Factors Influencing Prices of Residential Real Estate in Turkey

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ABSTRACT

In many nations, the real estate sector is a very important determinant of economic productivity and improvement. It is critical to conduct market research and gain a thorough understanding of the market before making house-buying decisions. In real estate investing, market analysis is an underappreciated asset. In actuality, the most significant aspect of analysing a real estate investment is market analysis. Although all the real estate is local, the main macroeconomic factors have an influence on all local markets. So, market analysts should check the interest rates, present and proposed inflation fluctuation, population expansion, interest rates, and GDP growth. These elements have an effect on the economic base which besetment the subject property's progression or reduction. Interest rates can affect the cost of borrowing and mortgage change rates in capital flows can also have a direct impact on the Demand and supply variables for a property. There are also links between inflation and any limited-supply goods. Inflation has a significant impact on a wide range of industries. The utility market, banking, and energy are the most affected. In fact, because the Gross Domestic Product Growth rate is the main influence on real estate pricing and rent, real estate investments offer a direct method to benefit from these economies' significant growth. And regarding the increase in the population, it's also important to comprehend the fundamental causes of population growth.

Keywords: *House Price Index, Macroeconomic Factors, House Pricing, Inflation, Real Estate Pricing, Interest Rate, Gross Domestic Product, Population.*

INTRODUCTION

Pricing is the result of an unpredictable and uncontrollable conflict between demand and supply within a market, also known as the price mechanism. Now Turkey's economy has undergone a significant shift over the last decade, and its economic foundations are rather steady. Turkey, in regard to its GDP growth, occupies the world's 17th largest and also ranked as the 6th largest in Europe. A huge part of the total Gross Domestic Product of Turkey's economics comes from the real estate sector which accounts for 19.5%. FDI inflows increased to USD 12.5 billion in 2012, with real estate and buildings accounting for USD 1.6 billion of the total. The real estate industry, often known as the property market, is an important economic component that has contributed to economic growth. In Turkey, the real estate market accounts for more than 23.5% of the country's GDP. Turkey's real estate industry has grown at a rapid pace over the last few generations, and it is now one of the world's leading real estate markets. As a result, and to understand the growth of the residential real estate market, we must comprehend the demand and supply variables, and also the reasons that cause changes in price (Burnside et al, 2011). The real estate or housing market differs significantly from other markets for commodities and services. This is because the housing market acts as both a commodity and an asset for investment. As a result, both sides will be included while evaluating the housing market.

RESEARCH OBJECTIVES

According to the purpose of this study work, four selected macroeconomic variables (GDP, interest rate, inflation rate, and population) will be used to assess the long-run impact on housing prices in Turkey. This research is important because, up until now, the majority of studies had looked at the causes of housing prices from a macroeconomic correlation point of view, but they had mostly been conducted in the United States and Europe, making this research particularly significant. Individual countries in Asia, such as Japan and China, have also been subjected to research, as has the situation in the United States. Consequently, in both countries, this study contributes to the current literature by inspecting the impact of macroeconomic variables on house values. It is possible that policymakers would find the information presented to be valuable in modifying or implementing new policies for their respective countries in order to achieve econom-

ic stability. Furthermore, this research will be useful to future academics who are interested in the economies of Turkey, according to the authors. Finally, the study will promote knowledge among the general public about the macroeconomic factors that influence home prices in the nations that have been chosen for research. People will be able to understand the influence of their spending decisions on the country as a result of this information (Muhammad, A., & Yvonne, Lee., 2022).

The price of a House is something so complicated because its regarded as the highest product the customer will pay the highest amount of money for it and generally every person through his/her life will buy and sell 1 time and sure the buyer or seller should know what are the indicators that may affect this amount of money from year to year beside the difference of price between one home to another based on its hedonic characteristics, through this study we will check by evidence if there is a correlation or no relation between the independent macro-economic variables which are interest rate, GDP, population and inflation rate in Turkey and other countries. We will check if the interest rate has an effect on the House Price Index and also the Population if there is a correlation with the House price index besides the gross domestic product, whether there is a connection between its change and the house price index change and finally the inflation and its influence on the house price index. This will be done through many tests and will apply and get the result to define the relationship and have final findings from these tests.

LITERATURE REVIEW

Analysis of the Turkish Housing Market's Efficiency is the Investors' main goal to raise the value of their money by trading multiple investment tools based on the premise of minimal risk high returns. Financial or non-financial investing instruments are available. Deposits, government and private sector bonds, treasury bills, and other financial investment instruments give a fixed or variable income, such as stocks, funds, and currencies. Esra, A., & Ünal, S. (2019). prices are produced completely at random, regardless of previous prices, and future prices cannot be predicted. Fama (2010). Moreover (Coşkun 2016) states that According to the study, even in consumption house ownership, the view of housing as a wealth protection mechanism and the hope that it will protect/increase its worth might contribute to a certain investment incentive.

Turkey's Geographical Strategic Location Between Europe and Asia

This is one of the factors that promoted the Real Estate Market growth in Turkey. Turkey is located between Europe and Asia continents, and hence functions as a crossroads. Istanbul's massive airport, which is the largest in the Middle East and Europe, as well as Ankara's airports, are a convenient way to travel to important cities in Europe and give Istanbul and Turkey very important positive points between the continents, Asia, Africa, and the Middle East, with an average of Four hours direct flight. Turkey's geographical location makes the trade between those continents has converged, leading to a rapid increase in warehouse and logistics infrastructure (Deloitte, 2013).

Turkey's Population

Also is another factor that promoted the Real Estate Market growth in Turkey. Turkey's population is also a pull factor for the real estate market, since a large population means a greater demand for housing, causing the real estate market to flourish. In 2015, Turkey's population was estimated to be 78.67 million people. Turkey's population is quickly increasing, with an estimated population of 88.5 million by 2030. As a result, Turkey's growth rate is higher than other European countries. Most of this population is between the ages of 15 and 65, resulting in a robust labour force (Deloitte, 2013). Turkey was also ranked 69th in 2014 Conducting Business Report. What is new in the real estate world is that land and space, whether it is under the road and infrastructure organisation plan or not, agricultural or non-agricultural, may be purchased by foreigners, so finally as a result, the foreigners can own property in Turkey.

Residential Real Estate Pricing Determinants

In numerous countries, the residential real estate market is influenced by a variety of factors. The size of the real estate market is one of the characteristics included in this study's analysis. Several factors influence the price of residential real estate. Inflation Rate, Gross Domestic Product, and Interest Rates (Mak, Choy, & Ho, 2012). The residential real estate market is mainly influenced by the Interest rate. In developed countries, the fluctuation of interest rates has a significant impact on a person's capacity to purchase residential real estate in that country.

This is due to the fact that a decrease in interest rates raises the cost of obtaining money to pay for real estate prices in a country. Interest, on the other hand, raises the cost of obtaining loans or mortgages, which reduces demand for residential real estate prices. Mortgage rates are a key factor in property prices. The capital flows are affected by interest rates, demand and supply for the capital, and investor returns (Liow, & Huang, 2005). Office renters have lengthier contracts that cannot be amended during a downturn (Case, Shiller, et al). (2005). Different land costs apply. Land prices are a consequence of real estate prices, not a cause because greater property prices raised the land prices and the demand for land, which in turn increased the prices of real estate (Gallagher, 2011). Inflation reduces money's buying power. The customer price index tracks retail prices for home products and services to measure inflation (Liow, Ibrahim, and Huang, 2005).

Selim (2008) suggests using a hedonic regression model to study urban and rural housing costs. According to the study, the water system, kind of home, pool, number of rooms, house size, construction style, and location influence property values. According to Mikhed (2009), falling U.S. home prices are justified by borrowing rate, income, stock, market, population, housing rent, wealth, and building expenditures. The study used unit root and cointegration tests on aggregate data. Lack of power stationarity and regional housing market information might hinder the analysis. Therefore, cross-sectional dependence-resistant panel data stationarity tests were applied. Previous U.S. residential real estate research looked at many parameters. Furthermore, Doerner (2011) revealed that the Florida study used a special 15-year panel to test for symmetrical effects during property booms and busts. The paths through the change in home values can affect city revenue per capita. Egert and Mihaljek (2007) employed the panel technique to determine the house price dynamics in eight economic growths in east and central Europe, as well as the 19 OECD countries, in a similar way to the previous study. The study lays the groundwork for real-world interest and demographics. The analysis also confirms the relevance of transition-specific elements such as housing quality improvement and residential marketing in the study. In CEE and OECD countries, the real interest rate, gross domestic product, and housing credit all have a considerable impact on property prices, according to the study. In the nations analysed, demography and labour market development play critical roles in residen-

tial real estate price dynamics. As per Muli (2011) study which investigates the relationship between lending mortgages and Kenyan real estate prices. In recent years, there were exceptionally huge changes in property values, from 2006 to 2010, a quarterly database was used for the study. The dynamic of the model was developed using multiple regressions to examine the impact of home prices and credit. The authors of this study come to the conclusion that fluctuations in home prices are caused by changes in mortgage lending. Muthee (2012) investigated the connection between Kenya's economic development and house prices. While tracking the Hass Housing Price Index and Kenya's GDP figures throughout a five-year period, data were gathered from various sources but connected in a similar or equal time and period, reviewed, subjected to regression analysis, and rated for validity. The findings showed that some factors are related to the quarterly change in GDP and the change in HPI. According to the statistics and analysis, Residential real estate is a powerful asset sector that has been overlooked by many investors. Investors' varied concerns in an attempt to provide an acceptable assessment of the manner in which real estate values are influenced, which has an impact on the status of the annual rental rate.

Opportunities for Real Estate Investing:

As an emerging economy, Turkey's economy necessitates infrastructure investment in all sectors, including residential and non-residential real estate, including energy and power and also transportation.

Turkey intends to attain the following goals by 2023. Being one of the top 10 performing countries by 2023. Aiming for a staggering 2 trillion USD of the gross domestic product by 2023. Increased export deals to more than 500 billion dollars.

By raising export volume from 152 billion dollars to 500 billion dollars, the world trade share will rise to 1.46 per cent. Construction enterprises must also set their goals in accordance with the country's goals.

- **Infrastructure**

Increase the length of the speed train track from 888 kilometres to 10.000 kilometres. The Turkish State Railways has set aside 514.9 million Turkish Liras for the construction of logistic communities. The government intends to construct 16 more logistic centres. TOKI, Turkey's Housing Development Administration, aims to develop 1 million residences for Turkish citizens by 2023.

- **Urbanisation**

Turkey has experienced massive urbanisation during the last six decades. The proportion of the population in Turkey who were living in cities has climbed from 25% in 1950 to almost 75% presently. Urbanization's demands have grown over time, especially in secondary cities with considerable infrastructure and investment requirements.

- **Tourism**

By 2023, the government hopes to expand the number of tourists to 50 million by building additional facilities like hotels, health centres, and sports centres to attract tourists to come to Turkey.

SWOT Analysis Turkey's Real Estate Market

To make a brief study of the Opportunities, Threats, Strengths, and Weaknesses, in the Turkish Real Estate Market we can conduct the below points:

- **Strengths**

Several elements have influenced the development of the real estate sector concept, including Turkey's strong and sophisticated infrastructure.

Legislation, investment, and banking that is appropriate.

Foreign investors continue to receive government backing.

Turkey has a large population (over 82 million).

Turkey is regarded as one of the most appealing tourist destinations in the world.

The government and municipalities are planning urban renovation initiatives in the foreseeable future. The updated regulation that had been settled and published to save The investor who became able to buy and sell under government supervision.

- **Weaknesses**

The irregular housing practices based on Studies done in (2008 by Turhan 5-6).

A huge number of residences that have been licensed do not meet the criteria for obtaining a mortgage. Land is expensive, particularly in large cities like Istanbul, Antalya, and Ankara.

- **Threats**

Sector volatility, as is expected. The earthquake rate in Turkey is unusually high, particularly along the Mamara zones, such as Istanbul and Bodrum

- **Opportunities**

House demand exceeds supply, indicating growth potential
House quality has increased to meet seismic standards.
Increasing demand for residences and shopping malls

As part of the urban rehabilitation process, run-down districts and residences are demolished and replaced with contemporary structures. (2017, Istanbul Investment House) In Turkey, there is a thriving real estate sector.

Dependent and Independent Variable

Dependent variable (House Price Index)

HPI is the abbreviation of House Price Index, it is an index that has been calculated on a quarterly basis that tracks the changes in the cost of single-family homes in the United States. By collecting the data on the median price changes of houses that have recently been resold or refinanced, the Home Price Index (HPI) serves as an indicator of trends in home pricing. The Home Price Index (HPI) is compiled and distributed with the assistance of data provided by the (Freddie Mac) Federal Home Loan Mortgage Corporation and by the Federal Housing Finance Agency (FHFA) and also, the Federal National Mortgage Association (Fannie Mae) (JASON 2022). The Federal Housing Finance Agency (FHFA) keeps track of the price of single-family dwellings. The House Price Index (HPI) is a single-family house value index maintained by the (FHFA). Since the mid-1970s, the index has calculated property prices using data from purchases and

re-mortgage in the 50 states and over 400 U.S. cities. From the mid-1970s to the present (HPI) House Price Index measures changes in single-family home values and also it is a weighted index. It calculates the average price change in repeat property sales or refinancing (Danielle 2022). The function of the House Price Index is that the HPI is a tool for analysing housing market movements, which have a considerable economic impact. The HPI can be used by academicians to better analyse changes in home ownership, prepaid expenses, and mortgage defaults. Monthly, quarterly and annual HPI index reports are issued.

Independent Variable

- **GDP**

GDP calculates the monetary value of a nation's finished goods and services produced during a specific time frame (i.e., which is bought by the end-user on an annual or quarterly basis). It is a statistic that measures the total amount of products produced within a nation's borders. GDP is made up of goods and services produced for market consumption as well as some non-market output, like military and educational services given by the government, GDP does not account for all forms of production. There are some activities excluded from the calculation such as unpaid labour (for example the one that is done at home or for charity) and black-market transactions because those are difficult to measure and value.

- **Inflation**

Inflation is a measure of the ability to buy through the value of money. It is characterised as the rate of change in the cost of goods and services over time (rated on an Annual basis in general). We can define it by the fluctuation of a product's price within a specific period of time and it affects the ability of consumers to buy because when inflation occurs people can no longer afford to purchase as before the inflation.

Inflation is measured in percentages and takes into account a variety of elements, ranging from broad metrics such as a country's general cost of living to more particular necessities such as fuel, heating expenditures, groceries, and even the cost of a haircut (The Street Staff 2022).

Inflation-Related Terms Glossary1- Deflation, on the other hand, occurs when the cost of goods and services falls, usually as a result of monetary supply change. On the plus side, consumers' purchasing power grows, i.e., they "get more for their dollar," yet deflation is usually associated with a slowing economy.2- Disinflation, it's different from deflation, merely implies that inflation is rising more slowly than predicted. For example, if CPI monthly was 4.2 per cent in June and 3 per cent in July, prices deflated by 1.2 per cent in June but are still rising at a 3 per cent annual rate in July.3- Hyperinflation is extremely high inflation that is still increasing. when the percentage is higher than +1000. Hyperinflation can harm an economy and cause a currency to fail. 4- Stagflation is defined as a dangerous combination of high unemployment, high inflation, and no or little economic growth (The Street Staff 2022).

- **Interest Rate**

The interest rate is a percentage of the principal, or the amount borrowed and is added on top of the base loan amount as additional fees to the borrower. The phrase used to define a loan's interest rate is the annual percentage rate or APR. Money accumulated in a bank, credit union, or both can generate interest through certificates of deposit or savings accounts. The yearly percentage yield refers to the revenue earned on certain bank accounts (APY) (Caroline 2021). The principal, or total borrowed, is what is charged as interest on a loan. The cost of borrowing is represented by the interest rate, which is also the rate of return for the lender. Typically, the amount to be repaid exceeds the amount borrowed since lenders seek a refund amount for the duration of time of lending the amount of money. The lender can have invested the money during that time instead of making a loan, earning revenue from the asset. The difference between the total amount repaid and the original loan amount is the interest.

Independent Variable (Population)

- **Population**

is a distinct group of people, whether it is a nation or a collection of people with a common trait. A population is a set of people from which a quantitative sample is taken in order to conduct statistical analysis. A population is a group of individuals who are similar in some way. A sample, not the entire population, is a statistically significant subset of it. As a result, the estimated standard deviation, or standard error, of a statistical analysis of the outcomes of a sample from the entire population must be presented. Only a population-wide study would be free of sampling error. A population is a unique group of people who share a common identity, citizenship, or trait. (Osikhotsali 2021). Many, if not all, government and commercial decisions are based on the results of large and local population surveys. Population Examples in the Real World.

DATA COLLECTION AND ANALYSIS:

The researcher collects secondary data in order to check the established connection between the variables. Population, inflation, GDP, and interest rate are all used in this study (Independent Variable) and the House Price Index (dependent Variable). We obtained secondary data from the Global Property Website guide for the House Price Index for a ten-year period. We acquired secondary quarterly data for the period of 11 years from Fred Stlouisfed website Data for the interest rate and secondary 11 years period of time data on a quarterly basis from Trading Economics Website Data for the inflation rate. We also obtained secondary quarterly data from Country Economy Website Data for GDP and annual data for a period of 11 years as secondary data for the population from the Country Economy Website. On the basis of the publishers' credibility, the data's validity, accuracy, and correctness were presumed. Data collected for studying will be tested by many statistical tests in order to check its validity using statistical applications: SPSS "Statistical packages for social scientists" and EViews statistic which are used to apply the below-mentioned Tests on data variation and relationship between all data each of them with each other and between the dependent and independent variables:

Descriptive Study - VIF (Multicollinearity) Test - CUSUM Test - Regression and Multi Regression Test - Normality Test - Plot Point Test - White Heteroscedasticity Test - Autocorrelation (Durbin Watson) Test – Heteroscedasticity Test - Unit Root Test - Kolmogorov-Smirnov Test - Correlation Test.

Descriptive Study Result

After applying a descriptive test by EViews for all the variables' data in order to check if its normally distributed we conclude that inflation rate results are not normally distributed since all results are negatively different that equal to the conditions to its not normally distributed.

Table 1: Descriptive Study Result

Descriptive Study	Condition	Housing Price	Interest Rate	Inflation Rate	GDP	Population
Kurtosis	< 3	2.3	1.78	5.41	2.48	1.71
Skewness	between -0.5 to 0.5	0.47	0.43	1.59	-0.39	0.04
P value	>0.05	0.27	0.12	0	0.44	0.21
Jaruque bera	Near to 0	2.5	4.09	29.3	1.61	3.04

Unit Test

The unit test was applied in all possible ways, although it's enough to have only 1 result for each variable (less than 0.05) so it means the data for this variable is stationary, so we can proceed with testing data with a regression test and the result of testing will be reliable results. From the below table for the summary of test results done by EViews, we can find that all second difference results are significant since all of them are less than 0.05 so the data is stationary.

Table 2: Unit Test Result

Unit Test	GDP	HPI	INTRST_R	INFL_R	POP
Level with Intercept	0.2433	0.9999	0.1241	0.2225	0.5981
2nd Diff with Intercept	0	0	0	0	0.0001
Level with NA	0.6064	0.9987	0.3868	5926	0.8076
1st Diff with Intercept	0	0.602	0.0038	0.0003	0.7823
1st Diff with Trend & Intercept	0	0.2679	0.0208	0.0018	0.9261
1st Diff with None	0	0.5884	0.0002	0	0.3235
Level with Trend and Intercept	0.7264	0.8578	0.3559	0.0676	0.2808

2nd Diff with Trend & Intercept	0	0.0001	0	0	0
2nd Difference with NA	0	0	0	0	0

CUSUM Test & CUSUM Square Test

The test Done using EViews App, fluctuation line should be in between the limitation predicted lines in order to proceed with testing. The graphic result for CUSUM is in between the 5% significance lines. This translated that our regression equation is stable over the period. Its purpose is to determine whether or not the coefficients of the regression model are shifting in a predictable manner.

Figure 1: EViews CUSUM & CUSUM SQUARE Test Output
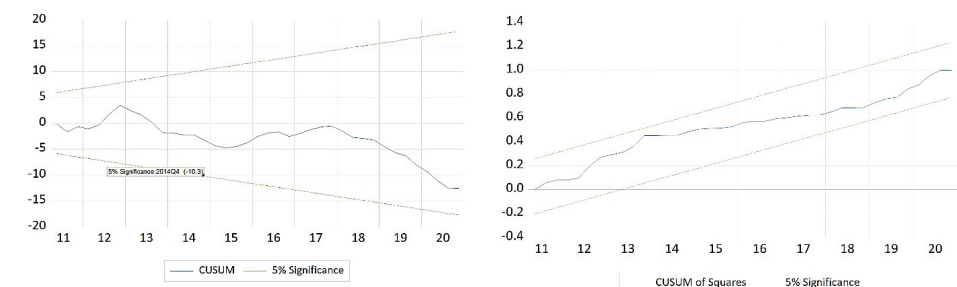
Correlation Test:

To test the hypotheses, Pearson correlation coefficient test was applied. The association degree between two variables is defined as a correlation. The correlation coefficient ranges from -1 to 1.
Perfect positive correlation represented by 1.
There is No correlation represented by 0.
Perfect negative correlation represents a negative 1. below table of correlation test result

Table 3: Correlation Test Result

Correlation	GDP	HPI	INFL_R	INTRST_R	POP
GDP	-	0.276060	0.000507	-0.490408	0.393096
HPI	0.276060	-	0.612603	-0.144372	0.968985
INFL_R	0.000507	0.612603	-	0.476671	0.648274

INTRST_R	-0.490408	**-0.144372**	0.476671	-	-0.116035
POP	0.393096	**0.968985**	0.648274	-0.116035	-

As per Table 3 for correlation test result, the HPI Correlation is significant with all independent variables except Interest Rate, the relation with Interest rate is insignificant since it is 0.3487 which is higher than 0.05.

Figure 2: EViews Correlation Test Output

Covariance Analysis: Ordinary
Date: 05/19/22   Time: 14:15
Sample: 2010Q1 2020Q4
Included observations: 44

Correlation t-Statistic Probability	GDP	HPI	INFL_R	INTRST_R	POP
GDP	1.000000 ----- -----				
HPI	0.276060 1.861408 0.0496	1.000000 ----- -----			
INFL_R	0.000507 0.003288 0.9974	0.612603 5.022986 0.0000	1.000000 ----- -----		
INTRST_R	-0.490408 -3.646856 0.0007	-0.144372 -0.945541 0.3498	0.476671 3.514097 0.0011	1.000000 ----- -----	
POP	0.393096 2.770596 0.0083	0.968985 25.41161 0.0000	0.648274 5.517798 0.0000	-0.116035 -0.757109 0.4532	1.000000 ----- -----

Regression Analysis

The regression test applied to check the significance of the relationship between the dependent variable and independent variable, through the result of probability in the regression test using EViews statistics calculation system if P value is greater than 0.05 so its insignificant relationship.

As per the below result summarised table, the interest rate results are insignificant. R-Squared: tells us how much the independent variable is representing the dependent variable.

Coefficients: interpret if the independent variable increased by 1, how much the dependent variable will be verified.

Table 4: Regression Test EViews Result

Regression	GDP & HPI	INTRST_R & HPI	INFL_R & HPI	POP & HPI
Coefficients	0.0003	-1.2142	4.6902	0.000008
P value	0.0870	0.3799	0.0000	0.00000
R-Squared	0.0697	0.0208	0.3759	0.94922

VIF / Multicollinearity Test

This kind of test is typically used to examine if the independent variables are similar in fluctuation so it tests the relation between them, and if the test concluded in a multicollinearity between them, then we can draw the conclusion that the interpretations are not entirely accurate. When VIF value is greater than 5 then we consider it the problem of Multicollinearity

Table 5: VIF Test EViews Result

VIF / Multicollinearity Test	Result
Inflation	3.917
Interest Rate	2.555
GDP	1.555
Population	3.289

RESULTS

Correlation Test Result Summary

Inflation has a weak positive relation with HPI
GDP has a weak positive relation with HPI
Interest Rate has insignificant relation with HPI
The population has a strong positive relationship with HPI

Regression Test Result Summary:

Inflation has a significant relation with HPI
GDP has a significant relation with HPI
Interest Rate has insignificant relation with HPI
The population has a significant relation with HPI

Our study covers the period of 2010 to, a duration of 11 years. Checking the relation of our variables upon HPI we concluded that, the house price

index's best relation is with population since it has strong positive relation and its relation with house price the dependent value is significant and also in linear regression there is a positive correlation.

After it, the inflation rate since its relation is significant even if the relation is weak as per the correlation test but still, all tests gave us the good relationship between those two variables population and house price index.

As for the GDP, the result of regression gave us the answer to our thesis's main question that the relation with the house price index is significant but weak relation as per the correlation test.

While for the Interest rate the regression result tells us that the relation is insignificant with the HPI.

CONCLUSION

The purpose of the study was to look at the factors that influence residential real estate values. Interest rates, inflation, gross domestic product, and population growth were taken into account when making the decision. The findings show a good link between the prices of residential real estate and the factors examined. According to the study's findings, real estate house prices significantly depend on factors including interest rates, inflation, GDP, and population growth. Therefore, the macroeconomic factors under investigation, including a country's population increase, successfully explain the rise in housing prices in Turkey. Despite the fact that the study found a conflict between interest rates and home prices.

The study goes on to say that, in light of the findings, there was an overall increase in housing prices over the time covered by the study, which serves as a signal to the constantly evolving study components (inflation, interest rates, GDP, and population growth). Therefore, it can be said that the study variables are important justifications for the housing prices in Turkey given in the context of the study. Therefore, it should be taken into consideration of the macroeconomic variable is required to control housing prices.

Glaeser et al. (2010) revealed that, between 1996 and 2006, the prices of real estate climbed by 53 per cent when compared to the prices of essential commodities; yet, low-interest rates could only explain a fifth of the increase in price over this time period.

Those who studied the real estate prices in 18 industrialised countries and established a substantial correlation between real estate price and monetary policy, such as Greiber and Setzer (2007), have corroborated this. They came to the conclusion that the interest rate was the most important factor that influenced the demand for real estate. Julius (2012) provided information on the factors that affect the price of residential real estate in Nairobi. The goal was to examine the real estate market's influencing elements in light of the scant or non-existent empirical data that was available. According to the analysis, interest rates, money supply, inflation, and employment rates, as well as population dynamics, all affected home values. Data from the Central Bank of Kenya and other Kenyan statistical agencies, such as Hass Consulting Ltd., were used in the study.

LIMITATIONS OF STUDY

Our thesis was studying a statistical data set for a period of 11 years starting from 01/01/2010 until 31/12/2020. Collecting detailed data on a quarterly basis was not easy for all the variables since most websites were publishing the statistics on an annual level, and the more sample size you have, the surer you can be of the experiment's outcome. You should have a big enough data set to see if the results are statistically significant. If your sample size is too small, you will encounter sampling errors. Financially it was very expensive in regard to collected data from paid websites and also the subscription to programs that helps in applying the needed statistics tests for example SPSS and EViews.

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