

THE RELATIONSHIP BETWEEN FOREIGN HOUSING INVESTMENTS AND TOURISM IN TURKEY: CAUSALITY ANALYSIS

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ABSTRACT

In this study the relationship between foreign housing investments and the tourism sector in Turkey was investigated by causality analysis. In this study Granger, Toda Yamamoto and Bootstrap Granger causality tests are used for 2013 and 2016 (2013M01:2016M11) period. As a result of this study, it was concluded that there is a relationship between foreign housing investments and tourism by determining a unidirectional causal relationship between foreign housing investments to tourism revenues and the number of tourists.

Keywords: Tourism Revenues, Real Estate Market, Foreign Housing Investments, Bootstrap Granger Causality.

TÜRKİYE'DE YABANCI KONUT YATIRIMI VE TURİZM ARASINDAKİ İLİŞKİ: NEDENSELLİK ANALİZİ

ÖZ

Bu çalışmada Türkiye'de yabancı konut yatırımı ile turizm sektörü arasında ilişki nedensellik analizleriyle araştırılmıştır. Bu çalışmada 2013-2016 dönemi için (2013M01:2016M11) Granger, Toda-Yamamoto ve Bootstrap Granger nedensellik testleri kullanılmıştır. Çalışma sonucunda, yabancı konut yatırımlarından turizm gelirleri ve turist sayısına doğru tek yönlü nedensellik tespit edilerek, yabancı konut yatırımları ile turizm arasında ilişki olduğu sonucuna varılmıştır.

Anahtar Kavramlar: Turizm Gelirleri, Gayrimenkul Piyasası, Yabancı Konut Yatırımları, Bootstrap Granger Nedensellik.

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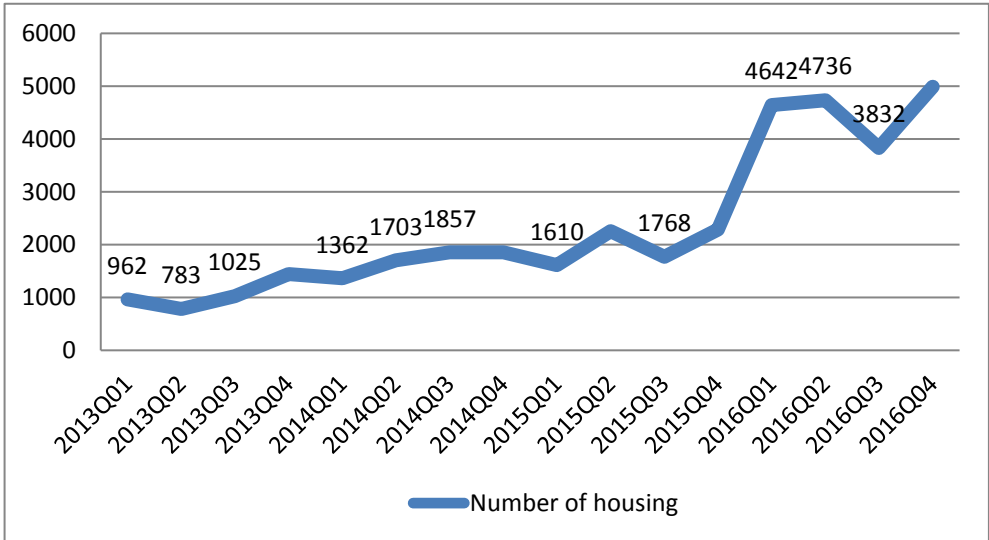
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INTRODUCTION

Real estate market has also had an important place in the economy of Turkey like tourism sector. The development of real estate market which has a considerable share in the Gross Domestic Product has a significant help on economy by having an impact especially on construction sector. Especially during the times when the loan volume is increasing, real estate-market also influenced by Mortgage experiences an increase in demand. Turkey starting to embrace outward-oriented politics starting with the 1980, permitted the foreigners to purchase residences starting with 2003, and as a result of the rescinding of principle of reciprocity in 2012, foreigners had no legal obstacles left to purchase residence (Resmi Gazete, 2012).

After the amendments made on the land register law in Turkey in the year 2012, the principle of reciprocity was called off in the house holding of both natural and legal person. Upon the rescinding of the rule of reciprocity, the interest of the foreigners in the real estate sector of Turkey has increased sharply. From then on, it is seen that houses especially in the touristic areas of Turkey have been bought by the foreigners. Foreigners now come to Turkey both for vacation and to invest by purchasing residences.

Graph 1: The Number of the Residences Purchased by Foreigners



Source: Türkiye İstatistik Kurumu, Internet Address: http://www.tuik.gov.tr/PreIstatistikTablo.do?istab_id=2121, Date of Access: 25.01.2017.

In Graph 1, the quarterly data belonging to the number of residences purchased by foreigners can be seen. According to this chart, after the rescinding of the rule of reciprocity, sales revenues have been constantly increasing. While the number of the residences purchased was 12.181 in the year 2013, this number reached 18.959 in the year 2014 and 22.830 in the year 2015.

Table 1: The Number of Residences Purchased by Foreigners Based on Cities.

CITIES	2013	2014	2015	2016
Antalya	5 548	6 542	6072	4037
İstanbul	2 447	5 580	7493	5226
Aydın	1 112	1 191	1007	797
Muğla	1 053	1 051	830	588
Bursa	545	954	1424	1178
Mersin	375	783	838	534
Yalova	284	765	1502	755
Sakarya	194	512	875	584
Ankara	175	369	619	560
Trabzon	103	225	595	749
Other Cities	345	987	1475	1541
TOTAL	12181	18959	22830	16541

Source: Türkiye İstatistik Kurumu, İnternet Address: [http://www.tuik.gov.tr /PrelIstatistikTablo.do?istab_id=2121](http://www.tuik.gov.tr/PrelIstatistikTablo.do?istab_id=2121), Date of Access: 25.01.2017.

In Table 1, the data related to the number of residences purchased by foreigners based on cities can be seen. According to this table, Antalya ranks first in the sales revenues followed by İstanbul, Aydın and Muğla, respectively which indicates that there is a relationship between the housing investments and tourism.

A question has been occurred after the legal arrangements about selling house to foreigners in Turkey. “Might purchasing housing and investing in the real estate market in Turkey affect tourism sector or not?” In this research it is investigated that answer of this question by causality analysis. In this study to investigate the relationship between foreign housing investments and the tourism sector in Turkey; Granger, Toda Yamamoto and Bootstrap Granger causality tests are used for 2013 and 2016 (2013M01:2016M11) period.

The paper structure is as follows: in the second section a literature review is carried out, and in this part we will explain all of the papers which are made about this issue. In the third section, we specify econometric models for the time period 2013-2016 and report the empirical findings. Finally, in the fourth section concluding remarks are summarized.

I. LITERATURE REVIEW

The number of researches investigating the relationship between foreign residential investment and tourism has grown in recent years (Jimenez 2002; Fereidouni, Al-Mulali, 2014; Fereidouni 2011; Craigwell, Moore, 2007; Sanford, Dong, 2000; Rodriguez, 2010; He, Wang, et al. 2009; Fereidouni, Masron, 2010; Cortes, Jimenez et al. 2010; NingYu, 2009). There however is a complete lack of studies in the literature in investigating this relationship in the context of Turkey.

The researches mentioned above investigated the relationship between foreign housing investment and tourism are generally based on the tourism revenues and the number of tourists by using several techniques. In his research, Jimenez (2002) investigated the relationship between foreign residential

investment and tourism for Spain. In this research, cointegration and nonlinear simultaneous model prediction analysis was made by using the data belonging to the period from 1967 to 1998. It was concluded that there is a long term relationship between foreign housing investments and tourism revenues and both variables are simultaneous and first-hand dependent.

Fereidouni et al. (2010) investigated the effects of the housing investments made by Iranian people on Dubai tourism. In this research, as a result of the analysis made using the multivariate cointegration technique, it was found out that there is long term causality between the tourism and foreign housing investments. Furthermore, it was found that there is a bidirectional causality relationship between the variables in the short term. In another research, Fereidouni et al.(2014) investigated the relationship between foreign housing investments and tourism for OECD countries. Based on the study related to 24 OECD countries, panel data analysis was used with the obtained data belonging to the period from 1995 to 2009. Within the Panel data analysis, as a result of the Panel cointegration and Panel Granger tests, it was determined that there is a long term cointegration and bidirectional causality relationship between the variables of foreign housing investment and the number of tourists.

In another research in which panel data analysis was used, Fereidouni et al.(2011) investigated this issue for 19 OECD countries. Data related to the period from 1999 to 2008 was used. As a result, it was indicated that there is a positive and meaningful relationship between tourism and foreign housing investment.

In another research made by Rodriguez and Bustillo (2010), as a result of the regression analysis made by the data belonging to the period from 1990 to 2007, it was concluded that tourist flow is an important determinant in foreign housing investments. Sanford and Dong (2000) also concluded the same result in their study. He, Wang, et al. (2009) concluded that as a result of the foreign housing investments, there is a demand for the tourism at the countries where people choose to make investment and thus tourism incomes of that country increase.

Craigwell and Moore (2007) made a panel data analysis for SIDS (Small Island Developing States) and in their research, they revealed that foreign housing investments create a tourism capacity for a specific country which leads to more accommodation for tourists and as a result, tourism movement increases. Cortes-Jimenez et al. (2010) and Ning Yu (2009) found out that the relationship between foreign housing investment and tourism contributes to the economic development for a country.

Hof and Blázquez-Salom (2013), the article investigates the actions and decisions of tourists who buy property in Majorca on the effects of urban sprawl. Tourists who have come to Majorca to stay in a hotel are increasingly renting housing in the real estate tourism sector or buying second homes in the island.

Füller and Michel (2014), new urban tourism and interest in the relatively low-priced real estate market in Berlin, resulting in an increasing number of holiday apartments. Online marketing ease, increasing accommodation needs and changing demands of the new urban tourism is reflected in the number of short-

term rental options in Berlin. Small flats in urban districts, are preferred by tourists as holiday apartments and second housing investments.

Liu et al. (2016), perceptions of brand personality of Chinese real estate companies of tourism are examined and classified. Within the scope of the study, five brand personality factors were identified: humanity, excitement, status enhancement, professionalism and wellness. As a result, the tourism real estate market along with China, to build a strong and distinctive brand personality to tourism and real estate firms that are required to maintain specified.

II. THE EMPIRICAL ANALYSIS OF THE RELATIONSHIP BETWEEN FOREIGN HOUSING INVESTMENT AND TOURISM

In this part of the research, the relationship between foreign housing investment and tourism has been analyzed empirically. In this context, the study carried out in relation to this topic was explained initially. Then, the data obtained by the Granger and Bootstrap causality test and unit root test was introduced in the econometric analysis chapter.

A. DATA AND METHODOLOGY

Generally, in the researches investigating the relationship between foreign housing investment and tourism, the analysis was made based on tourism revenues and the number of tourists. In this research, the relationship between foreign housing investment and tourism was analyzed based on the number of residences bought by foreigners, tourism revenues, the number of tourists variables. Since the foreign housing investments in Turkey were not calculated from a monetary point of view, the data related to this variable could not be reached. Therefore, the analysis was made based on the variable of the number of residences bought by foreigners.

The time period used in the analysis of the relationship of the data obtained was determined as the period from January 2013 to November 2016 (2013M01:2016M11). The reason for this is that after the amendment in the land register law in 2012 in Turkey, the rescinding of the principle of reciprocity for the home purchasing of both natural and legal people, the data related to the number of the residences purchased by foreigners was created after this time period.

In this research, E-Views 6.0 and Gauss 10.0 package programs were used. The data related to these variables were obtained from Turkish Statistical Institute (TUİK) and the Ministry of Culture and Tourism (KTB) databases. Furthermore, the analysis was made by obtaining the logarithms of the variables. Economic variables are mostly non-linear over the real value and linear over the logarithmic value. Hence, the series were analyzed based on their logarithmic values. The variables used in this study were explained below:

fh: The number of the residences purchased by foreigners,

tr: Tourism income,

tour: the number of tourists.

In the analysis of the time series, stable variables are important for the spurious regression which is not to come into existence. The average, variance and covariance of the stable series do not show change in time (Granger and Newbold, 1974: 111). In order to test the stability of variables used in this study, Augmented Dickey-Fuller Test (ADF) and Phillips-Perron (PP-1988) unit root tests were used¹.

During the investigation of the unit root of a Y_t serie, ADF type regression equation given below were used:

$$DY_t = r Y_{t-1} + \sum_{i=1}^m g_i DY_{t-i} + e_t \quad (1)$$

Based on series accumulation “c” or trend “T” affect (1), these variables should also be included in the regression equation. If a serie was found stable with accumulation or trend as a result of the unit root test, the trend or accumulation had to be modeled in the following models.

To make ADF unit root test reliable, residual () had to be without autocorrelation and with stable variance. The lag length value of the dependent variable had to be added to the model to prevent autocorrelation. () difference processor, (m) is the minimum delay time to prevent autocorrelation in a model. In the determination of m, such information criteria as Akaike, Schwarz, Hannan-Quinn were taken into consideration (Sever et al., 2007: 54)

Phillips and Perron (PP) test was different from ADF tests in that it has a different point of view about the problems of serial correlation and heteroskedasticity in disturbance terms. In the unit root test built by Phillips-Perron (1989), because of the degree of freedom drops while adding the lag length of the dependent variable to the model to prevent annihilating the problem of autocorrelation, instead of adding additional data, a non-parametric readjustment was made to the t test. Thus, there is no loss in the degree of freedom.

Among the variables used in the analysis, initially, Granger causality test was carried out in order to determine the relation of interaction with stable series. Granger causality test reveals the cause and effect relation between two variables. According to this, the causality relation between two variables as B and T is given below (Gujarati, 1995: 749):

$$B_t = a + SbT_{t-1} + SY_j B_{t-1} + e_{1t} \quad (2)$$

$$T_t = \theta + Sd_j B_{t-1} + Sl T_{t-1} + e_{2t} \quad (3)$$

t = states time.

When Granger causality test was carried out based on regression equation, the way of causality was described by testing the H_0 and H_1 hypothesis:

$$H_0 = \sum_{i=1}^p b_{2i} = 0 \text{ and } H_1 = \sum_{i=1}^p b_{2i} \neq 0 \quad (4)$$

¹ADF and PP unit root tests were carried out on Eviews6.0 package program.

In the case that H_0 hypothesis is accepted; x is not the cause of y . In the case that H_1 hypothesis is accepted; it can be concluded that x is the cause of y (Mercan et al, 2013).

Toda and Yamamoto (1995) stated that even though the series are not stable, VAR model by which the grade value of the series can be estimated and standard Wald test can be carried out. In this method, for Granger causality test, $[k+(d_{max})]$ degree VAR model was presumed and Wald test was performed on the first k unit of the matrix of the coefficients. Toda and Yamamoto (1995), without taking into consideration whether a given series is stable, stationary around a trend or cointegrated, showed that this test has asymptotic χ^2 distribution with the k degree of freedom. Here; k is the optimum presumed lag length of the VAR model and d_{max} is the maximum integration degree of the variables in the model. (Çil Yavuz, 2006:169).

Bootstrap causality test developed by Hacker and Hatemi-J (2006) is based on the causality test developed by Toda and Yamamoto (1995). As in the Toda and Yamamoto (TY) test, for the series in the analysis, VAR ($p + d_{max}$) process is estimated to be as in the equation given below (7):

$$y_t = v + A_1 y_{t-1} + A_p y_{t-p} + \dots + A_{p+d} y_{t-(p+d)} + \eta \quad (5)$$

Here, y_t is the vector of k variables, v is the constant vector, η is the vector of disturbance term. A is the parameter matrix. p VAR is the gap length, d_{max} is the order of stationarity. Therefore, series of the causality analysis does not need to be stable (Hacker, Hatemi-J, 2006).

B. FINDINGS

Before the implementation, steady state of variables was researched according to Advanced Dickey Fuller (ADF) and Phillips Perron (PP) unit root tests. The test results of stability belonging to variables were stated in Table 2. Before the analysis of causality, logarithmic values of data were taken.

Table 2: Unit Root Test Results

	Variables	Level Values		1. Differences	
		ADF	PP	ADF	PP
Test Statistics (With Stationary & Trend)	lnfh	0,6490(3)	3,8951(8) *	7,8133(0)***	20,5943(33)*
	lntr	8,3351(8)*	2,4503(2)	-----	4,6034(1)*
	lntour	5,6730(7)*	2,4587(3)	-----	2,8635(1)***
Critic Values	% 1	3.6537	4.2436	4.2528	3.6394
	% 5	2.9571	3.5442	3.5484	2.9511
	% 10	2.6174	3.2046	3.2070	2.6143

Values in the brackets mean gap lengths for ADF and band width for PP. Schwarz Information Criteria (SIC) was used to choose the gap lengths. The band width was determined according to Newey-West by using the Bartlett Kernel model.

***, ** and * mean that the significance level is % 1, % 5 and % 10, respectively.

According to the unit root test results given above on Table 2, while $\ln fh$ variable becomes diminished by taking the difference, $\ln tr$ and $\ln tour$ variables are stationary at level value in the ADF test. But they become stationary by taking the 1. difference level in PP test. That's why, tourism income and the number of tourists variables are $I(0)$ and foreign housing investment variable is $I(1)$.

To investigate the relationship between foreign housing investments and the tourism sector in Turkey first causality relationship are analysed using the Granger causality test. The models for the variables can be written as follows:

$$\ln FH_{it} = a_{it} + b_1 TR_{it} + e_{it} \quad (6)$$

$$\ln TR_{it} = a_{it} + b_2 FH_{it} + e_{it} \quad (7)$$

$$\ln FH_{it} = a_{it} + b_3 TOUR_{it} + e_{it} \quad (8)$$

$$\ln TOUR_{it} = a_{it} + b_4 FH_{it} + e_{it} \quad (9)$$

In the models, in addition to variables b_1, b_2, b_3 and b_4 are the slope coefficients of the model, t is time, i is the cross-sectional unit and a is a scalar.

Table 3: Granger Causality Test Results

Null Hypothesis (H_0)	Gap	F-Statistics	Probability	Result
$\ln fh$ is not the Granger cause of $\ln tr$.	6	2,7892	0,0447*	H₀Red
$\ln tr$ is not the Granger cause of $\ln fh$.	6	1,6766	0,1873	H ₀ Kabul
$\ln fh$ is not the Granger cause of $\ln tour$.	6	2,6947	0,0502*	H₀Red
$\ln tour$ is not the Granger cause of $\ln fh$.	6	1,6141	0,2036	H ₀ Kabul

***, ** and * mean that the significance level is %1, %5 and %10, respectively.

On Table 3, the results of Granger causality test can be seen. According to this, it was found out that there is a one-way causality from $\ln fh$ variable to $\ln tr$ and $\ln tour$ variables. However, there is no causality seen from $\ln tr$ and $\ln tour$ variables to $\ln fh$ variable.

Table 4: Toda-Yamamoto Causality Test Results

Hypothesis	Optimum VAR Gap Length ($k+d_{max}$)	Wald (X^2)	p Value	Result
$lnfh \neq>lntr$	2	5,7538	0,056*	Causality exists.
$lntr \neq>lnfh$	2	0,8570	0,651	No causality.
$lnfh \neq>Intour$	1	3,2447	0,071*	Causality exists.
$Intour \neq>lnfh$	1	0,0057	0,939	No causality.

Note: Gap length was selected based on SIC criterion. $\neq>$ notation on the table states the hypothesis that there is no Granger causality relationship in the direction shown between the two variables given.

***, ** and * mean that the significance level is %1, %5 and %10, respectively.

On Table 4, the results of Toda-Yamamoto causality test can be seen. According to the Toda-Yamamoto causality test, when p values on the table (probability values) are less than 0.10, it is found out that there is %10 significance level in the direction shown between two variables. According to the results, one-way causality was found out from *lnfh* variable to *lntr* and *Intour* variables. However, any causality has not been seen from *lntr* and *Intour* variables to *lnfh* variable.

In Table 5, Toda-Yamamoto causality analysis results based on Bootstrap can be seen. According to this causality test, it can be concluded that on condition that the MWALD value is higher than the critic values on %1, %5 and %10 significance level, there is causality between the two variables in the direction shown.

Table 5: The results of the Toda-Yomamoto Causality Test based on Bootstrap

Hypothesis	Optimum VAR Gap Length ($k+d_{max}$)	MWALD Statistics	%1 Critic Value	%5 Critic Value	%10 Critic Value
$lnfh \neq>lntr$	2	5,466*	12,800	7,016	4,940
$lntr \neq>lnfh$	2	0,986	11,350	6,565	4,918
$lnfh \neq>Intour$	1	3,198*	9,368	4,680	2,936
$Intour \neq>lnfh$	1	0,011	8,847	4,529	2,846

Note: $\neq>$ notation on the table shows the hypothesis that there is no Granger causality relationship between the two variables in the direction given. Gap length is specified based on the SIC criterion.

***, ** and * mean that the significance level is %1, %5 and %10, respectively.

According to these results, one-way causality was found out from foreign housing investment to tourism income. Because MWALD statistics of the given variable is higher than the bootstrap critic value, H_0 hypothesis predicting there is no Granger causality relationship from *lnfh* to *lntr* is refused.

Similarly, “*lnfh* is not the Granger cause of *Intour*” H_0 hypothesis is refused at the %10 significance level, because the MWALD statistics of the variables

mentioned is higher than the bootstrap critic value at % 10 significance level. That's why one-way causality was found out from foreign housing investments to the number of tourists. However, there is no causality found out from both tourism revenues and the number of tourists to foreign housing investment. Bootstrap causality test results are parallel with the Granger causality test and Toda-Yamamoto causality test.

CONCLUSION

In this paper we investigated how purchasing housing and investing in the real estate market in Turkey affect tourism sector by causality analysis. As a result of study there is a relationship between foreign housing investment and tourism sector. According to the analysis of causality, foreign housing investment affects both the number of tourists and tourism revenues. When the bootstrap which revealed the relationship of long-run causality results is evaluated broadly, the results are consistent; because if foreign housing investment affects the number of the tourists, it will be effective on tourism income, as well.

According to the result of the three different causality analyses, the relationship between foreign housing investments and tourism sector was determined in accordance with the literature (Jimenez, 2002; Fereidouni, Almulali, 2014; Craigwell, Moore, 2007; He, Wang, et al., 2009; Fereidouni, Masron, 2010; Füller, Michel, 2014; Liu et al., 2016). For example Craigwell, Moore (2007) revealed that foreign housing investments create a tourism capacity for a specific country which leads to more accommodation for tourists and as a result, tourism movement increases, as in this study.

According to these results, it can be said that if foreign housing investment increases, the demand of Turkish tourism will also increase and thus more and more tourists will visit Turkey by which the tourism revenues will increase. Likewise, it can be said that the tourism capacity has been increased with the foreign housing investment and thus more and more tourists have been hosted and tourism liveliness has increased in the country.

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