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Analysis of Factors Affecting Housing Sales in Turkey

Türkiye'de Konut Satışlarını Etkileyen Faktörlerin Analizi

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Abstract: Studies on housing in the field of macroeconomics have increased in recent years. Factors affecting housing sales in Turkey were investigated in this study.After the 2008 global financial crisis on the exchange rate in Turkey, the consumer price index (CPI), deposit interest rate, index of industrial production and the impact on home sales of relations between the employment rate was examined in this study, in the period between 2013 to 2019 years of real estate sales volume in Turkey It is aimed to reveal the causality relationships between and the factors affecting the sales amounts. As a result of the Johansen cointegration and Granger causality tests for the period of January 2013 to December 2013; a cointegration in other words long relationship among housing sales index and Dollar/TL exchange rate, deposit rates, industrial production index was found. In addition a bidirectional casuality runs between housing sales index and industrial production index while a unidirectional casuality runs from deposit rates and CPI to housing sales index, also from housing sales index to employment.

Keywords: Housing Sales, Housing Sales Index, Johansen Cointegration Test, Granger Causality Test

JEL Classification: G10, E44, C01

Öz: Makroekonomi alanında konut ile ilgili yapılan çalışmalarda son yıllarda artış görülmektedir. Çalışmada Türkiye' de konut satışını etkileyen faktörler araştırılmıştır. 2008 küresel finans krizi sonrasında Türkiye'de döviz kuru, tüketici fiyat endeksi (TÜFE), mevduat faiz oranı, sanayi üretim endeksi ve istihdam oranı arasındaki ilişkilerin konut satışları üzerinde etkisinin incelendiği bu çalışmada, 2013-2019 yılları arasındaki dönemde Türkiye'de gayrimenkul satış miktarları ile satış miktarlarını etkileyen faktörler arasındaki nedensellik ilişkilerinin ortaya konulması amaçlanmıştır. 2013 Ocak-2019 Aralık dönemi için yapılan Johansen eşbütünleşme ve Granger nedensellik testleri sonucu; konut satış endeksi ile Dolar/TL kuru, mevduat faiz oranı ve sanayi üretim endeksi arasında eş bütünleşme bir başka ifadeyle uzun dönemli bir ilişki; konut satış endeksi ile sanayi üretim endeksi arasında çift yönlü; mevduat faiz oranı ve TÜFE'den konut satış endeksine doğru tek yönlü; konut satış endeksinden istihdama doğru tek yönlü birnedensellik ilişkisi tespit edilmiştir.

Keywords: Konut Satışı, Konut Satış Endeksi, Johansen Eşbütünleşme Testi, Granger Nedensellik Testi

JEL Classification: G10, E44, C01

1. Introductıon

When viewed within the framework of the discipline of economics, it can be said that 1929 was an important turning point in the field of economics. Classical economics approaches were revised and the Great Depression was tried to be overcome with Keynes's approaches. Most researchers see the 2008 global financial crisis as the world's most important crisis after the 1929 crisis. The non-repayment of loans in the housing markets in the USA seriously affected the financial markets of developing countries, especially developed countries, and turned into a global crisis (Shoham and Pelzman, 2011: 10). When the crisis, which also affected the financial sector, started to appear in real markets over time; has turned into recession in countries with developed large economies. Recession symptoms, anxiety and

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financial pressure caused the belief that a crisis would occur in consumers and negative effects on consumer confidence (Aurebach and Gale, 2009: 4).

The 2008 global financial crisis made the impact of the crisis felt in the housing and real estate sector, which had significant returns on employment, and caused an increase in unemployment and indebtedness ratio. This situation has brought about a rapid decline in housing prices, disruptions in mortgage payments, and an increase in crimes and executions resulting from these disruptions. Overdue debts were 4,4% in the 2nd period of 2006; It was 7.88% in the 4th quarter of 2008. During this period, the non-performing debt ratio was determined from 1.89% to 5.17% (Sancak and Demirbaş, 2011: 342). The 2008 global financial crisis, which interact with international markets and Turkey have affected many economies to varying degrees, including, in this case, which was particularly effective in sales in housing prices and housing many variables revealed an academic research which investigated (Kayral, 2017: 66).

After the 2008 global financial crisis, the aim of this work has been the subject of housing sales in Turkey; It is the study of the effects of the relationship between exchange rate, consumer price index (CPI), deposit interest rate, industrial production index and employment rate on housing sales. The fact that there is no study in which these factors were analyzed together in the literature reveals the scope and importance of the study.

Within the framework of the study; In the second part, the factors affecting housing sales are the exchange rate, deposit interest rate, consumer price index (CPI), industrial production index and employment rates and their reflections in the literature are analyzed. In the third part is the research area, housing the amount of sales that take place in Turkey in 2013-2019; Exchange rate, deposit interest rates, industrial production index, employment and CPI variables, which are thought to be related to housing sales volume, are analyzed. In the fourth part, which is the last part of the study, results and evaluations are included.

2. Factors Affectıng Housıng Sales

2.1. Effect of Exchange Rates

An important area including construction and housing sector in Turkey's economy, development and the dynamic role it plays in the economic growth process in 1980 with the increase in population structure in which the public since Housing Development Administration of Turkey is supported (Emlak Konut, 2018: 35). Factors such as housing sales, increase in population, urbanization rate, household size, household disposable income and consumption expenditures, volume of deposit and lending in banks, mortgaged housing loan, cost and rent equation, increase in housing supply in the field of construction and

adequacy of the number of houses. shaped over (Hatipoğlu and Tanrıvermiş, 2017: 69). Creating new residential areas, encouraging projects for urban transformation reveal the effectiveness of the construction and housing sector (Sezgin, 2018: 5).

In housing sales, considering the building permits and usage permits in 2013 and 2018, it was determined that the dynamism in housing sales was in the second house sales, especially when the campaigns in the housing market were eligible for the bank loans and the pressure to increase the exchange rate and interest rates despite the decrease in interest rates (İNTES, 2018: 20). The exchange rate effective in housing sales; the increase in costs is seen as a triggering argument such as the suppression of domestic customers. In this context, Davarcıoğlu (2019: 134) sees the exchange rate as an element that includes the foreign investor in the housing sector and determines it as a driving force in the stagnation in the housing market.

2.2. Consumer Price Index (CPI) Effect

Inflation, as one of the controversial issues in the economics literature, never goes out of date. The most effective area of inflation that can be seen in a short period of time is the expenditure dimension (Tunalı and Özkan, 2016: 55).

Supply and demand components in the housing sector are affected by many macroeconomic factors. It includes factors such as housing pricing and sales, industry inputs and costs, and their effective status is determined by inflation. In the inflationary arena, housing prices are also on the rise, as are the prices in other products and services, which is reflected in housing sales. In this case, the smallest percentage fluctuation in house sales increases house prices. Therefore, pricing and sales progress in relation to each other (İslamoğlu and invention, 2018: 94- 98).

2.3. Effect of Deposit Interest Rate

Interest rates have important effects on housing investments. The reason for this is that houses are mostly purchased with long-term loans such as 20-30 years and with repaid loans in equal installments throughout their term. This leads to the smallest change in interest rates and a big difference in monthly installments. In industrialized countries, this credit structure, also called mortgage, which is the only way for households who live on their salaries to acquire housing is widely used (Yıldırım, Karaman and Taşdemir, 2010).

While the mortgage loan application showed intensely as a global crisis between 2008 and 2012, it is possible to say that the same effect still continues. The mortgage crisis that started in the US housing markets has a domino effect in global economic markets and in many

countries. In Turkey it affects the making of long-term contracts in situations of uncertainty in the financial markets in a negative inflation figure shows that this is not possible the making of such a mortgage loan transaction (Arslan and Kasa, 2020: 764).

According to Ceritoğlu (2020), the downward trend in interest rates, which increased in developed countries after the global financial crisis, contributed to the housing boom. Öztürk and Fitöz (2009) showed in their study that there is a linear relationship between housing demand and interest rates.

2.4. Impact of the Industrial Production Index

Housing market in Turkey after the 1980s, in terms of jobs created by businesses that provide the industry with opportunities to enter the market covers an important part in the economic field. With the expansion of the scope of duty of the Housing Development Administration of Turkey (TOKI) after 2003, it directly enters the production and sale of housing (Çoban, 2012: 95). But 2008 has negatively affected the global economic crisis, Turkey's economy. When macroeconomic data are analyzed, it shows that many indicators are affected by the crisis. The construction sector, which is the most important component of GDP, has also been affected by the global crisis at a level incomparable to agriculture, industry and trade sectors. Considering the construction sector in terms of industrial production, the decrease in housing production as a reflection of the stagnation and decline brought about decreases in the sales of new and existing houses (Sancak vd., 2011: 173).

2.5. The Impact of Employment

House sales can be seen as a broad perspective in detail. The factors related to housing sales and production and the multiplier effect of housing investments correspond to an area that significantly contributes to employment, especially the housing sector (Çelik ve Kıral, 2018). Having a home can be seen as one of the biggest expenditure items that individuals will make for a property in their lifetime. In this context, investment made in housing is important in meeting a priority need in the lives of many people (Gökler, 2017: 306).

Lebe and Akbaş (2014: 80) analyzed the effects on housing demand by using per capita income, housing interest, interest rate, industrialization, employment in the agricultural sector and marital status data between 1970 and 2011. In these studies, it is stated that marital status, per capita income and industrialization positively affect the demand for housing; It found that housing prices, interest and employment in the agricultural sector created a negative situation. It is seen that in the demand-oriented study, no conclusions can be drawn regarding house sales.

3. Method

3.1. Research Pattern

Relational survey model that examined the factors that affect the amount of real estate sales in Turkey used in this research, quantitative research methodology was utilized. Karasar (2018) states that the studies using the relational survey models are based on showing the current situation as it is (Karasar, 2018). In relational survey model, which is a type of survey model; It is tried to measure whether there is a change between two or more variables and / or the degree of this relationship (Karasar, 1999).

3.2. Data Set

The amount of real estate sales in Turkey in the period between the years 2013-2019 in this study was aimed to reveal the causality relationship between factors influencing the amount of sales. Because the urban transformation law was adopted in 2013; it was selected as the starting date of the research data. Thus, it has been tried to observe the relationship between house sales and the variables that are considered to be related to house sales with the adoption of this law. In this context, the equation to be formed include the Dollar / TL exchange rate, deposit interest rates, industrial production index, employment and CPI variables, which are considered to be related to housing sales volumes.

$$\Delta ln\_kset = \beta 0 + \beta 1 \Delta ln\_dkt + \beta 2 \Delta ln\_mevd\_faizt + \beta 3 \Delta ln\_surtm\_endt + \beta 4 \Delta\Delta ln\_isthdmt + \beta 5 \Delta\Delta ln\_tufet \quad (1)$$

In the equation 1;

"kse" refers to the index of total housing sales volume in Turkey;

"dk" means the dollar / TL rate;

"mevd_faiz" interest rates applied to deposits in Turkey;

"surtm_end" expression refers to the industrial production index;

"isthdm" refers to the employment rate in Turkey;

"tufe" means consumer price index;

"Δ" statement indicates that the first order difference of the variable is taken;

"ΔΔ" statement indicates that the second degree difference of the variable is taken;

“In” indicates that the variable is applied logarithmic transformation.

All data included in the study were obtained from the Central Bank of the Republic of Turkey for Electronic Data Distribution System. Housing sales indices are calculated by the researcher based on the average of house sales in 2017. Descriptive statistical information of the variables used in the study is presented in Table 1.

Table 1. Descriptive Statistics of the Variables in the Study

Variable	*Lowest*	*Highest*	*Average*	*Standard Deviation*
dk	1,76	6,37	3,42	1,34
tufe	216,7	440,5	299,9	66,3
mevd_faiz	5,95	24,11	11,83	4,51
surtm_end	77,04	130	103,8	12,73
İsthdm	42,7	48,35	45,98	1,39
Kse	64,32	211,84	113,41	22,28

In Table 1 for the 2013 January-December 2019 period;The average of the dollar / TL exchange rate is 3.42 TL; the lowest value is 1.76 TL (January 2013) and the highest value is 6.37 TL (September 2018); The average of the CPI is 299.9; its lowest value is 216.7 (January 2013) and its highest value is 440.5 (December 2019); The average of the deposit interest rate is 11.83%; 5.95% of its lowest value (May 2013) and 24.11% of its highest value (October 2018); The average of the industrial production index is 103.98; The lowest value is 77.04 (February 2013), the highest value is 130 (January 2017); Tthe average employment rate is 45.98%; 42.7% of its lowest value (January 2013) and 48.35% of its highest value (June 2018); The average of the house sales index is 113.41; It is seen that the lowest value is 64.32 (June 2019) and the highest value is 211.84 (December 2019).

The figures of the variables within the scope of the research are as follows.

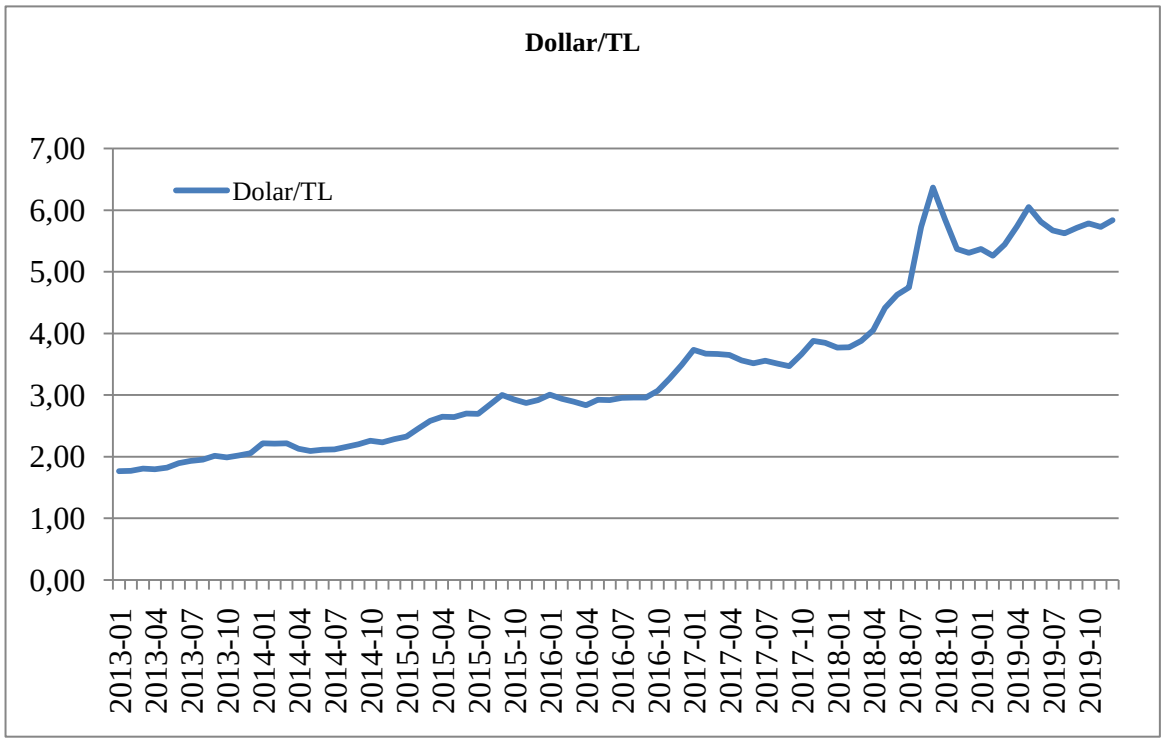

Figure 1. 2013 January-2019 December Period Dollar / TL Exchange Rate Chart

The Dollar / TL exchange rate between January 2013-December 2019 is given in Figure 1. It is seen that the Dollar / TL exchange rate, which has a slight upward trend between January 2013 and April 2018, has increased more sharply and linearly since April 2018.

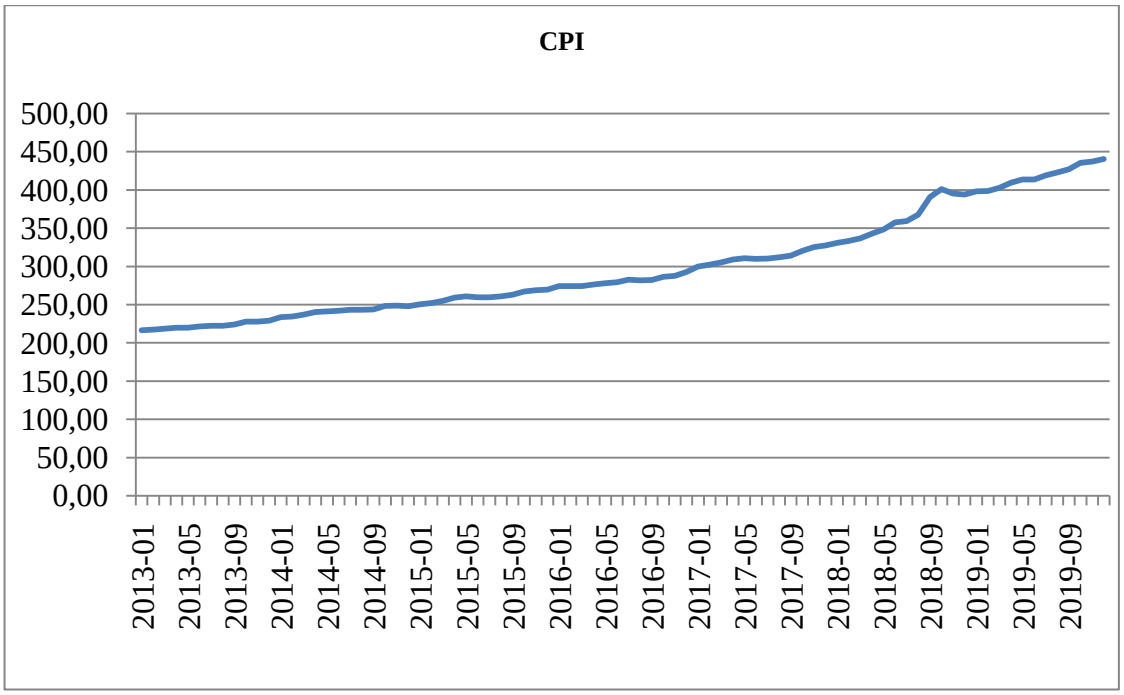

Figure 2. 2013 January-2019 December Period CPI Values Graph

CPI values between January 2013 and December 2019 are presented in Figure 2. It is observed that the CPI values in this period have a moderate upward trend in general.

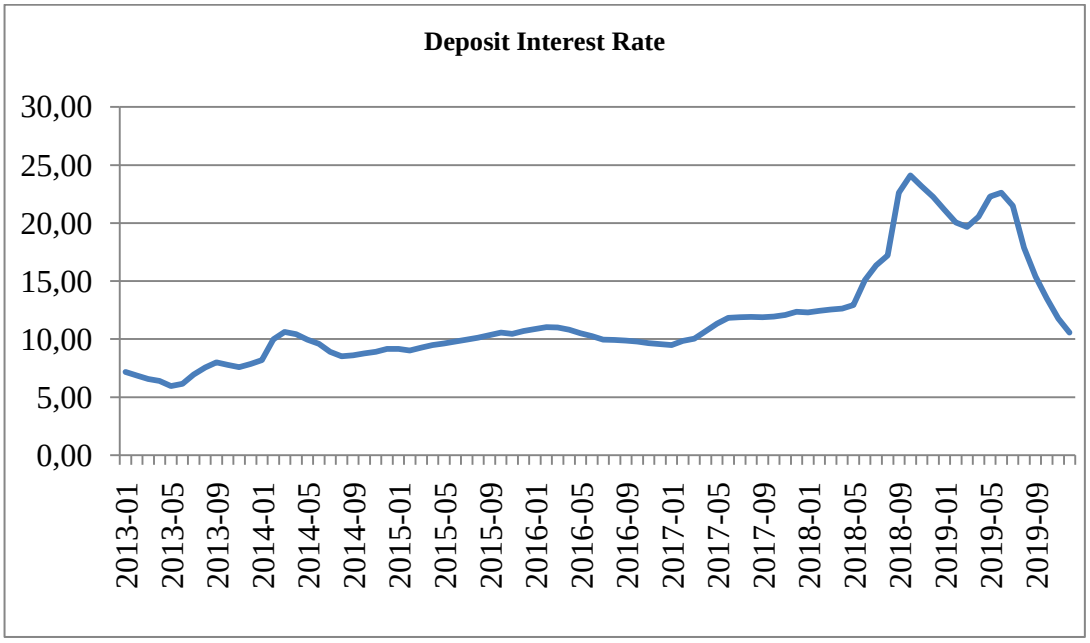

Figure 3. 2013 January-2019 December Period Deposit Interest Rate

Deposit interest rates between January 2013 and December 2019 are given in Figure 3. Deposit interest rates, which had a slight upward trend in 2013 January-May 2018 period; 2018 May-2018 October entered a very sharp upward trend and in the October 2018-December 2019 period (with one short-term exception between March 2019 - June 2019), it fell sharply.

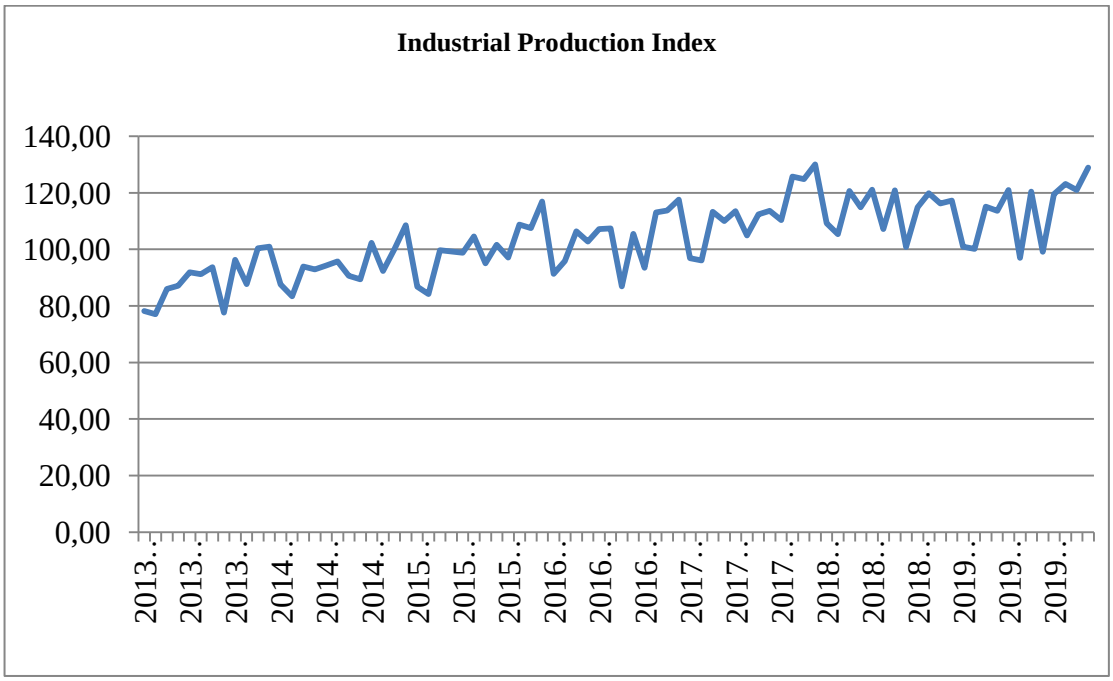

Figure 4. 2013 January-December 2019 Period Industrial Production Index

Figure 4 shows the industrial production index values between January 2013 and December 2019. It is observed that the general line of industrial production index values, which follow a very fluctuating course, is in a very slight upward trend.

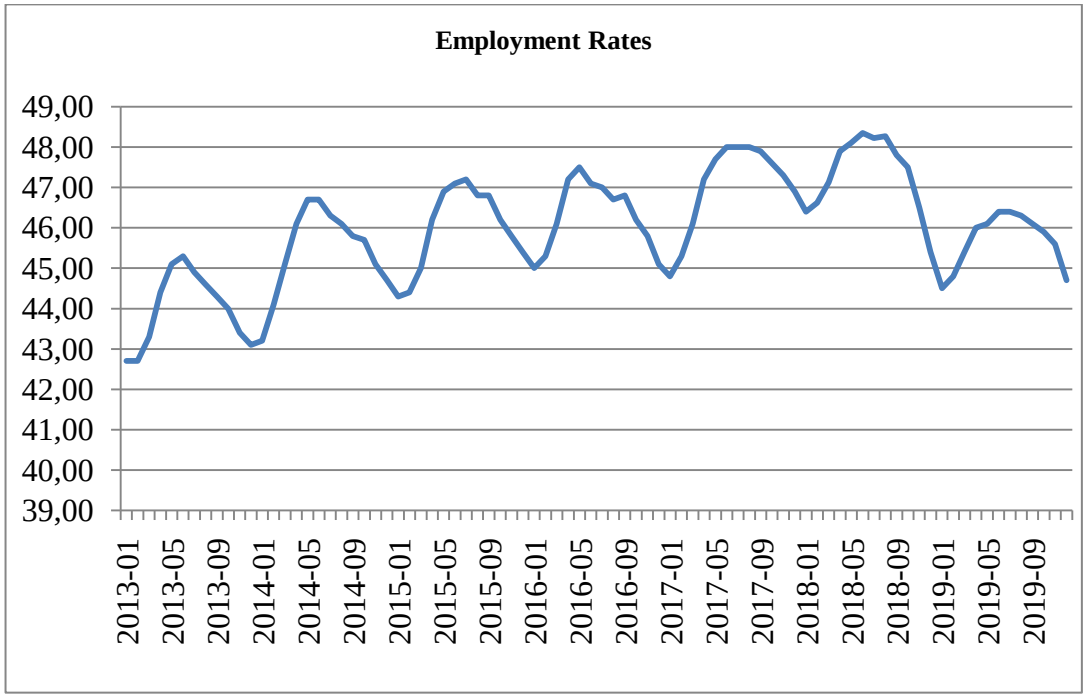

Figure 5.The Graph of Employment Rates for January 2013 - December 2019

The employment rates between January 2013 and December 2019 are presented in Figure 5. It is observed that the employment rate with the lowest value of 42.7% and the highest value of 48.35% followed a fluctuating course during this period and its general line had a slightly upward trend.

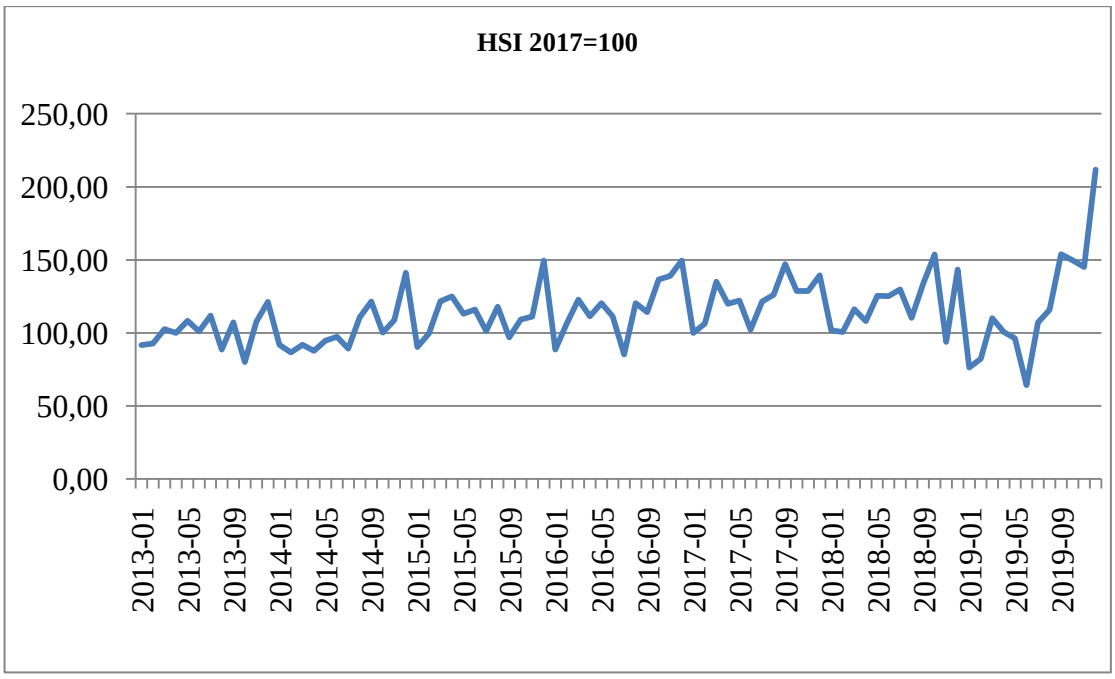

Figure 6. House Sales Index Graphic for 2013 January-December 2019 Period

In Figure 6, the house sales index for the period January 2013-December 2019 is given. Although it follows a very fluctuating course, the general line of the home sales index in the 2013 January-May 2019 period is horizontal. It is seen that it has entered a very sharp upward trend since June 2019 (with the exception of a slight decrease between September 2019 and November 2019), after a very sharp fall for a short time between May 2019 and June 2019.

3.3. Analysis

In terms of the reliability of the VAR model created within the scope of the research, it was first tried to stabilize the data (Güriş, Akay and Güriş, 2017).

The stationarities of the data to be used in the study were examined with the ADF (Augmented Dickey Fuller) and PP (Phillips-Peron) unit root tests.

Table 2. ADF and PP Unit Root Test Results

Variable	*ADF*		*PP*	
	Test Statistics	Probability (p)	Test Statistics	Probability
Δ*ln_kse*	-9.758789	0.000	-18.91199	0.000
Δ*ln_dk*	-6.130581	0.000	-5.512873	0.000
Δ*ln_mevd_faiz*	-4.249564	0.000	-4.304389	0.000
Δ*ln_surtm_end*	-3.066119	0.003	-23.27339	0.000
ΔΔ*ln_isthdm*	-8.970453	0.000	-8.831338	0.000
ΔΔ*ln_tufe*	-7.914391	0.000	-24.97925	0.000

Table 2 shows the ADF and PP unit root tests results of the variables used in the study. As can be seen from the table, when the logarithms of the housing sales index, exchange rate, deposit interest, industrial production index data and first degree differences are taken; When the logarithms and second-degree differences of employment and CPI data are taken, it is seen that they become stable $p < 0.05$ (Güriş, 2017).

The appropriate lag length was calculated before the VAR model to be created within the scope of the research.

Table 3.Calculation of Appropriate Lag Length

Lag Length	*LogL*	*LR*	*FPE*	*AIC*	*SC*	*HQ*
0	861.5665	NA	1.20e-17	-2.193.760	-2.175.632	-2.186.503
1	953.2305	166.8753	2.88e-18	-2.336.488	-22.09589*	-2.285.688
2	1023.582	117.2530	1.21e-18	-2.424.570	-2.188.899	-23.30227*
3	1066.267	64.57508	1.06e-18	-2.441.712	-2.097.269	-2.303.825
4	1108.386	57.23855*	9.86e-19*	-24.57401*	-2.004.188	-2.275.971

In Table 3, the optimum lag length is determined as 4. The calculated lag length must fulfill some assumptions of the error term. Control of the assumptions will start with the LM autocorrelation test.

Table 4. LM Test Results

Lag Length	*LRE Statistics*	*sd*	*Probability Value (p)*	*Rao F-Statistics*	*sd*	*Probability Value (p)*
1	3.589.292	36	0.4737	0.999273	(36, 187.2)	0.4779
2	4.920.883	36	0.0701	1.417.001	(36, 187.2)	0.0720
3	4.582.382	36	0.1264	1.308.215	(36, 187.2)	0.1291
4	4.889.913	36	0.0741	1.406.973	(36, 187.2)	0.0761

LM test results are shown in Table 4. The fourth order LM probability value of the VAR (4) model created as a result of the LM test is p = 0.07> 0.05. A probability value greater than 0.05 indicates that there is no autocorrelation problem (Güriş, 2017).

Whether there is a variance problem in the created VAR model was checked with the White test.

Table 5.White Test Results

Integrated Test					
Chi Square Statistics	*df*	*Probability Value (p)*			
1029.814	1008	0.3095			
Separate Components					
Dependent	*R2 value*	*F(48,29)*	*Probability Value (p)*	*Chi Square Statistics (48)*	*Probability Value (p)*
res1*res1	0.598969	0.902368	0.6314	46.71960	0.5254
res2*res2	0.738107	1.702753	0.0642	57.57233	0.1621
res3*res3	0.695206	1.378048	0.1798	54.22609	0.2491
res4*res4	0.634464	1.048655	0.4546	49.48816	0.4136
res5*res5	0.594379	0.885321	0.6528	46.36160	0.5402
res6*res6	0.655204	1.148077	0.3511	51.10591	0.3527
res2*res1	0.680181	1.284921	0.2380	53.05409	0.2856
res3*res1	0.717198	1.532189	0.1111	55.94141	0.2013
res3*res2	0.594582	0.886064	0.6519	46.37737	0.5395
res4*res1	0.587684	0.861134	0.6831	45.83937	0.5618
res4*res2	0.651226	1.128089	0.3705	50.79559	0.3640
res4*res3	0.677204	1.267502	0.2505	52.82193	0.2932
res5*res1	0.641895	1.082954	0.4169	50.06780	0.3913
res5*res2	0.693606	1.367698	0.1856	54.10130	0.2529
res5*res3	0.655111	1.147606	0.3515	51.09867	0.3529

res5*res4	0.697360	1.392154	0.1722	54.39407	0.2441
res6*res1	0.582928	0.844425	0.7039	45.46840	0.5772
res6*res2	0.686719	1.324346	0.2116	53.56407	0.2693
res6*res3	0.749422	1.806930	0.4580	58.45495	0.1434
res6*res4	0.535920	0.697692	0.8677	41.80174	0.7235
res6*res5	0.700686	1.414335	0.1608	54.65348	0.2366

White test results are shown in Table 5. As a result of the White test, both the integrated test probability value and the separate components probability values greater than 0.05 shows that the error terms have constant variance, no variance problem (Güriş, 2017).

The stability assumption of the created VAR model was checked by observing the locations of the inverse roots of the AR Characteristic polynomial on the unit circle.

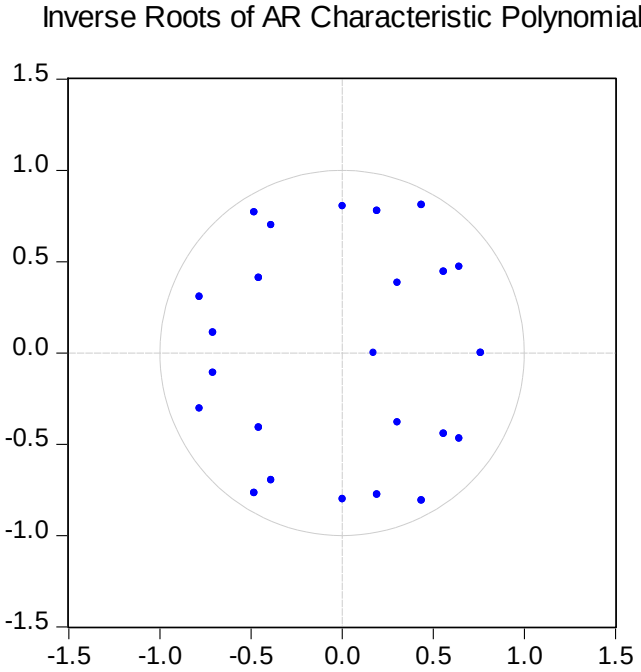

Figure 7. Stability Graph of the VAR Model Created

In Figure 7, the inverse roots of the AR characteristic polynomial are located within the unit circle boundaries. For this reason, the model does not have any problem in terms of stability (Özgen and Güloğlu, 2004).

After it was seen that the above-mentioned assumptions were fulfilled, Johansen cointegration test was made.

The long term relationships among house sales index and Dollar/TL exchange rate, deposit rates, industrial production index were determined with Johansen cointegration test. In the analysis employment rate and CPI were excluded because these variables weren't stationary at the first level but at the second level. The results are as in Table 6.

Tablo 6. Johansen Cointegration Test Results

H_0	Trace Statistics	0.05 Critical Value	p	Max-Eigen Statistics	0.05 Critical Value	p
No cointegration (r=0)	148.699	40.175	0.000	62.846	24.159	0.000
At most 1. (r≤ 1)	85.853	24.276	0.000	53.299	17.797	0.000
At most 2 (r≤ 2)	32.554	12.321	0.000	18.957	11.225	0.018
At most 3 (r≤ 3)	13.597	4.129	0.000	13.597	4.129	0.000

As seen in Table 6; according to both trace and max-eigen statistics; there are cointegration relationships in other words long term relationships among the variables ($p<0.05$).

Table 7. Granger Causality Test Results

Dependent Variable	*Excluded Variable*	*Chi Square Statistics*	*df*	*Probability Valuable (p)*
Δ*ln_kse*	Δln_dk	3.258492	4	0.5155
	Δln_mevd_faiz	13.10401	4	0.0108
	Δln_surtm_end	25.12443	4	0.0000
	ΔΔln_isthdm	7.644538	4	0.1055
	ΔΔln_tufe	10.97965	4	0.0268
	All	76.58619	20	0.0000
Δ*ln_dk*	Δln_kse	1.622656	4	0.8047
	Δln_mevd_faiz	1.101795	4	0.8940
	Δln_surtm_end	0.862431	4	0.9299

	ΔΔln_isthdm	0.709193	4	0.9502
	ΔΔln_tufe	4.399396	4	0.3546
	All	11.03186	20	0.9454
Δ*ln_mevd_faiz*	Δln_kse	3.304661	4	0.5082
	Δln_dk	62.89654	4	0.0000
	Δln_surtm_end	6.839903	4	0.1446
	ΔΔln_isthdm	1.824175	4	0.7681
	ΔΔln_tufe	10.40301	4	0.0342
	All	80.97401	20	0.0000
Δ*ln_surtm_end*	Δln_kse	15.34665	4	0.0040
	Δln_dk	8.028657	4	0.0905
	Δln_mevd_faiz	1.645757	4	0.8005
	ΔΔln_isthdm	7.649656	4	0.1053
	ΔΔln_tufe	15.97091	4	0.0031
	All	52.71052	20	0.0001
ΔΔ*ln_isthdm*	Δln_kse	14.27947	4	0.0065
	Δln_dk	5.365830	4	0.2518
	Δln_mevd_faiz	3.614601	4	0.4607
	Δln_surtm_end	24.33918	4	0.0001
	ΔΔln_tufe	6.028378	4	0.1970
	All	50.94170	20	0.0002
ΔΔ*ln_tufe*	Δln_kse	6.309351	4	0.1772
	Δln_dk	36.94584	4	0.0000
	Δln_mevd_faiz	8.372463	4	0.0788
	Δln_surtm_end	1.193950	4	0.8791
	ΔΔln_isthdm	4.012644	4	0.4043

	All	61.46710	20	0.0000

Granger causality test results are included in Table 7. When we look at the probability values in the equation where the dependent variable is determined as "House sales index", it is seen that the p value of deposit interest, industrial production index and CPI variables is less than 0.05, which is the reason for "Housing sales index".

In the equations where the dependent variable is determined as "Industrial production index" and "Employment", the probability values of the house sales indices are less than 0.05. In other words, it is seen that the housing sales index is the cause of "Industrial production index" and "Employment".

4. Conclusıon

Looking at studies examining the factors affecting housing demand, Baffoe-Bonnie (1998) found that labor growth rate, inflation, interest rate, and money supply play a determining role in housing demand for the US. Apergis (2003) stated that a positive shock in the housing loan rates in Greece decreased the real house prices and as a result, there was a decrease in the housing demand. Adams and Füss (2010) examined the relationship between housing prices and employment level, industrial production index, interest rates for 15 OECD countries. As a result of the study, it is concluded that the variables affect house prices positively. Öztürk and Fitöz (2009) analyzed the determinants of housing supply and demand in their study. According to the results, there is a correct relationship between housing demand and CPI and interest rates.

The determination of residential sales in Turkey, exchange rate, consumer price index (CPI), deposit interest rate, index of industrial production and employment is an important variable. The global financial crisis in 2008 and the next period of time, the increase or decrease in residential sales in Turkey is possible to say that the impact of macroeconomic determinants.

After the 2008 global financial crisis, the exchange rate with the housing sales in Turkey, the consumer price index (CPI), deposit interest rate, index of industrial production and the impact on home sales of relations between the employment rate was examined in this study, real estate in applications as 2013 January 2019 December quarter. The long term relationships among sales volumes and dollar / TL exchange rate, deposit interest rates, industrial production index were analyzed with Johansen Cointegration test while the short-term relationship between sales volumes and dollar / TL exchange rate, deposit interest rates, industrial production index, employment and CPI was analyzed with Granger causality test.

As a result of the Johansen Cointegration test; there are cointegration relationships in other words long term relationships among sales volumes and dollar / TL exchange rate, deposit interest rates, industrial production index. As a result of the Granger causality analysis for the period of January 2013 to December 2013; a bidirectional casuality runs between housing sales index and industrial production index while a unidirectional casuality runs from deposit rates and CPI to housing sales index, also from housing sales index to employment. On the other hand, there is no relationship between the USD / TL exchange rate and the housing sales index.

According to the results of the analysis, in the period after the financial crisis, it is seen that the impact of macroeconomic variables in the increase or decrease in the demand for housing in Turkey. Changes in the industrial production index, deposit interest rate and CPI are a determining factor in the increase or decrease in housing demand. This situation will greatly affect the development of the construction sector with the increase in housing demand. With the development of the construction sector, employment will be created and the increase in the construction sector, which is one of the important items of growth, will affect the economic growth positively.

Considering the results of the studies in the literature, there is no consensus on the variables that affect the housing demand, especially the exchange rate variable. When the compatibility of the results obtained in the study with the literature is evaluated; It has been observed that it has similar results with the findings of Öztürk and Fitöz (2009), Adams and Füss (2010), Baffoe-Bonnie (1998).

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