector by all means.

In order to both attract more tourists and increase the share of tourism in the world, the focus on the determinants of tourism demand and supply is very important. For policy makers at the national and local level, investigation of these aspects of the tourism is also important to allocate the resources among different sectors in the future.

In the literature, there is a number of the study focusing on the determinants of demand for tourism. Researches on the determinants of tourism demand are mainly based on time series analysis (Schubert et al., 2011; Brida et al.,2010; Zorturk, 2009; Kim et al., 2006; Gunduz and Hatemi, 2005, Chen and Chiou-Wei, 2009; Cortes-Jimenez et al., 2009; Dritsakis, 2004; Durbarry, 2004 and Lee and Chang, 2008). As far as Turkey is concerned, there is a limited number of researches on the economic determinants of tourism carried out by Modeste (1995), Proenca and Soukiazis (2005), Garin-Munoz (2006), Aslan, Kaplan and Kula (2008), Eita et al. (2011), Walle (2010), Ibrahim (2011), Bonham et al. (2013), Ekanayake (2012), and Maloney and Rojas (2013).

The aim of this paper is, therefore, to empirically examine the determinants of the tourism demand in Turkey by employing macroeconomic variables from the top 20 countries where Turkey attracts tourist for the period of 1995-2011 and by utilizing panel data methods. This paper contributes to the existing literature with the selection of example and application of the panel data methods considering the cross-sectional dependency to this sample. The empirical results indicate that main macroeconomic variables (income, prices, supply capacity, exchange rate and political stability) play a statistically significant role in the determination of tourism demand in Turkey.

II. MODEL AND DATA

While the determinants of demand for tourism toward Turkey is analyzed, the tourism function with moving from literature implicitly is:

$$TA = f(CPI, GDP, RER, NB, PSI) \quad (1)$$

where TA represents demand for tourism; CPI, general levels of prices; GDP, per capita GDP; RER, real exchange rate; NB, number of bed (touristic supply of goods and services); and PSI, political stability index. The function of demand for tourism can be written in linear and logarithmic panel data form as follows:

$$\ln TA_{it} = \alpha_0 + \alpha_1 \ln CPI_{it} + \alpha_2 \ln GDP_{it} + \alpha_3 \ln RER_{it} + \alpha_4 \ln NB_t + \alpha_5 PSI_{it} + \varepsilon_{it} \quad (2)$$

where $i = 1,..., N$ represents the number of horizontal section; and $t = 1,..., T$ the dimension time. The rationality and theoretically expected effects of the variables taking place Equation (2) can be expressed as follows:

$\alpha_1 < 0$: It is expected that the increase of general level of prices (CPI) will reduce the demand for tourism (TA) to Turkey. CPI here expresses the rate of prices between two countries (ratio of domestic price level to foreign price level) (Eita et al., 2011; Proenca and Soukiazis, 2005; Ibrahim, 2011; Surugıu Leıtão, 2011).

$\alpha_2 > 0$: An increase occurring in income (GDP) will increase the demand for tourism to Turkey (TA). (Naude and Saayman, 2005; Garin-Munoz, 2006;

Garin-munoz and Montero-martin, 2007; Aslan, Kaplan and Kula, 2008; Walle, 2010).

$\alpha_3 > 0$: The increase in real exchange rate (RER) will increase the demand for tourism. Because it expresses the appreciation of national currency (Turkish lira) against foreign currencies, it is expected that it affects demand for tourism in the negative direction (Maloney and Rojas, 2013; Webb and Chotithamwattana, 2013).

$\alpha_4 > 0$: It is expected that the increase in the number of bed (supply of touristic goods and services) icreases demand for tourism. The sign of this coefficient is expected to be in the positive direction (Proenca and Soukiazis, 2005; Aslan, Kaplan and Kula, 2008).

$\alpha_5 > 0$: It is expected that the rise in political stability index (PSI) will increase demand for tourism. Hence expected sign is positive for this coefficient (Naude and Saayman, 2005; Webb and Chotithamwattana, 2013).

Econometric analysis will be carried out by using the data from top 20 countries from where Turkey attracts most tourist. The countries included in analysis are Germany, Ukraine, Russia, Greece, United Kingdom, Sweden, Bulgaria, Austria, the Netherlands, Poland, Georgia, Norway, France, Denmark, the USA, Romania, Italy, Switzerland, Belgium, and Spain. Although Azerbaijan takes place among the top 20 countries, but she is excluded from the analysis because of the data shortage and missing. Details (definitions, sources and period) of the dataset is presented in Table 1.

Table 1. Explain of Variables

Variables	Explain of Variables	Source	Period
TA	Tourism Demand (Number of Tourist Arrivals)	World Development Indicators (WDI) and United Nations World Tourism Organization (UNWTO)	1995–2011
CPI	Consumer Price Index (2005=100)	World Development Indicators (WDI)	1995–2011
GDP	Per Capita Gross Domestic Product (PGDP)	World Development Indicators (WDI)	1995–2011
RER	Real Exchange Rate	World Development Indicators (WDI)	1995–2011
NB	Numbers of Bed (Piece)	United Nations World Tourism Organization (UNWTO)	1995–2011
PSI	Political Instability Index(0-100)	World Development Indicators (WDI)	1995–2011

III. EMPIRICAL EVIDENCE

3.1. Results of Panel Unit Root Test

Before employing the cointegration analysis, it is necessary to investigate the unit root specifications of the variables in the analysis. For both the level and first differences of series, LLC (Levin, Lin and Chu 2002), IPS (Im, Pesaran and Shin (2003), Hadri (2000) and CADF (Cross-Sectionally Augmented Dickey-Fuller) (Pesaran, 2007) unit root tests are applied and the results are given in Table 2. The results show that while the series is not stationary at the level; they are stationary in the first–difference form. Because the series in the tourism demand model are integrate at the same order (i.e., I(1)), we proceed to testing for whether they have a co-integration relationship.

Table 2: Panel Unit Root Tests

		Level				First Difference			
		Constant		Constant+Trend		Constant		Constant+Trend	
		Statistics	Probability	Statistics	Probability	Statistics	Probability	Statistics	Probability
lnNB	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	-2.67***		-2.33		-1.57		-3.436***	
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	-3.584***		-3.74***		-3.38***		-3.572***	
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: Critical values of the CADF statistics are -2,66 (with constant) and -3,24 (with constant and trend) at %1 significance level critical; -2,37 and -2,93 at %5 significance level; -2,22 and -2,76 at %10 significance level respectively.

3.2. Results of Panel Cointegration Test

Table 3 shows the results of panel cointegration test. Most of Pedroni (1999) tests in Table 3 show that there is a cointegration which implies the existence of a long run relationship among the variables in Equation 2 in the long-run in Turkey. Pedroni's approach the test result does not take into consideration the cross-sectional dependency in the panel data. In terms of the reliability of the findings in the direction of the presence of co-integration relationship obtained from Pedroni tests, panel cointegration test developed by Westerlund ve Edgerton (2007) is also carried out and the results were reported in Table 3. As suggested by Westerlund and Edgerton (2007), in order to take into consideration the cross-section dependency, the probability values were obtained from "bootstrap" distribution and showed in Table 3. According to this, for the panel dataset discussed, the null hypothesis of "there is cointegration" is accepted and it is concluded that there is a cointegration.

Table 3: Panel Cointegration Tests

		Constant Statistics	Probability	Constant and Trend Statistics	Probability
Pedroni (1999)	Panel-v	-0.481416	0.6849	-1.239184	
	Panel-rho	1.605899	0.9459	2.991036	0.9986
	Panel-pp	-3.908882	0.0000***	-2.455883	0.0070***
	Panel-adf	-3.839977	0.0001***	-2.707001	0.0034***
	Group-rho	3.359107	0.9996	4.485265	1.0000
	Grup-pp	-4.973372	0.0000***	-10.08239	0.0000***
	Grup –adf	-4.673525	0.8924	-3.167950	0.0008***
Westerlund and Edgerton (2007)	LM_N^+	31.009	0.375[b]	50.678	0.620[b]

Lag number criteria in Pedroni (1999) tests was 2 and the probability values reported for Westerlund andEdgerton (2007) tests were obtained from bootstrap distribution with 1000 repetition. Since panel-v statistics showed a right tail distribution, at the significant level of 5%, critical value was 1.645; since the other statistics showed a left tail distribution, critical value was – 1.645. The statistics calculated for Panel v >1.645 or the others are <-1.645, null hypothesis is rejected, and it is decided that there is a long term cointegration relationship between variables (Nazlıoğlu and Soytas, 2012). b expresses that the values of "bootstrap distribution probability".

While the null hypothesis of Pedroni (1999) is in the form of "there is no cointegration"; in terms of the reliability of the results Westerlund-Edgerton (2007) test is also employed and the null hypothesis in this approach is in the form of "there is a cointegration". The results presented in Table 3 reveals that there is long term relationship between InTA, dependent variable expressing demand for tourism from the top 20 countries sending tourist to Turkey and the explanatory variables of lnCPI (price level), lnGDP (gross domestic product), lnRER, lnNB and lnPSI.

3.3. The Estimated Results of Panel Cointegration Relationship

Next step is to determine the long run relationship among the variables in concern and Table 4 present the cointegration relationship obtained from the model represented in Equation 2.

Table 4: Estimation of Panel Cointegration Relationship

	DOLS Coefficient	t-statistics	FMOLS Coefficient	t-statistics	2-Step Est. Coefficient	t-statistics
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	-2.258314**	-0.359	-2.805***
lnNB	0.514515	4.714895***	0.524336	6.024861***	1.177	10.060***
lnPSI	0.064701	1.679663*	0.066706	2.672991***	0.083	1.361
CD Test Statistics	-0.855					
Probability	0.392					

Note: In DOLS estimation, processor and lagging numbers were determined according to Schwarz information criterion and, in FMOLS and two Step estimations, lagging number was assigned as 2. ***, **, * denotes statistical significance at the levels of 1%, 5%, and 10%, respectively.

The findings obtained from the estimation regarding the explanatory variables in the model can be evaluated as follows:

From the empirical findings of DOLS and FMOLS, the effects of the coefficients of the variables of log of per capita Gross Domestic Product (lnGDP) in the other countries from where tourists comes and log of touristic supply capacity (lnNB) are consistent with the theory. Both lnGDP and lnNB have a positive sign and statistically significant at 1 percent significance level in the model. The size of the coefficients for both lnGDP and lnNB provides information about the elasticities which are quite high. In particular, 1 percent increase in the per capita income (lnGDP) increases tourist arrivals (lnTA) at more than 1 percent. Similarly, 1 percent increase in the touristic

supply capacity (lnNB) increases tourism demand (lnTA) at about 0,5 percent. This implies that income level in the tourist sending countries to Turkey and touristic supply capacity in Turkey are very vital to attract more tourist towards Turkey.

As theoretically expected, the real exchange has a negative sign and statistically significant at 5% and at 1% significance level in the FMOLS and two-step estimation respectively. Thereby, an appreciation of Turkish lira against her trading partners' currecny seems to deteriorate foreign demand for Turkish tourism areas.

Additionally, coefficient of the log of price level (lnCPI) (ratio of domestic price level to foreign price level) is statistically insignificant in the estimation of DOLS, but statistically significant at 5% and at 1% significance level in the FMOLS and two-step estimation. lnCPI has a negative sign as expected in the theory. It implies that a relative increase in the domestic price level against foreign price level will reduce the demand for tourism towards Turkey.

Lastly, coefficient of the log of political stability index (lnPSI) has a positive sign and statistically significant at 10% and at 1% significance level in the DOLS and the FMOLS respectively. It implies that political stability increases the perception of security and free movement of tourist among the countries and. therefore, positively contributes to tourism demand in Turkey.

CONCLUSION

As many developed and developing countries, Turkey has been trying to attract more tourist in each year to accumulate the foreign currency from tourism sector. It is very important what sort of macroeconomic variables affects the demand for tourism in Turkey. This paper, therefore, tries to empirically determine the macroeconomic factors that play important role on the tourism demand in Turkey by using the annual data for the period of 1995-2011 from the top 20 countries from where most tourists come to Turkey.

Econometric results obtained from the panel data analysis can be summarized as follows: per capita income level (lnGDP) in the top 20 tourist sending countries and the real exchange rate (lnRER) are the most important factors that determine tourism demand in Turkey. Additionally, relative level of domestic price (lnCPI), touristic supply capacity (lnNB) and political stability (lnPSI) also have effects on the demand for tourism in Turkey. Additionally, the touristic supply capacity should be expanded over the years.

Another important information from the empirical results is about interpretation of the elasticities in the log form of the model in the estimation. According to the findings, both price and income elasticities of tourism demand are quite high in Turkey. Policy makers should closely follow the economic performance of the tourist sending countries and should eliminate the risk of the price instability in Turkey. Especially relative increase of domestic prices against foreign price level seems to be a risk factor and therefore the policy makers should prioritize the price stability.

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