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ARE SHOCKS TO TURKEY'S TOURIST ARRIVALS PERMANENT?

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Özet

Geçtiğimiz yıllarda Türkiye ekonomik krizler, terör ve doğal afetler yaşadı. Bu çalışma söz konusu şokların ziyaretçi sayıları üzerindeki etkisinin geçici mi yoksa kalıcı mı olduğunu incelemektedir. Rassal yürüyüş hipotezi bir serinin durağan olmadığını veya birim kök içerdiğini iddia etmektedir. Yabancı ziyaretçi serisi birim kök içeriyorsa, şokların yabancı ziyaretçiler üzerindeki etkisi kalıcı olacaktır. Eğer yabancı ziyaretçi serisi birim kök içermiyorsa, şokların yabancı ziyaretçiler üzerindeki etkisi geçici olacaktır. Bu çalışmada, 1996-2014 döneminde Türkiye'ye gelen yabancı ziyaretçiler için rassal yürüyüş hipotezi Im vd. (2003) panel birim kök testiyle test edilmiştir. IPS panel birim kök testi sonuçları, rassal yürüyüş hipotezinin reddedilmesine izin vermiş, Türkiye'ye 1996-2014 döneminde 15 kaynak ülkeden gelen ziyaretçiler üzerinde şokların etkisinin geçici olduğunu göstermiştir.

Anahtar Kelimeler: *Turizm, Türkiye, Ziyaretçi Sayıları, Birim Kök, Rassal Yürüyüş Hipotezi*
Jel Sınıflaması: *Z32 ,C23*

Abstract

In recent years, Turkey has experienced economic crises, terrorist incidents and natural disasters. This study investigates whether these shocks have temporary or permanent effects on visitor arrivals. Random walk hypothesis asserts that a series is a non-stationary or a unit root process. If visitor arrivals are characterized by a unit root, it implies that shocks to visitor arrivals are permanent. If visitor arrivals series not include a unit root process, this implies that shocks to visitor arrivals are temporary. In this study, the "random walk hypothesis" is tested for visitor arrivals to Turkey during 1996-2014 using Im et al. (2003) panel unit root test. IPS test results allow rejecting the random walk hypothesis, implying that shocks to visitor arrivals to Turkey from the 15 major source countries between 1996 and 2014 have a temporary effect on visitor arrivals.

Keywords: *Tourism, Turkey, Visitor Arrivals, Unit Root, Random Walk Hypothesis*
Jel Classification: *Z32 ,C23*

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1.INTRODUCTION

Over the past six decades tourism has experienced continued expansion and become one of the largest and fastest-growing economic sectors in the world. Tourism has shown virtually uninterrupted growth despite occasional shocks. As reported in the report of the United Nations World Tourism Organization international tourist arrivals have increased from 25 million globally in 1950, to 527 million in 1995, and 1133 million in 2014 (UNWTO, 2015). Tourism -as an "industry without a roof"- is also very important for developing countries as a main source of foreign exchange earnings creating much-needed employment and opportunities. Therefore, visitor arrivals to a country have important implications for tourism policy.

Table 1 shows the world's top international tourism destinations. In 2014, France continued to top the ranking of international tourist arrivals with 84 million tourists, The United States ranked 2nd in arrivals with 75 million. Spain was 3rd in arrivals with 65 million overnight visitors. China remained 4th, Italy has consolidated its position at 5th place and Turkey remained 6th in arrivals. Germany came 7th, The United Kingdom ranked 8th, The Russian Federation held on to 9th place in arrivals. Mexico re-entered the top 10 by arrivals at number 10 (UNWTO, 2015).

Table 1: Top Tourism Destinations

	Million		Change (%)	
Rank	**2013**	**2014**	**13/12**	**14/13**
1. France	83.6	83.7	2.0	0.1
2. United States	70.0	74.8	5.0	6.8
3. Spain	60.7	65.0	5.6	7.1
4. China	55.7	55.6	-3.5	-0.1
5. Italy	47.7	48.6	2.9	1.8
6. Turkey	37.8	39.8	5.9	5.3
7. Germany	31.5	33.0	3.7	4.6
8. United Kingdom	31.1	32.6	6.1	5.0
9. Russian Federation	28.4	29.8	10.2	5.3
10. Mexico	24.2	29.1	3.2	20.5

Source: United Nations World Tourism Organization. (2015), *Tourism Highlights 2015 Edition*.

Non-stationarity is a relatively new concept in tourism research. Some major events like 9/11, SARS and the Gulf War introduce shocks to visitor arrivals series. If the visitor arrivals series is stationary, these events have temporary effects on tourist arrivals. But, if tourist arrivals are non-stationary, they will have a permanent effect. There are a few studies examine the random walk hypothesis in the tourism economics literature. Narayan (2005)

examined the presence of non-stationarity in the tourist expenditure in Fiji. Bhattacharya and Narayan (2005) examined the presence of non-stationarity in the visitor arrivals to India. Narayan (2008), Narayan and Prasarad (2008) also examined the presence of non-stationarity in the visitor arrivals in Australia. Also, Chu, Chang, Chang and Su (2008) examined the stationarity of visitor arrivals to Taiwan, Lee (2009) to Singapore and Chu, Yeh and Chang (2014) to China. Lean and Smyth (2009) used Lagrange Multiplier (LM) unit root tests for to examine international visitor arrivals from Malaysia's ten major source markets to ascertain if shocks to the time path of tourist arrivals are permanent or transitory.

Murat, Sener and Yilanci (2013) is the first study examined the effects of the shocks on the growth path of the tourist arrivals to Turkey by employing Kapetanios (2005) unit root test. Their results show that the shocks have permanent effects on visitor arrivals. Bozkurt and Bahar (2015) also analyzed the effects of demand shocks in Turkish tourism sector for the period 1991-2010. They reached to a decision that the demand shocks are non-permanent.

This study differs as the method and data period. In this study, the random walk hypothesis for visitor arrivals is examined using Im, Pesaran and Shin (IPS, 1997, 2003) panel unit root test. Here, section 2 describes the recent developments in Turkish tourism sector. Section 3 presents the model, the econometric methodology and analyses the empirical findings and the concluding section summarizes the findings and policy purposes.

2. RECENT DEVELOPMENTS IN TURKISH TOURISM INDUSTRY

Tourism is one of the leading industries in the Turkish economy with its contribution to GDP. In 2014, number of foreign visitors came to Turkey has increased 5,5% from 34,9 million to 36,8 million. The number of visitors coming from Germany has increased 4,1% from 5 million to 5,2 million, visitors from Russia has increased 5% from 4,2 million people to 4,4 million. Also, the number of visitors coming from United Kingdom that has grown 3,6%, has increased from 2,5 million to 2,6 million. When we examine the order of the countries sending the maximum number of visitors, Germany is the first with a ratio of 14,25%, Russian Fed. is the second with a ratio of 12,16% and United Kingdom is the third country with a ratio of 7,06%. Georgia and Bulgaria are following United Kingdom in the order (UNWTO, 2015).

In the fourth quarter of 2015, tourism income decreased by 14.3% and declined to $ 6 billion 568 million 22 thousand. While 77.6% of this income was obtained from foreign visitors, 22.4% was obtained from citizens resident abroad. Tourism income in 2015 decreased by 8.3% and reduced $ 31 billion 464 million 777 thousand compared to the previous year. While 81.3% of this income was obtained from foreign visitors, 18.7% was obtained from citizens resident abroad. In this quarter number of departing visitors decreased by 2.2% compared to same quarter of previous year and declined to 8 million 112 thousand 611 persons. While 84.8% of visitors was foreign, 15.2% of them was Turkish citizens resident abroad.

In 2015, number of departing visitors increased by 0.5% compared to the previous year, 85.5% of visitors was foreign, 14.5% of them was Turkish citizens resident abroad. Tourism income in 2015 decreased by 8.3% and reduced $ 31 billion 464 million 777 thousand compared to the previous year. While 81.3% of this income (excluding GSM roaming and marina service expenditures) was obtained from foreign visitors, 18.7% was obtained from citizens resident abroad (TURKSTAT).

3. MODEL AND THE ECONOMETRIC METHODOLOGY

A non-stationary series is called a unit root process or a random walk series. If we assume that a series, y, is generated by an AR(1) process as stated below:

$$y_t = \beta y_{t-1} + \mu_t \qquad (1)$$

where β is a parameter and μ is a white noise disturbance term. In equation (1), μ can be perceived as the shocks to the series. The effect of shocks on the series can be tested by unit root tests.

3.1. ADF TEST

The presence of unit root in the visitor arrivals series can be examined by employing the "Augmented Dickey and Fuller" (ADF) test (Dickey and Fuller 1979, 1981). ADF test is based on the regression:

$$\Delta VA_t = \kappa + \alpha VA_{t-1} + \beta t + \sum_{j=1}^{k} d_j \Delta VA_{t-j} + \varepsilon_t \qquad (2)$$

In equation (2), ΔVA_{t-1} is the lagged first difference to accommodate serial correlation in the errors, ε_t; t is a time trend; and α and β are the parameters to be estimated. Equation (1) tests for the null hypothesis of a unit root against a trend stationary alternative in VA_t .

The null and the alternate hypotheses for a unit root in VAt are:

$$H_0 : \beta = 0 \qquad H_1 : \beta \langle 1$$

For any given sample size, the null hypothesis of a unit root cannot be rejected if the estimate of β is not significantly different from zero. If β<0, then the alternative hypothesis of trend stationary holds. In this study, because of the small sample size, the optimal lag length is selected as 5 and Schwarz Bayesian Criterion is used.

3.2. IPS PANEL UNIT ROOT TEST

It is known that traditional unit root tests like ADF, KPSS and DF possess low power against near unit root alternatives (Diebold and Nerlove, 1990). The development of panel data unit root tests allows considering data sets with a short time dimension. The most disseminated results were developed by Levin and Lin (1992, 1993), Im, Pesaran and Shin (2003) and Maddala and Wu (1999).

The panel unit root test developed by Im, Pesaran and Shin (IPS, 2003) is shown to be more powerful than Levin and Lin's (LL, 1992). IPS test allows for heterogeneous values for all estimated parameters, including the first order autoregressive coefficient that tests the null of a unit root.

For a sample of N groups observed over T time periods, the IPS panel unit root regression of the conventional ADF test is of the following form:

$$\Delta VA_{i,t} = \alpha i + \pi_i t + \beta_i VA_{i,t-1} + \sum_{j=1}^{k} \psi_{i,j} \Delta VA_{i,t-j} + \varepsilon_{i,t} \qquad (3)$$

In equation (3), VA denotes visitor arrivals, Δ is the first difference operator, $\varepsilon_{i,t}$ is a white noise disturbance term with variance σ^2, i=1,2,….., N indexes countries and t=1,2,…,T indexes times. The $\Delta VA_{i,t-j}$ terms on the right hand side of equation (3) allow for serial correlation, with the aim of achieving white noise disturbance term.

The null hypothesis of a unit root in the panel can be defined as:

$H_0 : \beta i = 0$, and the alternative hypothesis:

$Hi : \beta i \langle 0$, i=1,2,….,N1, βi=0, i=N1+1, N2+2,….,N

Alternative hypothesis allows for β1 to differ across groups, and is more general than the homogenous alternative hypothesis, namely $B_i = \beta < 0$ for all i (Im et al., 2003).

For testing the hypothesis, Im et al. (2003) propose a standardized t-bar statistics:

$$Z_{tbar} = \frac{\sqrt{N}\left\{tbar_{NT} - \frac{1}{N}\Sigma_{i=1}^{N} E\left[t_{iT}(p_i,0)|\beta_i = 0\right]\right\}}{\sqrt{\frac{1}{N}\Sigma_{i=1}^{N} Var\left[t_{iT}(p_i,0)|\beta_i = 0\right]}} T,N \Rightarrow N(0,1) \qquad (4)$$

Where

$$tbar_{NT} = \frac{1}{N}\sum_{i=1}^{N} t_{iT}(p_i,\theta_i)$$

In equation (4), $t_{iT}(p_i,\theta_i)$ is the individual t-statistic for testing $\beta_i = 0$ for all i.

The values for $E\left[t_{iT}(p_i,0)|\beta_i = 0\right]$ and $Var\left[t_{iT}(p_i,0)|\beta_i = 0\right]$ are provided by Im et al. (2003) for different values of T and p, computed via stochastic simulations with 50000 replications, when the underlying ADF(p) regression is estimated with and without a linear time trend. Under the assumption that the disturbances for each country are independent, Im

et al. (2003) show that, under the null hypothesis that $\beta_i = 0$ for all i, the t-bar statistic converges to a standard normal variate $\left[Z_{tbar} \overset{N}{\Rightarrow} N(0,1) \right]$. The critical values for conventional significance levels are reported in Im et al. (2003).

3.3. DATA

The annual data used in this study consists of visitor arrivals to Turkey from 15 major countries; Germany, Russia, UK, Bulgaria, Netherlands, Iran, France, USA, Georgia, Greece, Austria, Romania, Belgium, Italy and Syria in the natural logarithmic form. The data obtained from the Ministry of Culture and Tourism of Turkey and Turkish Statistical Institute.

3.4. EMPIRICAL FINDINGS

Table 2 reports the ADF test results of the series. We are able to reject the unit root null hypothesis at the 5% and %1 levels of significance for visitor arrivals to Turkey from the Germany, Netherlands, France, USA and Georgia, Romania and Syria. These results show that, for these countries, because visitor arrivals are stationary processes, shocks to visitor arrivals will have a temporary effect. But for the remaining eight countries, visitor arrivals contain a unit root. This means, shocks to visitor arrivals will have a permanent effect.

Table 2: ADF Test for a Unit Root

Visitor Arrivals to Turkey From:	t-Stat	Prob.	Lag
Germany	-11.272***	0.0000***	5
Russia	-2.9617	0.1777	5
UK	-1.5801	0.7601	0
Bulgaria	-1.3658	0.8355	0
Netherlands	-5.7266***	0.0030***	5
Iran	-2.1834	0.4697	0
France	-4.4138**	0.0134**	0
USA	-4.4602**	0.0191**	5
Georgia	-4.7175**	0.0114**	4
Greece	-1.8341	0.6432	1
Austria	-3.3030	0.1035	3
Romania	-3.4079*	0.0936*	5
Belgium	-2.0634	0.5229	3
Italy	-1.6734	0.7042	5
Syria	-3.6650*	0.0610*	4

Notes: The critical values are -4.88, -3.82 and -3.36 at the 1%, 5% and 10% levels respectively. * , (**), (***) denote statistical significance at the 10%, 5% and 1% levels respectively.

It is known that univariate unit root tests such as ADF test have lower power when the root is close to one. Because of the time period also being short in this study, the unit root properties of visitor arrivals to Turkey are examined using the IPS panel unit root test. Table 3 gives the results of IPS test.

Table 3: IPS Panel Unit Root Test Results

	Statistic	Prob.
Im, Pesaran and Shin W-stat	5.05621	0.0000

IPS test statistics indicate visitor arrivals to Turkey to be stationary processes, inconsistent with the random walk hypothesis. It means that, shocks to visitor arrivals to Turkey have a temporary effect for all the countries.

4. CONCLUSION

According to the report of World Travel & Tourism Council 2015, the direct contribution of Travel & Tourism to GDP is forecast to rise by 4.6% pa, from 2015-2025, to TRY131.8bn (4.7% of total GDP) in 2025. The total contribution of Travel & Tourism to GDP is forecast to rise by 4.1% pa to TRY324.0bn (11.6% of GDP) in 2025.

With the immense tourism potential and its rich natural and cultural landscape Turkey is the unique country among Mediterranean countries. According to Turkish Tourism Strategy 2003, Turkey's vision is to increase tourist arrivals and revenues so that Turkey will be in the first five countries in tourist and tourism revenue recipients.

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