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ARAŞTIRMA MAKALESİ

Döviz Kurundaki Dalgalanmaların Türk Deniz Turizmine Etkisi

Arş. Gör. Esra BARAN, Dokuz Eylül Üniversitesi, Denizcilik Fakültesi, e-posta: esra.baran@deu.edu.tr

ORCID: https://orcid.org/0000-0002-2235-5617

Arş. Gör. İlke Sezin AYAZ, Dokuz Eylül Üniversitesi, Denizcilik Fakültesi, e-posta: ilkesezinayaz@gmail.com

ORCID: https://orcid.org/0000-0002-7053-3940

Arş. Gör. Abdullah AÇIK, Dokuz Eylül Üniversitesi, Denizcilik Fakültesi, e-posta: abdullah.acik@deu.edu.tr

ORCID: https://orcid.org/0000-0003-4542-9831

Öz

Turizm ülkeler için bacasız bir sanayi gibidir ve mal ihracatı yapmaya eşdeğer bir şekilde ülkeye döviz akışı sağlar. Buna ek olarak, turizm bölgelerinde yerel iş gücü fırsatları ve altyapı yatırımları da artmaktadır. Turizm aktiviteleri birçok farklı alanda gerçekleştirebilir ve bunlardan en önemlilerinden birisi yat turizmidir. Bu noktada, turizme olan talebi etkileyen nedenleri incelemek ve gelecekteki turizm politikalarını şekillendirmek için bazı sonuçlar sunmak oldukça önemlidir. Bu çerçevede, bu çalışmanın amacı turizm talebini etkileyen en önemli faktörlerden biri olduğu düşünülen döviz kuru ile Türk marinalarına gelen yat ve yolcu sayısı arasındaki ekonometrik ilişkiyi tespit etmektir. Veri seti 1988 ve 2016 yılları arasını kapsayan yıllık bazda 29 gözlemden oluşmaktadır. Kurulan modeller en küçük kareler yöntemiyle tahmin edilmiştir. İki ayrı modelde, yat sayısı ve yolcu sayısı bağımlı değişkenler, döviz kuru ise bağımsız değişken olarak konumlandırılmıştır. Çalışmanın sonucunda, yapısal kırılmaları da dikkate alan modellemeler kullanılarak gelen yolcu ve yat sayısı ile döviz kuru değişkenleri arasında beklenen pozitif ilişki tespit edilememiştir. Bu sonuç yat turizminde döviz kuru dışındaki faktörlerin daha etkili olduğuna işaret etmektedir.

Anahtar Kelimeler: Döviz kuru, Yat sayısı, Yolcu sayısı
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RESEARCH PAPER

The Effect of Exchange Rate Movements on the Marine Tourism of Turkey

Res. Asst. Esra BARAN, Dokuz Eylül University, Maritime Faculty, e-mail: esra.baran@deu.edu.tr
ORCID: https://orcid.org/0000-0002-2235-5617

Res. Asst İlke Sezin AYAZ, Dokuz Eylül University, Maritime Faculty, e-mail: ilkesezinayaz@gmail.com
ORCID: https://orcid.org/0000-0002-7053-3940

Res. Asst Abdullah AÇIK, Dokuz Eylül University, Maritime Faculty, e-mail: abdullah.acik@deu.edu.tr
ORCID: https://orcid.org/0000-0003-4542-9831

Abstract

Tourism is like an industry without a chimney for countries and provides an equivalent inflow of foreign currency as exporting goods. In addition, regional labor force opportunities and infrastructure investments also increase in the tourism destinations. Tourism activities can be carried out in many different areas and one of the most important of these is yacht tourism. At this point, it is important to examine the reasons of the changes in the demand for tourism and to present some results in order to shape the future tourism policies. In this context, the purpose of the study is to determine econometric relationship between exchange rate, which is thought to be one of the main determinants of the tourism demand, and the number of foreign yachts and passengers that call Turkish marinas. The data set consists of 29 observations on an annual basis covering the years between 1988 and 2016. The models are estimated by regression analysis using the least squares method. In two separate models, the number of yachts and the number of passengers is selected as dependent variables, and the exchange rate is selected as independent variable. As a result of the study, the expected positive correlation between the number of passengers and yachts arriving in Turkey and exchange rate cannot be identified by the models which take into account structural breaks. This indicates that factors other than the exchange rate are more effective in yacht tourism.

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INTRODUCTION

The tourism industry, which is defined as smokeless industry, provides foreign exchange inflows especially to developing countries that ensures new employment opportunities, closes the deficits of foreign payments and thus dynamises the economy (Çımat and Bahar, 2003; Uğuz and Topbaş, 2011; Akın, 2018; Buluk and Duran, 2018). It is an industry that combines different activities under a single flag such as marketing services, accommodation and transportation services, food and beverage activities, retail stores and various animation activities (Kara et al., 2012), and its economy has a direct or indirect spillover effect on the related sectors (Proença and Soukiazi, 2008). The purchase of goods and services by tourists creates greater expenditure and revenue in the economy due to the multiplier effect. (Sengupta and Espana, 1994).

Furthermore, tourism provides a number of socio-economic benefits to local community as travel and accommodation areas of tourists are made suitable for these activities. Therefore, investments such as infrastructure, fresh drinking water, electricity, telephone, road and airport directly contribute to the regional economies. (Skerritt and Huybers, 2005). In addition, while the tourism industry provides employment for the trained and skilled workforce, it also provides employment for people who do not have sufficient education (Çetintaş and Bektaş, 2008).

The tourism revenues generated by the visits of foreign tourists to the country where the activities are carried out, is an export revenue for the countries as well as the export of goods (Öncal et al., 2016). So, tourism contributes to the convergence between countries by contributing to the distribution of income from wealthy countries to poorer countries, from developed countries to less developed countries (Bahar and Bozkurt, 2010). Tourism sector in Turkey has entered a period of growth, especially after 1985, the number of tourists has increased and the sector has become an important source of income for the country (Karluk, 1997: 264).

The effects of tourism on the economies of countries are mostly positive. Significant relationships between tourism sector and economic growth have been verified by many studies (Çetintaş and Bektaş, 2008; Bahar and Bozkurt, 2010; Bozkurt and Topçuoğlu, 2013; Kanca, 2015; Özcan, 2015). Therefore, it is important to identify and examine the factors affecting the arrival of tourists visiting the country and to develop strategies and policies for the future. One of the most important of these factors is the exchange rates in the countries. Theoretically, their relationship can be explained as follows; the increase in the exchange rate within the country makes tourism less expensive and therefore tourism revenues also increase thanks to the increasing demand for the tourism. Otherwise, tourism in the country becomes more expensive and the demand for tourism by foreigners decreases (Şen and Şit, 2015). From this point of view, exchange rate can be considered as a determining factor for tourists' interest to the destination countries.

This importance of exchange rate has attracted the attention of many researchers and various empirical studies have been done. Studies in the literature are generally concentrated in 4 areas; studies examining the relationship between exchange rate and tourism demand; studies examining the relationship between exchange rate and tourism income; studies examining the relationship between the exchange rate and the number of tourists. To examine the relationship between the exchange rate and the demand for tourism, the study conducted by Uğuz and Topbaş (2011) has examined the relationship between exchange rate and tourism demand. As a result of the study, they found a statistically significant relationship between exchange rate and tourism demand in the long run. In another study, Sarı et al., (2018) have examined the short and long run causal

relationship between tourism demand and real exchange rate. One-way causality from real exchange rate to tourism demand has been found for Turkey according to the causality analysis. In a study based on shocks, Bozkurt and Pekmezci (2015) have examined the causal relationship between tourism demand shock and exchange rate shock. Theoretically, the authors have hoped that the positive shocks in the exchange rate would make the prices of tourism services cheaper. However, they have found that this the opposite effect has occurred in Turkey. Many studies (Crouch, 1994; İçöz et al., 1998; Webber, 2001; Gagello et al., 2007; Al-mulali et al., 2014; Tang et al., 2014; Sari and Oğuz, 2018; Meo et al., 2018) have examined and verified the relationship between exchange rate and tourism demand, but it is impossible to mention them all. To examine the relationship between the exchange rate and the tourism income, Şen and Şit (2015) have examined the relationship between tourism income and exchange rate with causality analysis. The results of the study have revealed that there is a one-way causality relationship from exchange rate to tourism income. Real exchange rate affects tourism revenues. In another study, Öncel et al., (2016) have found a cointegration relationship between variables. However, they have found that the direction of the relationship was from the tourism income to the real exchange rates. This can be interpreted as increasing tourism income has a benefit for restraining the increase in exchange rates. To examine the relationship between the exchange rate and the tourism number, in the study conducted by Bahar (2007), the effect of exchange rate changes on the number of tourists has been examined. The author has found a significant relationship between variables as a result of the study, they determined that the increase in exchange rate caused an increase in the number of tourists visiting the Turkey. Sevinç (2013) has examined the causal relationship between real US exchange rate and number of tourists visiting the Turkey. As a result of the study, they have found that there is no Granger causality between real exchange rate and number of foreign tourists visiting the Turkey. The significant relationship between the variables is theoretically reasonable, but in many other studies (Mervar and Payne, 2007; Demirel et al., 2008), significant relationships between the exchange rate fluctuations and the number of incoming tourists has not been determined. Despite all these different results, it is not groundless to think that the exchange rate has an impact on the tourism sector and is prone to logic.

Tourism services are composed of many sectors and high value-added yacht tourism is one of the most popular ones. Our country is rich in natural wonders and its three sides are surrounded by seas, so the yacht tourism is positioned as an important source. At this point, it is certain that yacht tourism is affected by the changes in exchange rate. However, in the literature, any empirical study could be spotted on the relationship between yacht tourism and exchange rate. In this context, in this study, it is aimed to provide contribution to the literature by examining the relationship between the US exchange rate, the number of yachts visiting Turkey and the number of foreigners arriving to Turkey by foreign yachts. According to the results of the regression analysis conducted with annual observations between 1988 and 2016, negative relationships have been determined between the variables in contrast to the expectation. This situation has revealed that the other factors are more effective in the determination of demand for Turkey's yacht tourism sector.

The rest of the study is organized as follows; the method and dataset used in the study are introduced in the second section; the results obtained from the analysis are presented and the findings are evaluated in the third section; and finally, conclusions are made in the last section.

METHODOLOGY

In this section, the method and dataset used in the study are introduced. Then, the results of the analyzes with the mentioned econometric method are presented in the next section

Regression Analysis

A variety of econometric methods are used to examine the econometric relationships between variables. One of the most widely used of them is regression analysis as it presents simple method for examining functional relationships between variables (Chatterjee and Hadi, 2015: 1). Application area of the regression analysis are wide and its applications occur in almost every field such as economics, management, engineering, social sciences, physical and chemical sciences, and life and biological sciences (Montgomery et al., 2012: 21).

The expected relationship is expressed in the form of a model connecting the dependent variable and one or more explanatory (independent) variable (Chatterjee and Hadi, 2015: 1). In a theoretical notation, the econometric model can be expressed as follows:

$$Y = f(X_1, X_2, X_3, \dots., X_i, \varepsilon)$$

where:

Y = dependent variable,

X_1, X_2, X_3,…, X_i=set of explanatory variables,

ε=residuals from the model (the part that model cannot explain)

The regression models can be vary according to aim of their usage. The simplest and probably the most commonly applied form is the linear one. The linear regression model can express as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots. + \beta_i X_i + \varepsilon$$

The only differences from the previous explanation are βs. They are the coefficients of the model which quantify a direction and strength of the statistical relationships between the dependent variable and individual explanatory variables (Esquerdo and Welc, 2018: 2). These coefficients are very important to understand the direction and strength of the relationship.

In this study, one of the most common and simple versions of regression analysis is used, which is the least squares method. The data in the regression model can be used as raw data and can be used in various forms. One of these forms is the log-log regression models. One attractive specification of the log-log model is that the slope coefficient β_2 measures the elasticity of Y with respect to X. In other words, this helps to determine the percentage change in Y for a given percentage change in X (Gujarati, 2004: 176). This method partially eliminates the difficulty of interpreting the raw data in the econometric analysis. In addition, taking the logarithm of the data increases its processability and makes the discrete data continuous.

In this context, simple linear regression model is constructed as log-log type in this study. In the next section, the data set used in the study is introduced.

Data

The data set consists of 29 observations on an annual basis covering the years between 1988 and 2016. The logarithms are taken to increase the processability of the data and to make the discrete series continuous series.

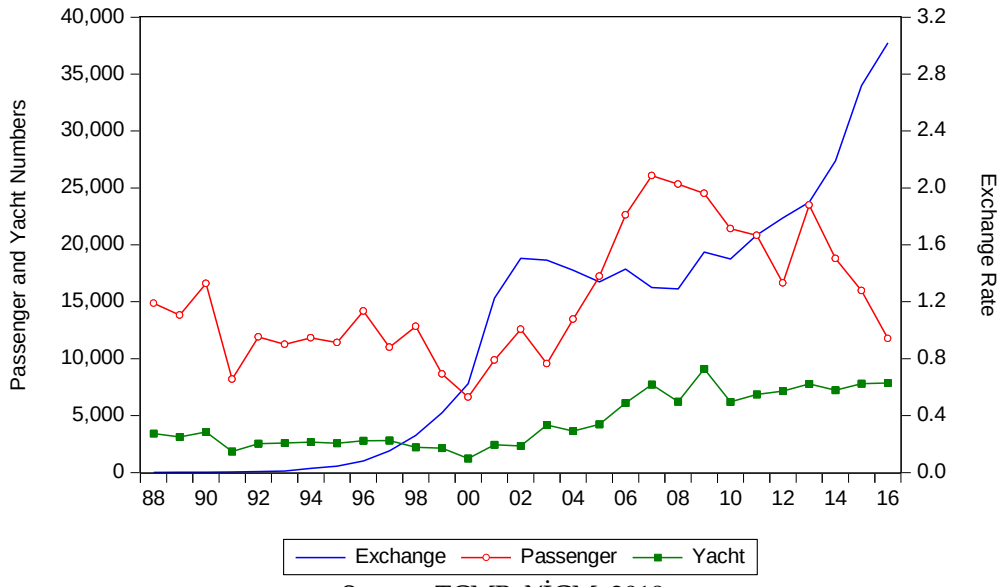
Table 1. Descriptive Statistics of the Variables Used in the Analysis

	Exchange	Passenger	Yacht	Ln Exchange	Ln Passenger	Ln Yacht
Mean	0.999610	15291.03	4496.586	-1.354949	9.572439	8.271854
Median	1.290000	13826.00	3554.000	0.254642	9.534306	8.175829
Maximum	3.020000	26083.00	9113.000	1.105257	10.16904	9.117457
Minimum	0.001426	6628.000	1235.000	-6.553085	8.799058	7.118826
Std. Dev.	0.895937	5505.991	2357.121	2.518877	0.362361	0.545886
Skewness	0.385512	0.530835	0.468172	-0.921143	-0.038857	-0.029342
Kurtosis	2.199061	2.185131	1.702487	2.310390	2.253549	1.870973
Jarque-Bera	1.493478	2.164310	3.093672	4.675743	0.680568	1.544426
Probability	0.473910	0.338865	0.212921	0.096533	0.711568	0.461990
Observations	29	29	29	29	29	29

Source: TCMB, 2018; YİGM, 2018

Figure 1 shows a graphical representation of the series used in the study. Incoming yacht and passenger numbers are generally parallel to each other. However, there has been a sharp decrease in the number of passengers after 2013. Although some correlations have been observed with the exchange rate at some times, the correlation of the relationship is generally low.

Figure 1. Graphical Display of the Raw Variables



Source: TCMB, YİGM, 2018

FINDINGS

In this section, econometric analyses are applied and the results obtained are discussed. In this direction, firstly, stationarity tests which are the indispensable pre-tests of time series analysis are implemented. Then, the process of modelling econometric relationship between variables is started.

Standard Unit Root Tests

Firstly, some stationarity tests such as Augmented Dickey-Fuller (Dickey and Fuller, 1979), Philips Perron (Phillips and Perron, 1988) and Kwiatkowski-Phillips-Schmidt-Shin (Kwiatkowski et al., 1992) tests are implemented to the series in order to avoid spurious regression problems. If the series are not stationary, they are converted to stationary series by taking their difference. However, it should be avoided to take difference as far as possible since each difference causes loss of information in the series.

According to the results of the augmented Dickey-Fuller (ADF) test, only the exchange rate variable is stationary at level. However, the other series become stationary when the firs differences are taken. So, according to this test exchange rate is I (0) while other variables are I (1). The Phillips-Perron (PP) test also shows the same results as the ADF test and only the exchange rate variable is I (0). However, unlike the first two cases, all series are stationary at levels according to the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) test. These results may indicate that the series are stationary, but some structural breaks in the series may cause inaccurate results such as the presence of the unit roots. Therefore, unit root tests, which take into account structural breaks, are applied in the next section.

Table 2. Unit Root Test Results

		Level		First Difference	
	Variable	**Intercept**	**Trend and Intercept**	**Intercept**	**Trend and Intercept**
ADF	Exchange Rate	-4.22***	-0.69	-2.14	-3.08
	Yacht Number	-0.41	-2.73	-7.99***	-8.03***
	Passenger Number	-1.97	-2.27	-6.51***	-6.37***
PP	Exchange Rate	-2.91*	-0.87	-2.14	-2.98
	Yacht Number	-0.78	-2.73	-7.87***	-7.91***
	Passenger Number	-1.93	-2.19	-6.51***	-6.37***
KPSS	Exchange Rate	0.60***	0.17***	0.43**	0.10*
	Yacht Number	0.51**	0.12**	0.18*	0.13**
	Passenger Number	0.32*	0.10*	0.12*	0.12**

ADF and PP CVs for Intercept: -3.69 for 1%, -2.97 for 5%, -2.63 for 10%. ADF and PP CVs for Trend and Intercept: -4.32 for 1%, -3.58 for 5%, -3.23 for 10%. KPSS CVs for Intercept: 0.73 for 1%, 0.46 for 5%, 0.34 for 10%. KPSS CVs for Trend and Intercept: 0.21 for 1%, 0.14 for 5%, 0.11 for 10%. Significance Degrees: * denotes 10%, ** denotes 5%, *** denotes 1%.

Unit Root Tests with Structural Breaks

Five of the tests that implement unit root analysis by taking into consideration the breaks in the series are applied to the dataset. These tests are able to analyze both the break in level and the break in the level and trend. These implemented tests are respectively Zivot and Andrews (1992), Lee and Strazicich (2013) Narayan and Popp (2010), Lee and Strazicich (2003) and CiS and Sanso (2007). Information criteria is selected as Akaike (AIC) for the analysis. Also trimming rate is selected as 0.10 to eliminate extreme values that may distort test results. The results obtained are presented in Table 3.

Table 3. Unit Root Test Results with Structural Breaks

	Break in level			**Break in level and trend**		
Test Items	**Passenger**	**Yacht**	**Exchange**	**Passenger**	**Yacht**	**Exchange**
One break ADF test (Zivot and Andrews, 1992)						
ADF Stat	-3.20	-3.36	-3.62	-2.88	-2.93	-5.00**
Break Date	2003	2004	1992	2004	2004	1999
Fraction	0.55	0.58	0.17	0.58	0.58	0.41
Lag	2.00	2.00	2.00	2.00	2.00	2.00
One break LM test (Lee and Strazicich, 2013)						
LM Stat	-2.15	-2.68	-2.59	-4.53**	-4.55**	-2.98
Break Date	2003	2002	2003	2004	2002	2006
Fraction	0.55	0.51	0.55	0.58	0.51	0.65
Lag	0.00	0.00	2.00	0.00	0.00	2.00
Two breaks ADF test (Narayan and Popp, 2010)						
ADF Stat	-3.46	-4.88**	-5.57***	-6.02*	-8.48*	-6.88*
Break Dates	2002, 2004	1996, 2001	1992, 2002	1998, 2007	1998, 2008	1999, 2008
Fractions	0.51, 0.58	0.31, 0.48	0.17, 0.51	0.37, 0.69	0.37, 0.65	0.41, 0.72
Lag	2.00	1.00	1.00	2.00	1.00	1.00
Two breaks LM test (Lee and Strazicich, 2003)						
LM Stat	-2.59	-3.73*	-2.92	-5.72**	-6.13**	-4.50
Break Dates	2003, 2005	2002, 2005	1993, 2003	1998, 2006	1998, 2006	1996, 2006
Fraction	0.55, 0.62	0.51, 0.62	0.20, 0.55	0.37, 0.65	0.37, 0.65	0.31, 0.65
Lag	0.00	0.00	2.00	0.00	0.00	2.00
Two breaks KPSS test (CiS and Sanso, 2007)						
KPSS test	0.20	0.13***	0.09**	0.14	0.35	0.06***
Break Dates	2003, 2005	2002, 2005	1993, 1997	1999, 2007	1999, 2007	1993, 2002
Fraction	0.55, 0.62	0.51, 0.62	0.20, 0.34	0.41, 0.69	0.41, 0.69	0.20, 0.51

Symbols correspond to *10%, **5%, ***1% confidence intervals.

The results show that all the variables are stationary when the structural breaks are considered by many tests. Only, the number of passengers cannot be determined as stationary by any test considering the break in levels. However, when the tests considering the breaks in level and trend are examined, the stationarity of the variable is confirmed. These tests can also determine the structural break date(s) in the series. When the number of passengers is examined in terms of the break in the level, the 2003 year stands out in both single and double break tests. On the other hand, break in trend and level tests for the same variable indicate the 2004 and 2007 years mostly. When

the breakdown dates of yacht numbers variable are examined, it is seen that 1998, 2002 and 2004 years have come to the fore. On the break dates related to the exchange rate variable, 1993, 1999 and 2003 years attract the attention.

It is inevitable for the established regression model to have possible structural breaks since the series include many structural breaks. Therefore, regression equations are examined structurally after the estimation, and the results are interpreted considering the breaks in the next section.

Regression Model Estimation for Yacht Number

The regression model established within the framework of the purpose of the research is as below. The number of yachts calling at Turkish ports is dependent variables, and the exchange rate is the independent variable in the model. Thus, the effect of exchange rate on the yacht number in Turkey is tested whether the relationship is statistically significant or not.

$$lnYacht_t = ln\beta_1 + \beta_2 lnExchange_t + u_t$$

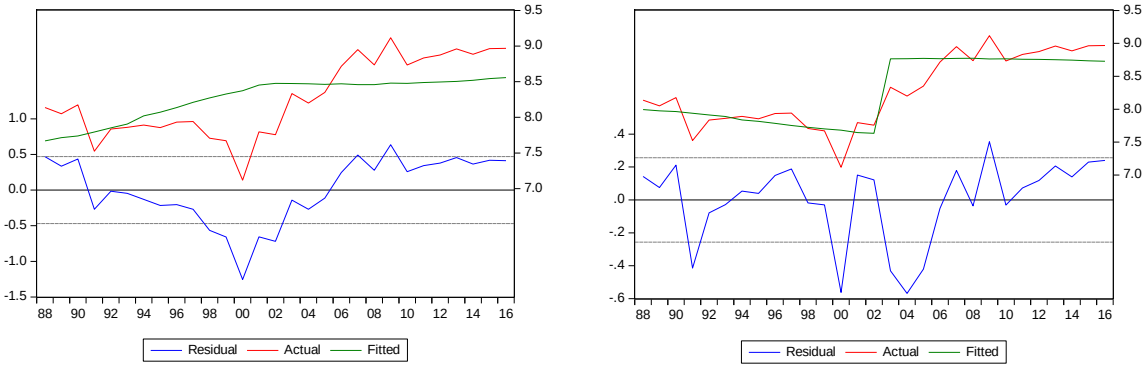
Then the model is run with an econometric software and the results are presented in Table 4. According to the results, the F statistic shows the significance of the model as a whole, while the probability values in the lines of the variables show the significance of each variable. The model is significant both as a whole and as variables. The positive coefficient of exchange rate indicates a positive relationship between variables. According to the coefficient, an increase of 10% in exchange rate results in an increase of 1% in yacht number. However, the explanation power of the model is 25% and is quite low. Given the level and trend breaks found in the unit root tests, the source of the low power of explanation can be understood, and this makes the reliability of the model questionable. Therefore, goodness of fit of the model checked and a structural break test is applied.

Table 4. Regression Results for Yacht Number

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
Ln EXC	0.115950	0.035236	3.290688	0.0028
C	8.428961	0.099424	84.77785	0.0000
R-squared	0.286255	F-statistic		10.82862
Adjusted R-squared	0.259820	Prob. (F-statistic)		0.002786

The Actual-Fitted-Residual graph, one of the tools that show how successful the predicted model is, is presented in the Part A of Figure 2. As seen in the figure, the results predicted by the estimated model in the middle parts of the real value are quite unsuccessful. The reason for this is seem as a level shift in the yacht number variable. In order to determine this, Quandt-Andrews breakpoint test which is originally introduced by Quandt (1960) and later developed by Andrews (1993) and Andrews and Ploberger (1994) is applied to the model. The idea behind the test is performing single Chow breakpoint test at every observation between two dates (Gómez-Puig and Sosvilla-Rivero, 2014).

Figure 2. Regression Model Fitness of Good before and after Dummy Variable



Quandt-Andrews test is applied and the results are presented in Table 5. The null hypothesis of this test is that there is no break in the model. According to the results, null hypothesis is rejected and a breakpoint is detected in the model in 2003. Then, including the year 2003, a dummy variable is formed that covers the years after that date. In other words, a dummy variable with a value of "1" is formed between 2003 and 2016 years. Then the dummy variable is added to the independent variables and the regression model is re-estimated.

Table 5. Quandt-Andrews unknown breakpoint test

Statistic	**Value**	**Prob.**
Maximum LR F-statistic (2003)	39.69552	0.0000
Maximum Wald F-statistic (2003)	79.39103	0.0000
Exp LR F-statistic	16.95932	0.0028
Exp Wald F-statistic	36.70555	0.0410
Ave LR F-statistic	14.69683	0.0002
Ave Wald F-statistic	29.39366	0.0002

The results of the re-estimated regression model are presented in Table 6. Before going into the results, it is useful to browse the graph in Part B of Figure 2. This graph shows the goodness of fit of the new model. As shown, the harmony between the green line indicating the value of the yacht number value that the model predicted and the red line indicating the actual value increases. Thanks to the dummy variable, the level shift is added to the model. If the regression model is interpreted, the model is significant as a whole according to the F statistic. Also, three variables, including the dummy variable, are all significant. The new model's explanatory power also increases to 79%. The coefficient of the dummy variable indicates that there has been a 112% increase in the yacht number calling at Turkish ports in 2003 independently of the other variables. However, the coefficient of the exchange rate variable becomes negative in the new model and shows that the 10% increase in the exchange rate causes a 0.5% decrease in the number of yachts.

Table 6. Regression Results for Yacht Number

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Ln EXC	-0.051684	0.028332	-1.824209	0.0796
C	7.656426	0.110214	69.46872	0.0000
Dummy	1.129757	0.140331	8.050671	0.0000
R-squared	0.795654	F-statistic		50.61745
Adjusted R-squared	0.779935	Prob. (F-statistic)		0.000000

Regression Model Estimation for Passenger Number

In the second model of the study, the relationship between the number of passengers and the exchange rates is examined. The regression model is as below, the number of passengers is dependent, and the exchange rate is independent variables. Thus, the effect of exchange rate on the yacht number in Turkey is tested.

$$lnPassenger_t = ln\beta_1 + \beta_2 lnExchange_t + u_t$$

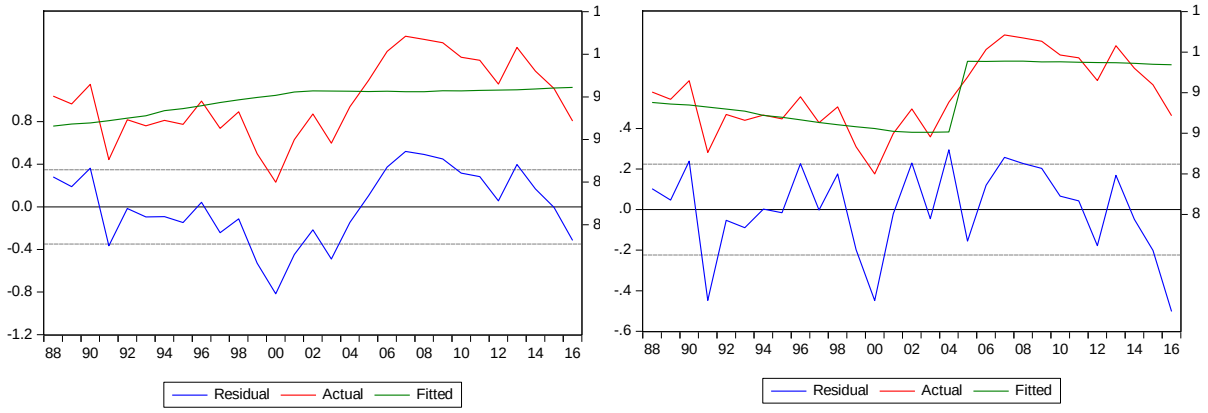
Then the model is estimated through an econometric software and the results are presented in Table 7. According to the results, while the F statistic indicates the significance of the model as a whole, the probability value of each variable shows the significance of the each one. Both models and variables are significant. The coefficient of the exchange rate variable is positive and indicates a 10% increase in the exchange rate resulting in a 0.4% increase in the number of passengers. However, the power of the model is 10% and this is a very low power. For this reason, as in the first model, goodness of fit graph and Quandt-Andrews breakpoint test are used to reconstruct the model.

Table 7. Regression Results for Passenger Number

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Ln EXC	0.047325	0.026145	1.810148	0.0814
C	9.636562	0.073771	130.6276	0.0000
R-squared	0.108223	F-statistic		3.276637
Adjusted R-squared	0.075195	Prob. (F-statistic)		0.081417

The Actual-Fitted-Residual graph for the estimated regression model is presented in the Part A of Figure 3. As can be seen from the graph, the estimated value is far from the actual value in the middle and end of the data set. This situation can be interpreted as a precursor of a level break in the variables. As the model tries to estimate the number of passengers linearly, the power of explanation remains extremely low. In order to determine possible level breaks, Quandt-Andrews breakpoint test is applied to the model.

Figure 3. Regression Model Fitness of Good before and after Dummy Variable



A B

Quandt-Andrews breakpoint test is applied to the model and the obtained results are presented in Table 8. The null hypothesis, which indicates that there is no breakpoint in the model, is rejected and a break in 2005 is found. Then, a dummy variable with a value of "1" is formed between 2005 and 2016 years, and the regression model is re-estimated.

Table 8. Quandt-Andrews unknown breakpoint test

Statistic	Value	Prob.
Maximum LR F-statistic (2005)	29.11099	0.0000
Maximum Wald F-statistic (2005)	58.22197	0.0000
Exp LR F-statistic	11.71174	0.0000
Exp Wald F-statistic	26.12903	0.0000
Ave LR F-statistic	7.470860	0.0002
Ave Wald F-statistic	14.94172	0.0002

Table 9 presents the results of the regression model, which is re-estimated by adding the dummy variable to the independent variables. It is useful to examine the new goodness of fit chart in Part B of Figure 3 before interpreting the regression results. As can be seen, the new value is more compatible with the actual value. According to the results of the new model, the model is significant as a whole and all of the variables are also significant. In addition, the power of the model is increased to 64%. The coefficient of the dummy variable indicates a 69% increase in the number of passengers in 2005, independent of the other variables. However, as in the first yacht number model, the exchange rate coefficient turns to negative, and the 10% increase in exchange rate implies a 0.4% decrease in passenger numbers.

Table 9. Regression Results for Passenger Number

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Ln EXC	-0.042291	0.022058	-1.917267	0.0663
C	9.227422	0.080643	114.4232	0.0000
Dummy	0.695310	0.110850	6.272531	0.0000
R-squared	0.645171	F-statistic		23.63734
Adjusted R-squared	0.617876	Prob. (F-statistic)		0.000001

CONCLUSION

At the beginning of the study, the increasing exchange rate is assumed to make Turkey more attractive to foreign tourists. As a result, the study has not revealed the expected positive relationship between exchange rate and yacht and passenger numbers. Although the first models have positive relations, their explanatory powers and consistencies are not satisfactory. Then, the re-estimated models that take into account structural breaks give negative relations. This relationship is negative both in the number of yachts and the number of passengers. These results may be caused by many factors apart from the exchange rate such as;

- There may be some problems with the quality of the services offered by the companies in Turkey.
- Turkey's regional rivals may be offering better and more convenient service.
- Some legislative arrangements on yacht tourism may be compelling for tourists.
- Recently, rising fuel prices in dollar terms may prevent yachts from navigating over long distances.
- The USD exchange rate, which is also appreciated in the global markets, may also impose additional cost burdens on the citizens of other countries as the dollar is charged in the facilities.
- Cheapening of tourism services in Turkey may generate a perception about low quality and may affect the plans of tourists.

The results of the research can be interpreted as the impact of the exchange rate on yacht tourism in Turkey is insignificant and the impact of the other factors is much more effective. However, the increase in exchange rates may also generate positive effects on tourism demand as theoretically and empirically indicated by some studies in the literature. In order to turn this exchange rate increase into an opportunity in our country in recent years, the following headings can be taken into consideration; improvements in other factors affecting yacht tourism; identifying the demands of incoming tourists; examination of tourism policies and services in other countries that are attractive for the yacht sector; identification and elimination of bureaucratic problems for business stakeholders; performing ads of Turkey better in the international arena; increasing the number of destinations that can be visited by yachts in Turkey. These headings can be reproduced and are all worth examining separately.

The limitations of the study are mainly related to the available data set. The recent increase in foreign exchange could not been reflected in the study as the yacht and passenger statistics have

been published until 2016. Inclusion of recent years can make the analysis healthier. In addition, more frequent data in the analysis can provide more accurate results. Further studies may perform the analysis with a more frequent data set. In addition, the other countries may be included in the research by panel data analysis to reach a general conclusion. Moreover, periodic relations may be determined by dividing into different regimes with different econometric methods. Finally, it may be possible to conduct interviews with tourists with qualitative studies to determine the effect of exchange rate on their preferences.

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