

Price and Income Elasticity of Demand for Tourism Sector in Turkey

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I. Introduction

Tourism sector is considered to be among the major sources of generating foreign exchange earnings, and improving balance of payments as well as employment creation. According to the data provided by World Travel and Tourism Council (WTTC), following the banking sector, tourism is the second largest industry generating 9% of global GDP in year 2011. Sector also has been of strategic importance in terms of its backward and forward linkages with various sectors such as transportation, financial services, retailing, and telecommunications. Stimulating investments and growth in these sectors tourism acts as a catalyst for economic growth. Given the rising importance of the sector in terms of economic contribution, sector attracts much attention in academic research.

Eventhough World Tourism Organization has been ranking Turkey within first 10 destinations last five years, it seems that Turkish tourism has still huge potential for growth. Table 1 shows that the contribution of tourism sector to the GDP remains relatively limited by 4.0 % on average, whereas the growth rate of the sector has been highly fluctuating during last five years. Share of tourism receipts in both exports and trade balance deficit also seems to be far from a stable average. The contribution of tourism sector to the economy is expected to increase upon a stable level by both public and private planning and policy making. As a labour intensive industry, the sector would be a promising one in terms of job creation. Moreover sustainable growth of the tourism sector could have also cure the chronic balance of payments problem to an extend as being an important source of foreign exchange earnings to the country.

Summary Indicators	2005	2006	2007	2008	2009	2010
Tourism Direct Contribution to GDP (% share)	4.4	4.1	4.0	4.0	4.3	4.0
Real Growth rate of GDP by Tourism	2.2	0.5	2.3	0.2	2.8	0.0
Growth rate of GDP*	8.4	6.9	4.7	0.7	-4.8	9.0
Tourism Direct Contribution to Employment	2.1	2.2	2.1	2.1	2.1	2.1
International tourism receipts (% of exports)*	19	16	14	14	17	16
Share of tourism receipts in trade balance deficit	21	27	18	36	32	15

Source: WTTC data

*Data from World Bank Database

With its advantageous location and natural beauties, tourism sector has been attributed much importance in Turkish economy as well. However, natural resources must be accompanied with the necessary infrastructure and managerial decisions in order to create and maintain the global competitive advantage in the industry. The infrastructure such as transportation and other touristic facilities require the devotion of huge funds to the sector by both the public and private investment sources. Such kind of long term investment decisions necessitate the estimation of tourism demand function. Despite the importance of tourism sector for Turkish economy, empirical research remains limited in this area.

In an early study, Akış (1998) researched on 18 countries for a period covering 1980-93. By fitting time series data into separate double logarithmic functional form of the regression models, she found greater than one income elasticity of demand for all countries indicating Turkish tourism to be a luxury item. Furthermore, for 15 of the 18 countries, she found statistically significant and negative relationship between relative prices and tourism demand for Turkey. In a recent research by Aslan, Kula, and Kaplan (2009) the determinants of tourism demand for Turkey by using a dynamic panel model was estimated. The model included both supply and demand Dynamics together with respect to its 9 major clients for a 10 years of period. Results reveal inelastic prices, and low income elasticity for Turkish tourism. These contravertial results of two researches may be attributed to different methods of estimation and coverage of time span. Though another research conducted by Görmüş and Göçer (2010), by using two way random effect model, estimated the demand function with respect to 32 countries for years 2000-06. Results indicate income elasticities lower than one which reveals that Turkish tourism is considered to be an inferior good by the foreign tourists. Moreover, according to the paper, there exists a positive and significant relationship between relative prices and tourist demand, which can be attributed to damping and promotion policies of cheap holiday packages by Turkish suppliers of tourism. By employing alternative prices of alternative destinations, the paper also indicates Greece and Spain as close substitutes to Turkish tourism. There exists no common conclusion provided by these three attempts to reveal the determinants of demand structure for Turkish tourism.

The purpose of this research is to estimate a demand function for international tourism services in Turkey. The paper is expected to contribute to the existing literature by employing up to date econometric models, provide new evidence for a wider range of client countries. The estimated demand function is expected to reveal the price, income and substitutive price elasticities that are also important for tourism planners. It is evident that the accurate estimation of tourism demand would help the policy makers to make up their managerial strategy concerning marketing and sales decisions.

The remainder of the paper is organised as follows, section two explains the data and the methodological framework, section 3 provides and discusses the empirical results. Finally, section 4 concludes.

II. Variable Specification and Dynamic Modelling

Debates on whether basic time-series models or more sophisticated econometric models are better in modelling and forecasting tourism demand has dominated the relevant literature from the 1980 until 2000s. An extensive research by Martin and Witt (1989) revealed that simple models outperform more complex econometric models. Superiority of basic “no change” technique to more sophisticated models in tourism forecasting was also supported by the evidence provided by Kulendran & King (1997), Kulendran & Witt (2001), and Song, Witt & Jensen (2003). Poor performance of ordinary least squares analysis was attributed to lack of using up to date methodological developments in empirical testing (Witt and Witt, 1995). Witt and Witt (1995) suggested that use of methodological developments, such as diagnostic tests, error correction mechanism models, and cointegration would boost the accuracy of tourism

forecasting studies. Kulendran and Witt (2001) investigated whether or not the poor performance of regression methods are the result of failure to adopt recent developments in econometric models. The results from their research demonstrate that even though the accuracy of estimation increased by recent advances in econometrics, casual analysis models are outperformed by time series models, and the basic no change model still performs best. By contrast, Kim and Song (1998) found that ECMs perform better compared to time series. In addition, Song, Romilly, and Liu (2000) provided that econometric models outperform simple time series models.

Given the mixed results regarding the relative performance of time series and econometric models provided by the literature, there exists no clear cut evidence on the fact that any one model can consistently outperform other models. Forecasting performance depends highly on the data frequencies, sample size, and forecasting horizons (Song & Li, 2008). Time Varying Parameter model is found to be superior in short term forecasting, while static OLS model performs better for longer term forecasting (Song, Witt, Jensen, 2003). Low frequency data, such as annually, may have fewer unit roots and fewer cointegrating relationships than the same series at quarterly level, hence different ECMs may perform better.

While debates over superiority of either model over the other is going on, it is evident that models are often built up depending on the nature of observations. Recently, panel data analysis appeared in the literature. Using panel data has several advantages. It gives more information based on cross section and time series data simultaneously. Furthermore, provides higher degrees of freedom and more efficiency. However, generally some econometric problems arise with the tourism demand model. First, the demand system includes variables which are usually considered to be endogenous, and the regressors may be correlated with the error term. In addition, time invariant country characteristics (i.e. geography, demography) may also be correlated with the explanatory variables. These problems are treated through fixed effects instrumental variable estimation. Second, the model usually includes lagged dependent variable, which gives rise to autocorrelation problem. The regressors are transformed by first differencing in order to remove both country specific fixed effects and also instrument first differenced lagged dependent variable with its past levels. Last, the data set used for this study includes small time, large panels. In order to avoid all these possible problems, this study uses Arellano - Bond dynamic panel model, which is designed for small T, large N panels.

International tourism demand model considered for this study is

$$TA_{it} = f(TA_{it-1}, Y_{it}, P_{it}, Dcrises)$$

Here, TA_{it} : Number of tourist arrivals to Turkey from country i in year t ,

Y_{it} : Real per capita Gross Domestic Product for country i in year t ,

P_{it} : Relative prices in Turkey for tourists from country i in year t ,

PCO_{it} : Price of crude oil country i in year t ,

$Dcrises$: Dummy variable indicating years that the country i experienced financial crises.

20 major tourism clients of Turkey (Austria, Belgium, Bulgaria, Czech Republic, Denmark, France, Germany, Greece, Israel, Italy, Japan, Netherlands, Poland, Russian Federation, Spain, Sweden, Switzerland, Ukraine, United Kingdom, United States) which consists more than 80% of tourism demand during last five years is observed for the period 2000 – 2010.

Tourism demand is commonly proxied by number of tourist arrivals/departures, tourist expenditures/receipts, travel exports/imports, length of stay, and nights spent at tourist accommodation (Lim, 1997). For the purpose of this study, the number of tourist arrivals are used as independent variable. The data are gathered from the Turkish Ministry of Tourism Statistics.

A lagged dependent variable is also included in the set of regressors in order to account for habit persistence. Eventhough the lagged dependent variable may suppress the explanatory power of other independent variables, inclusion of previous consumption as explanatory variable provides information on interdependent preferences and word of mouth effect.

Other independent variables include income and relative prices. Eventhough the real personal disposable income is the most appropriate measure of income for the purpose of the study, due to unavailability of data for Turkish data sources, real per capita GDP is used as a proxy for tourist income. The relative price movements, on the other hand, at best would be traced from indices constructed using abasket of goods and services consumed by tourists. However, such kind of Tourist Price Indices are non-existent, and relative Consumer Price Indexes adjusted by bilateral exchange rates are used as measure of relative prices. The data for real GDP per capita, CPI, and bilateral exchange rates are gathered from World Bank data set.

As another important determinant of international tourism demand, a cost of travel variable is also included in the model. Calculation and dissemination of data for exact cost of travel for the tourists is impossible and non-existent. International airfare price data is widely used as a proxy in the literature. Also, the price of crude oil is also employed as a proxy in the studies by Garin Munoz (2006, 2007). For the purpose of this research, price of crude oil is used as a proxy for cost of travel.

Finally, a crises dummy variable is also incorporated in the model with a value of 1 for the years that the country is exposed to crises, and 0 otherwise. During the observation period (2000 – 2010) many of the economies experienced global financial crises, and tourism industries as many other industries affected by demand shocks especially in the beginning and end of the decade. Hence, in order to account for the effect of global crises on Turkish tourism demand, model contains a crises dummy. The dummy is constructed on the basis of crises information dataset provided by Laeven & Fabian (2010).

Dynamic model to be estimated takes the form:

$$\Delta \ln T A_{it} = \beta_1 \Delta \ln T A_{it-1} + \beta_2 \Delta \ln T_{it} + \beta_3 \Delta \ln P_{it} + \beta_4 \Delta \ln P C O_{it} + \beta_5 \Delta D_{crises} + \Delta \epsilon_{it} \quad (\text{Equation 1})$$

Double logarithmic form of demand function allows coefficients to be interpreted as price and income elasticities. Also long run elasticities are to be obtained by dividing each of the coefficients by $(1 - \beta_1)$.

III. Empirical Results

Stata 11.0 package program is used for the econometric estimation of equation 1. Parameters obtained from GMM – DIFF Arellano – Bond Dynamic Panel Estimation are shown in Table 1. The model assumes that there is no second order autocorrelation in errors. The test for autocorrelation and Sargan test of overidentification is conducted, and the failure to reject the null hypothesis in both tests gives support to the validity of the instruments and the model. In addition, there exists no signs of serial correlation, and the Wald test indicates the joint significance of explanatory variables.

Table 1: Estimation Results for Dynamic Panel Data (2000 – 2010)

Variable	GMM – DIFF Arellano – Bond Estimator
<i>TAit-1</i>	.43 (11.77)***
<i>Yit</i>	.66 (2.50)**
<i>Pit</i>	-.56 (-4.69)***
<i>Dcrises</i>	.04 (1.15)
<i>PCOit</i>	.001 (1.71)*
Autocorrelation2	-2.01
Sargan (d.f.)	171.78 (55)
Wald Test	1105.84 (4)
Num. Of Observations	200
Long Run Parameters	
<i>Yit</i>	1.16
<i>Pit</i>	-0.98
<i>PCOit</i>	.002

Note: Figures in brackets are t-statistics. *, **, and *** denote significance at 0.01, 0.05, and 0.10 levels.

According to the results, the lagged dependent variable has positive and statistically significant estimated coefficient. It shows that habit formation has considerable effect on Turkish tourism demand. 43% of demand for Turkish tourism is explained by repeated visits, and hence the word of mouth effect plays an important role in tourism demand. Estimated coefficient for the income variable has positive sign and statistically significant at 0.05 level. Since double logarithmic model is used, the coefficients are directly interpreted as short run elasticities. In order to obtain long run elasticities, estimated parameters are divided by $(1-\beta_1)$. According to the results, demand for Turkish tourism is income inelastic in the short run, though it becomes elastic in the long run. This means that, demand for tourism is considered to be a necessity in the short run, and becomes luxury in the long run.

Estimated coefficient of relative price variable is negative and statistically significant, which in line with the economic theory. Price elasticity of demand for Turkish tourism is lower than unity in the short run, and approaches to unity in the long run. Low short run price elasticity suggests that tourists are not very responsive to changes in relative prices in Turkey. A 1%

increase in prices would lead to 0.56% decrease in tourist arrivals in the short run, and 0.98% decrease in the long run. Crises dummy variable, on the other hand, has positive and statistically insignificant coefficient, which is contrary to the traditional wisdom. Economic crises does not seem to curb tourist demand for Turkish tourism. The reason may be that clients perceive tourism to Turkey as a necessity, and demand is not affected significantly by the economic conditions of the country of origin.

Cost of travel has positive, statistically significant but only a minor effect on tourism demand. As the crude oil price increase by 1%, tourism demand also increases by 0.04%. This may be attributable in part, to the geographic location of Turkey. Major clients of Turkey are from European continent. Since Turkey is located geographically not far from its major clients, becomes a good substitute among its competitors, as crude oil prices surge.

IV. Concluding Remarks

The research was pursued with the aim of exploring the determinants of Turkish tourism with respect to its 20 major clients, that count for more than 80% of its total tourism demand. A dynamic panel data method is conducted over the period 2000 – 2010. The study poses some important policy implications with regards to tourism marketing strategy.

Relatively low price elasticity of demand for tourism together with almost inelastic cost of travel suggests that Turkish tourism is considered to be a necessity for the origin countries. Moreover, external shocks, such as economic crises, does not seem to have any important negative impact on tourism demand. These results suggest that in order to increase total revenues out of tourism, prices may be increased. In line with the previous research on Turkish tourism, income elasticity is found to be low especially in the short run, which supports the fact that travel to Turkey is considered to be a necessity by the tourists (Aslan, Kaplan & Kula, 2008, and Görmüş & Göçer, 2010). However, in order to become a trademark in tourism industry, and to be perceived as highly differentiated, effective advertisement and marketing of Turkey should be carried out. This could increase the Turkish suppliers power to implement aggressive pricing strategies and hence raise the revenues. Often implemented promotions imposing lower prices are considered to be unnecessary and even inappropriate since further lowering the income elasticity. Finally, an important limitation to this study is that the model does not incorporate any variable concerning substitute prices. Inclusion of prices of alternative destinations in the dataset would improve the results of the model and pose important policy implications as well.

Statistically significant and relatively high value of lagged dependent variable may be interpreted as an important word of mouth effect. Hence, in order to attract more tourists, suppliers of tourism services should improve their quality and upgrade brand image. In order to achieve this aim, infrastructural investments, especially on domestic transportation, should be carried out by public authorities. In addition, continuous performance evaluation of all tourism service providers by external agencies could also help increasing standards.

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