

“The Impact of Macroeconomic Factors on the Change of Residential Prices” The Case Study of Albania

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ABSTRACT

The housing market is a very important sector worldwide that occupies a significant part of their capital stock. Given that the economy is experiencing a difficult situation, because of the Covid-19 pandemic crisis, also based on the financial crisis of 2007-2008, their impact has been immediate in the change of house prices. Moreover, this paper will contain the investigation of some of the macroeconomic variables that affect housing prices in Albania. The study is built on econometric models, using bound test to understand what relationship there exists between GDP, inflation, mortgage rate and evaluating the "Autoregressive Distributive Lags" model in the short-term period, as well as looking at the perspective of a long-term period according to the "Vector Error Correction" (VEC) model. The results obtained from E-views software, show that depending on the time period, the impact of these macro variables is different. If in the short term the impact of the mortgage rate is not a very substantial variable or inflation can have a negative impact, in the long-term it is the opposite. To have a model that is as reliable and strong as possible, "battery" tests have also been analyzed to diagnose its constituent elements such as heteroskedasticity, autocorrelation, normality and the CUSUM / CUSUM square test for stability of the model. This paper applies to all areas, whose political implications can be found mainly in the bank, various investors or even policy makers, which may be the Bank of Albania, which should pursue policies to stimulate economic growth and show caution in the level of inflation created or setting the mortgage threshold.

1. Introduction

First of all, when referring to the real estate market, it is worth noticing that the concept of value is very important and the unit of measurement used in this case is money, so increasing or decreasing the value of this market will be converted into "money". So, reaching the potential price that the seller expects and on the other hand the reasonable price of the buyer, thus satisfying both parties, we say that we have determined the market value. In other words,

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the moment when supply and demand are in equilibrium, it determines the value of real estate in the market. This is also effected by other economic or political factors that initiate the drafting of fiscal and financial policies or that specifically regulate this market, making it as transparent and well-functioning as possible. Also, care must be taken that these policies do not affect the imbalance and thus offering a more competitive market.

A number of macroeconomic factors that have a significant impact on these markets can be mentioned here such as: demographic factors, GDP, inflation, new construction, remittances, investments, lending, etc. It should also be added that in recent years Albania has faced a growth boom in the construction sector, thus increasing the demand for new residential buildings. This is closely related not only with the fact of the transition period that Albania has experienced during the last decades, but also to the Albanian culture, where the ownership of residential houses is considered as one of the primary vital needs. If we talk about the national economy of a country, the housing market occupies a special place and is closely linked to other economic elements / sectors that lead to the further development of the country.

Since apartments are considered capital assets, they are in themselves an investment, which means that they are a great help for business development thus providing them with income through rents that can be issued, but also by serving as loan collateral. So, since this sector has such a high impact on the economy, then special attention to updated research is very important, especially when dealing with emerging economies of small countries like Albania. Given the large economic bubble of the financial crisis of 2007-2008, where banks and financial institutions included into their balance sheets, the structured loans, causing the fall in house prices and the value of mortgage bonds, thus reducing market turnover, and massively increasing risk premiums. Moreover, the crisis of recent years caused by the pandemic situation of Covid-19 is still causing shock waves across the globe, highlighting the vital role played by the housing market. Faced with both periods of crisis in a relatively short time, the study of the housing market has a special value, not only to understand the current situation in which it is, but also to draw up appropriate plans and take measures to cope with other waves of crises if they occur in the future.

Considering the recent pandemic crisis, the Central Bank of Albania decided to conduct a questionnaire in 2020, selecting a sample of 230 construction companies and real estate agents, who represented about 80% of the population. The general situation resulted in a negative value, described as the lowest over the years, emphasizing that the situation has deteriorated in the real estate sector, and this is clearly seen as evidence of financial uncertainty that the country is going through. An average of 825 properties out of 1301 were sold and most commercial properties were purchased on bank credit. Also, the Fischer index of house prices had increased by 4.9% compared to previous months and about 40% if we compare it with the last 10 years. So, in this way, inflation has caused the prices of residential houses and rental prices to increase significantly (Bank of Albania, 2021).

1.1. Literature Review

The housing market and their price volatility are unpredictable, often leading to economic bubbles. In this way the economic performance is hindered because of immediate and continuous increases in house prices compared to their basic value (Kritayanavaj, 2008). The basis of macroeconomic factors that determine changes in housing prices are mainly gross domestic product (GDP), mortgage rates, inflation rates and those of the exchange rate (Garber & Shiller, 2003). Numerous empirical evidence has been found in various literatures

that emphasize the connection of these economic factors considered with the changes in house prices around the world.

1.1.1. Empirical Evidence

According to an empirical analysis, during the research of the movement of real estate prices in China, it was found that an increase in GDP, significantly affects the change in prices, understanding this result as more than 11% of GDP are in residential property investments (Ping-Ma, 2010). A close relationship between GDP and the market price of housing has been examined by many researchers. An increase in GDP has a direct impact on the increase of house prices. This important factor drives international markets and has a global power (Adams & Füss, 2010). On average, during statistical analysis, the correlation coefficient of GDP varies from 0.33 to 0.44 (Case, 2000). However, the long-term contribution of GDP does not exceed 10% of the change in housing prices and this evidence is derived from a study conducted in 17 industrialized countries, the variance of which managed to show this conclusion (Tsatsaronis & Zhu, 2004). Other empirical evidence shows that house prices increase in the long run by 0.6% in response to a 1% increase in GDP.

As we can understand from the above results, different authors share different evidence, but that is essentially the same logic that exists between the two variables under consideration. But, on the other hand, there are others who say that these two factors have an inverse relationship between them. So, the GDP rate negatively affects the price of houses, further revealing that globalization has a stronger effect on the movement of these prices (Ley & Judith, 2010). Below we will present evidence which belongs to the other influential factor in the change of house prices, which is inflation. A simple notion or definition of inflation is that it refers to the, steady rise in prices for a large range of goods across the country over a period of time (Schneider, 2009).

As a result of such symptom, it is emphasized that a high inflation rate causes an increase in prices of the housing market (Schneider, 2009). Others concluded that inflation is a key indicator that influences changes in house prices and less real changes in mortgage rates (Brunnermeier & Julliard, 2008). Of course, a country also faces the inflationary environment, where like everything else the prices of goods increase. So inflation is a factor that significantly affects the increase of house prices. An impact on the movement of changing house prices occurs after the time when inflation values are increasing or decreasing (Kahveci, 2018).

Even in this case we can see that often the authors combine their findings with the theoretical aspect mentioned above in the general theoretical framework. However, there are studies that show that the inflation rate is not one of the most dominant or determining factors in changing the price of homes (Tan, 2011). From a general point of view we can understand that there is no strong empirical evidence that makes inflation appear as a very dominant factor in the impact of household changes, but this can only happen in special cases or the temporary financial situation in it. Other regression conclusions show that GDP growth rate and inflation have a positive trend in the rising of house prices and otherwise can be said for a real interest rate which has no particular effect (Andrews, 2010).

The last factor that will be examined in this literature, but which is of a very important value in this paper is the mortgage rate (Islamoglu & Nazlioglu, 2019). Various empirical literatures have studied the sensitivity of mortgage rates in the housing market. Among the most commonly used approaches is the use of a single series of house prices and the model of its change through the use of vector autoregressions (VAR) or panel data on specific countries. We can emphasize that time series studies estimate the effect of the mortgage rate

on house prices to be with a correlation of 0.3% and 0.9%, and the effects that belong to approximately half the elasticity between 3 and 9 (Kuttner, 2014). Also, the effects of house price estimation can be matched by large speculative bubbles in the housing market markets, such as the one in the period 2000-2007.

We all know and are aware that everything in that economic bubble during those times of 2007, started exactly from a fraud and manipulation of the mortgage rate and of course this would undoubtedly affect the change of price increases leading them to a quite large boom, so in a fairly high increase of house prices at that time. Mortgages which have a planned mortgage rate increase, such as those with higher interest rates and hybrid, should exist in countries with the highest house price rating (Piskorski & Tchisty, 2011). In order to reinforce this, we can add that this higher house price rating is also accompanied by an increase in mortgage rates and inverse (Krainer, 2010). Mortgage rates affect quite significantly the change of house prices. Various empirical studies have been presented which confirm this. It has been proven that if we have a decrease in mortgage rates from 6% to 5%, this can reduce the cost of maintaining a home by up to 16% and thus leading to an increase in the price of homes by 13.6% (Hubbard & Mayer, 2009). Other empirical studies which have been researched show that if there is a decrease in mortgage rates of 1%, then this result will be accompanied by an increase in house prices by 8% (Hubbard & Mayer, 2009). This opposite relationship in the case of the mortgage rate where we can have a decrease in 0.3% (Adams & Füss, 2010).

In conclusion of this, according to another analysis at the international level, it turns out that house prices, although they can usually depend on inflation or GDP, changes in the mortgage rate are of particular importance and this factor is a statistically significant variable (Tsatsaronis & Zhu, 2004).

1.1.2. Literature related to Albania

Given the fact that, literature related to the variables taken into consideration during this paper are missing in the case of Albania, which is also identified as a gap and limitation for the study, then below it is included a general view about literature in terms of macroeconomic related with our country. Studies show that if we refer to the liquidity of the banking sector and the GDP of the country and the impact that these variables have, not only directly on the house prices, but also on the loans taken in connection with the purchases of a house, they show that there is a positive relationship of these variables (Vika, 2009).

Furthermore, other authors studied the determinants of mortgage lending in Albania and identified that there is a cointegrating relationship between the above variable and real GDP, banking development and mortgage rates. According to them, when Albania is in a very good and stable macroeconomic situation and the policy helps to reduce credit costs, then lending will be at a higher level, so we will have an increase in credit supply in, including mortgage loans (Shijaku & Kalluci, 2011). During these years, various authors have conducted various studies on the impact of mortgage loans on housing prices, referring to the country's capital, Tirana. Their study was built based on the method of dynamic estimation by means of small squares (DOLS), in a period from 1998 to 2010.

This study found a very strong empirical relationship between these two variables and their evaluation found that among the main factors that influenced the change in house prices were construction costs, income and, above all, mortgage loans. To further deepen their study, the authors decided to consider the impact of GDP and interest rates for obtaining mortgage loans. The relationship between dependent and independent variables turned out to be very strong and that there was a strong positive correlation between GDP and housing prices with

the demand for mortgage loans, while interest rates had a negative correlation between them (Suljoti & Hashorva, 2011). Regarding the approach after the economic crisis of 2007-2008, according to a study with a panel of 10 countries of Central and Southeast Europe, including Albania, it turned out that the decrease in GDP and the increase in prices (Inflation) was very high, proved to be a negative impact on the ratio of loans, mainly mortgages ones (Note and Suljoti, 2012).

1.2. Methodology

1.2.1. Population and Sampling

Since this study will be carried out through the archival research strategy, then secondary quantitative data will be presented and used in relationship to the macroeconomic variables considered, which will be collected mainly by the World Bank, INSTAT, "Bank of Albania", "International Monetary Fund" in Albania etc. Since these organizations include many databases, initially a general overview will be built regarding the housing market in Albania, then for the purpose and the main objective of this study will be used data on GDP- in, inflation, mortgage rates and house prices in Albania, but also data for other countries in the Balkan region comparing them with each other. Given that, due to the high political instability that Albania has encountered, mainly before the 2000s, this has led to a lack of data or inaccurate data that may unfairly affect the evaluation of the study, so consequently the period framework considered is from 2000 to 2020.

1.2.2. Methods of Collecting Data

First, it is important to note that the whole study is based on quantitative secondary data, which are data previously collected for certain purposes and will now be used for the current study (Lewis & Thotnhill, 2016). The selection of this method is directly related to the topic that this research will address, which requires a statistical analysis between variables. Moreover, this data requires less time to be collected and will be obtained from published electronic sources, where there is easier access to obtain the necessary information or in academic journals, where the information is found even more specific and more detailed (Kabir SMS, 2016).

1.2.3. Methods of Analyzing Data

To analyze the secondary quantitative data, inferential statistics will be used, as through this method we can study the relationship that exists between the considered variables as well as reveal the correlation that exists between them to further answer the research question (Inferential Statistics, 2021). So, all data will be processed through an econometric program such as "E-views" software, to further analyze econometric models built during the study. The study starts with a descriptive analysis, further deepening in the analysis of various tests such as: unit root test, lag-length criteria, Granger causality test and issuing the appropriate results to carry out an evaluation of the statistical model which will include its impact in the short and long term on the prices of residential houses.

1.2.4. Hypothesis

This study is designed under three research questions which will direct this study to the right path:

Impact of Consumer Price Index (CPI) on housing prices

H0=There is no significant impact of inflation on housing prices

H1=There is significant impact of inflation on housing prices which might be positive/or negative

Impact of Gross Domestic Product (GDP) on housing prices

H0=There is no significant impact of growth on housing prices

H1=There is significant impact of growth on housing prices which might be positive/or negative

Impact of Mortgage Rate on housing prices

H0=There is no significant impact of mortgage rate on housing prices

H1=There is significant impact of mortgage rate on housing prices which might be positive/or negative

2. Model Specification

Initially, the author emphasizes that Albania is a country that still knows a very high degree of informality and therefore the housing market in this country is informal, especially in the last two decades where it has undergone very important socio-economic developments, as can be seen To mention, foreign remittances, population movements, gross domestic product, interest rates, the financial crisis of 2007-2008, which brought high inflation, the pandemic crisis of COVID19 in the last years, the war in Ukraine etc. The analysis of this study, depending on the availability of data, consists of analyzing the impact of macroeconomic variables such as: gross domestic product (GDP), mortgage rates and consumer price index (CPI), on the change in house prices measured by the construction cost index and using the ARDL model, which is known as Autoregressive Distributed Lags Model.

The author has selected exactly this model in her study to evaluate the coefficients and investigate the selected variables in the long-term and short-term time frame over the years. In addition these time series data seek to be analyzed through time series models such as ARDL. Consequently, the empirical part of the study begins with the descriptive analysis of the variables to better understand how they behave. Since stationarity is one of the main characteristics of this data type, to perform augmented Dickey-Fuller (ADF) tests, the principles of (Dickey and Fuller, 1981) have been followed.

The author sets out the reasons and characteristics of the model selected in this study, based on the typology of data used and thus presents a clearer and more understandable overview of the econometric model on which the entire study will be based. Some of their unique features that make them are part of the time series data in economic terms are their clear trends and high resistance to shocks although they may have high volatility over the years. Thus, during their analysis, it is necessary to understand the behavior and interaction of the variables considered.

Having achieved this, the analysis of statistical models takes on a special meaning and the relationship between the variables that are of interest for the study is clearly expressed. The autoregressive character of these data must deal precisely with the fact that the present value of each variable under consideration is determined by its past value adjusted by several other factors known as "adjustment factors". As for the stationary and non-stationary series, this is related to the fact that their value tends in return to the long-term average and do not change over time or vice versa. The typical case of non-stationary series belongs to the macroeconomic variables of this study, where the Consumer Price Index (CPI) and GDP

(gross domestic product) change over time and do not attempt to return to a fixed average, but their variance and covariance varies over the time.

For this reason, the following econometric model will be examined in the unit root tests, since the series is non-stationary and contains a unit root. Two of the most popular methods for unit root testing are the Augmented Dickey – Fuller test, which is also the most used method, and the Phillips – Perron test, an alternative method known otherwise as a non-parametric test, but above all the ADF test is identified as the most reliable (Reader, Elsevier, 2021).

After performing the unit root test, which coincides with the start of the time series analysis, the cointegration and diagnostics tests are a very important part of the time series, as the latter aims to determine their falsity and sustainability. If all the data are non-stationary, then the Johansen cointegration test can be used to test the relationship and long-run relationship between the order variables 1. But since the time series in this study are presented as I (0) and I (1), the most suitable application is the ARDL model (Johansen, 1988).

On the other hand, this model together with its bound tests may be valid in small samples (Mah,2000). Thus, a cointegration test was initially performed to determine whether the most appropriate model would be the ARDL model or the Error Correction Model (ECM) (Shin & Smith, 2001). In this way the hypotheses are defined, where one is known as the null hypothesis (H0), which shows the non-existence of a long-term relationship between the variables and the other as the alternative hypothesis (H1) which expresses the opposite of the null hypothesis (Matuka & Asafo, 2021).

Thus, the model will define an F-statistics for both bounds and based on this element the decision is made regarding the variables and hypotheses raised. If the value of F-statistic is higher than the critical value of the upper bound in the evaluation of the long-run model, then the null hypothesis is rejected and vice versa. Otherwise, it is preferable to evaluate a short-run model (Reader and Elsevier,2021).

The author has presented below the generalized function of the ARDL model:

$$Y_t = Y_c + \sum_{i=1}^p \beta_i Y_{t-i} + \sum_{j=1}^q \beta_j X_{t-i} + \varepsilon_{jt}$$

$Y_{t-i} \rightarrow$ Vector

$X_{t-i} \rightarrow$ Possible stationary variables at levels and first differences

β_i and $\beta_j \rightarrow$ The coefficients

$Y_c \rightarrow$ The constant

p & $q \rightarrow$ The number of lags

$\varepsilon_{jt} \rightarrow$ The error term.

Thus, in this way the impact of macroeconomic variables such as: Gross Domestic Product (GDP), Consumer Price Index (CPI) and the mortgage rate on dwelling prices in the case of Albania will be assessed.

3. Results

Consumers Price Index (CPI)

The chart below shows the level of inflation in the country during the years 2000-2020. The two culminating points coincide with 2002, where the highest value was recorded over the

years (8) and the year 2010, which coincides with the sharpest decline ever (-4). According to this chart, the year 2002 corresponds to the reduction of the Bank of Albania's control over interest rates, replacing them with other indirect instruments as well as with the approval of repos at a rather high one-week price of T-bills. All this period was very difficult, and the Albanian economy faced a great transition, going further into the financial crisis of 2007-2008. At the time, the monetary policy pursued by the central bank caused the debt level to rise to 70% of GDP, so at this point it decided to forecast a deficit reduction, thus calming the market (Bank of Albania, 2021).



Figure 1. Consumers Price Index (CPI)
Source: (World Development Bank)

Gross Domestic Product

In Figure 11, we show the Gross Domestic Product in US \$ which there has been an increase until 2008 followed by a mild reduction in 2015. After that, the production has increased again, and the sharp decrease corresponds to the construction of Trans Adriatic Pipeline AG (TAP) which is normally reflected in the domestic product of Albanian economy (Bank of Albania, 2021).

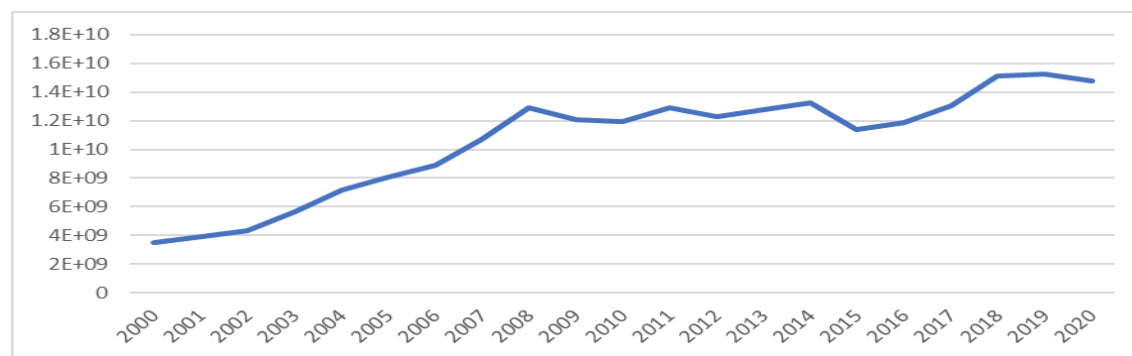


Figure 2. Gross Domestic Product
Source: (World Development Bank)

Mortgage rate for house purchase

Among the important influential factors studied in relation to house prices is undoubtedly the mortgage rate. The chart below shows the trend of this rate over the years in Albania, reported by the Central Bank. This rate of home purchase consists of a steady downward trend over the years and has not experienced high volatility from year to year, keeping the housing market in a stable equilibrium:

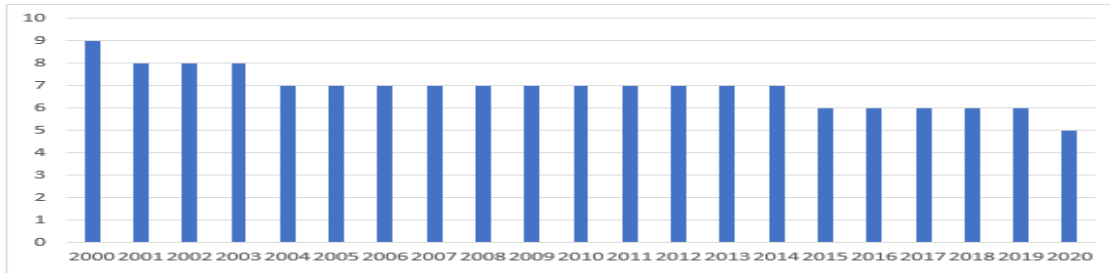


Figure 3. Mortgage rate for house purchase

Source: (World Development Bank)

Descriptive Statistic

The author begins her study analysis with a descriptive statistic on the variables included in the empirical approach, analyzing its core component mainly for gross domestic product and Consumer Price Index. The following table presents the mean, standard deviation, and minimums & maximums for the above variables. According to the results presented below, it turns out that GDP has the highest value of the average and standard deviation, while the CPI represents the lowest average and at the same time the construction cost index again represents a high value of the standard deviation.

Table 1.

Descriptive statistics

Variable	Mean	Std. Dev	Min	Max
CPI	1,99	2,16	-4,29	7,77
GDP	1,06e+10	3,73e+09	3,48e+09	1,53e+10
CHI	109,37	14,22	77,17	18,8
R	6,9	0,88	5	9

Source: (Author's calculations / E-Views Software)

Notes: *, ** and *** refer to 10%, 5% and 1% levels of significance.

Unit root test

Next the analysis continues with the unit root test using the ADF test (Augmented Dickey-Fuller) and in the table below, exactly in the first four columns, the variables are presented according to the log form, then the intercept and without trend model is presented, intercept and trend model and finally without intercept and trend model. The other columns present the same models but in the first difference. From the following findings it appears that some of the variables are stationary at levels and some others are stationary in the first difference and what matters is the fact that none of the variables is stationary at secondary difference, so the author is assured to use the ARDL model in this case.

Table 2.

Unit root test

Variable	T _u	T _t	T	First Difference	T _u	T _t	T
CPI	11,40***	11,38	11	ΔCPI	10,35***	10,60***	11,02***
LGDP	20, 40 **	18,24**	19,27***	ΔLGDP	18, 38***	18,50***	19,02***
LCHI	19,98**	19,01***	18,89***	ΔLCHI	19**	19,05***	18,89***
LR	8,7**	9,8**	9	ΔLR	9***	9,5***	10***

Source: (Author's calculations / E-Views Software)

Notes: *, ** and *** refer to 10%, 5% and 1% levels of significance.

Lag length

Continuing further, after the unit root test has been performed, the analysis continues with the specification of the appropriate number of lags, thus evaluating the VAR model. The table below also presents the criteria used which are: Likelihood ration, Final prediction error and Schwarz information criteria, according to which it is identified that there is a lag as the optimal level. Also, the author checks the existence of a long-term relationship between the variables through the bound tests cointegration and according to this test of Johansen, it turns out to be invalid, so the Bound test must be performed, which is determined based on two hypotheses (Smith, 2001). The null hypothesis has to do with the fact that there is no cointegrating equation between the variables and the alternative hypothesis that asserts the existence of this cointegrating equation. Depending on these hypotheses, conclusions are reached whether to evaluate since an error correction model in a long-term relationship, or using an ARDL model, in the case of a short-term relationship.

Table 3.

Lag Length Criterion

Model	Lag Length	Criterion
	1	LR, PFE, SC

Source:(Author's calculations).

LR, likelihood ration; FPE, final prediction error; AIC,

Akaike information criterion; SC, Schwarz information criterion

Bound Test

The results in the table below show that there is a long-term relationship between these series and that they are cointegrated with each other. Thus, if it turns out that the variables are cointegrated, this means that shocks in the short run can converge in the long run and proper evaluation is performed through the ARDL and VECM model.

Table 4.

Bound test

Bound Test	Wald F-statistics
Model	800***

Source: (Author's calculations / E-Views Software)

Notes: *, ** and *** refer to 10%, 5% and 1% levels of significance.

Short-run and long-run coefficients

Below are presented the short-term coefficients belonging to the ARDL model, where it can be said that the mortgage rate does not seem to have an impact on housing prices in the short-term, as also mentioned in the previous literature. While in the long run, almost all macro variables have a substantial impact on dwelling prices.

Table 5.

Short-run coefficients

Variable	Coefficient
C	0,17*
CPI	-0,20**
GDP	1,87***
R	0,57

Source: (Author's calculations / E-Views Software)

Notes: *, ** and *** refer to 10%, 5% and 1% levels of significance.

Table 6.

Long-run coefficients

Variable	Coefficient
C	1,5*
CPI	0,87**
GDP	2,01***
R	0,97**

Source: (Author's calculations / E-Views Software)

Notes: *, ** and *** refer to 10%, 5% and 1% levels of significance.

Diagnostic tests

All diagnostic tests are performed, including the normality tests (Jarque-Bera), the heteroskedasticity test (Engle's ARCH test) and the autocorrelation test (Breusch-Pagan test), thus ensuring that the model under study is strong and reliable or not. According to the found remains of the model, it appears that all battery tests have been passed successfully. Also, to show stability, Cusum and Cusum of Squares (CCSQ) tests were also performed, which turned out to be stable with a significance level of 5%.

Table 7.
Diagnostic tests

Test	Value
ECM (-1)	0,92**
R^2	0,89
Normality	0,10*
ARCH	0,82
Correlation	0,52
CUSUM/CUSUM SQUARE TEST	Stable

Source: (E-Views Software)

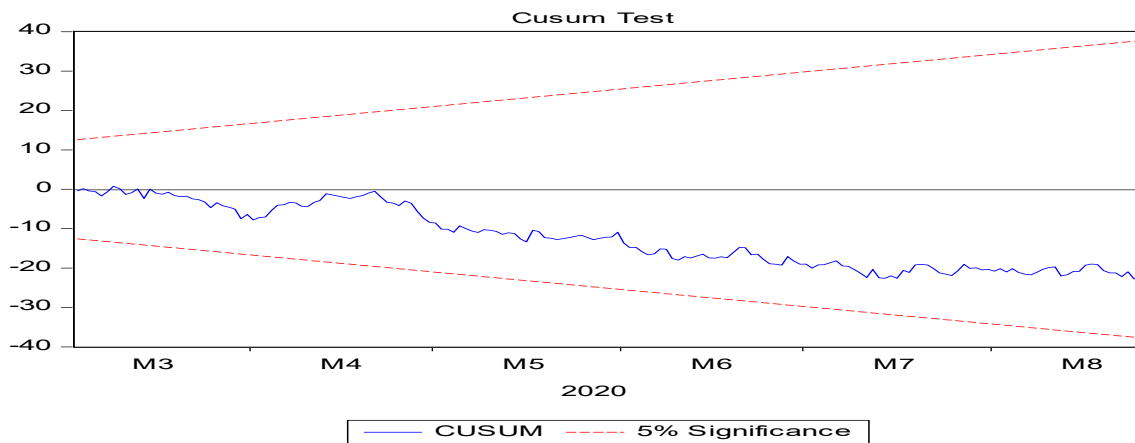


Figure 4. Cusum Test

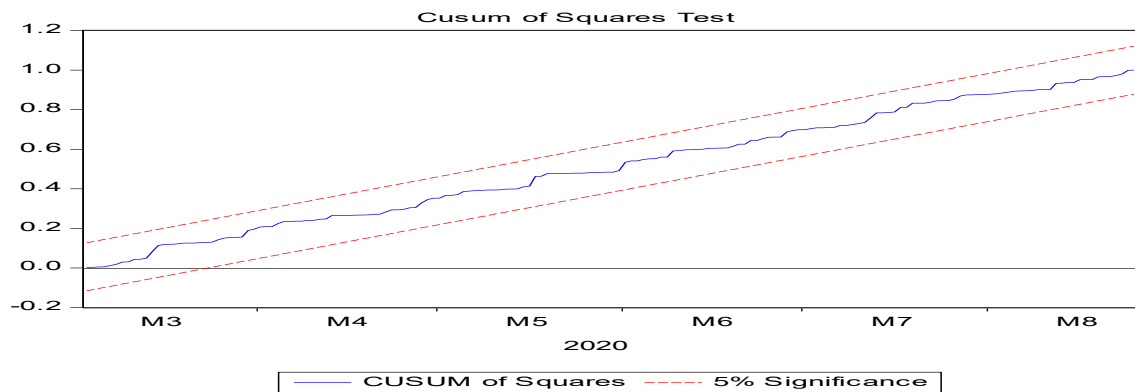


Figure 5. Cusum of Squares Test

Source: (E-Views Software)

According to the research findings, considering the three hypotheses raised in this study, the author concludes that: first the zero hypothesis falls, which stated that inflation had not an impact on house prices and the alternative hypotheses of the two other variables stand, supporting the fact that gross domestic product and mortgage rates have a particular and substantial impact on house prices.

4. Discussion

If we refer to the short-term framework, the results show that inflation (CPI) and gross domestic product (GDP) have a significant impact on the change in house prices. The findings show that the link between inflation and house prices is an inverse relationship,

which means that when inflation decreases by one unit, then, it makes it possible to increase house prices by 0.2%, while gross domestic product increases by 1.87%, so there is a positive correlation. But these results are always for only a short period of time, which can change a lot when we talk about the long-run aspect. The focus of this study is exactly on the impact of a long-term period, as this is the indicator which shows the interaction of variables, thus measuring the real impact that macro factors have on the economy.

As the literature on the impact of macroeconomic variables on house prices referred to other countries is extensive, it happens that the findings of different researchers are different depending on the point of view or treatment of their study, in terms of the factors taken into consideration above. The author shows that according to the results of her study, the relationship that exists between inflation and house prices is a positive relationship, where she emphasizes that if inflation rates increase by 0.87 units, then house prices respond to the same way. So, the author's conclusions are related and are like other studies, whose findings have shown the same impact and relationship of these variables.

Researchers, using the autoregressive model of the error correction vector and investigating how macro variables such as inflation (CPI) or mortgage rates have affected house prices, they have identified a positive correlation between these two variables (Apergis & Rezitis, 2015). Based on this fact, it is understood that during the inflationary periods in Albania, the price of housing increases and at the same time the incentive of people and the demand to invest in the purchase of a house decreases. Findings in the long run show the relationship between gross domestic product (GDP) in relation to house prices, having an impact and a direct relationship between them. When GDP in the country increases by 2% then the wealth in the economy increases, thus increasing the price of housing in the market (Su et al, 2017).

Regarding mortgage rates, in the above study it was found that their impact in the short term is almost invisible in the long term. The findings show that the relationship that exists between mortgage rates and housing prices is fair. When the mortgage rate increases by 1%, then this would lead to a change in the price of housing by increasing it by 0.97%. Adding here one last detail which is also related to the cost of lending, which means that similar studies have shown that increasing the mortgage rate, will immediately increase the cost of lending, thus leading to more high valuable prices of dwelling.

5. Conclusion

The author emphasizes that global development has made the housing market a priority and to pay more special attention compared to other sectors, thus offering all individuals the need for affordable housing and within the basic value of assets. Although, urbanization in such a short time, has made this problem deepen not only in the developing countries but also in those which are under development, as is the case of Albania. In this case, there are many families who face such problems, which are related to housing or providing funding to meet this basic need. Financing through mortgage loans may be easier for higher class individuals, compared to the other majority, who face repayment problems and related formalities.

As a result, all of this is reflected in the low ratio of mortgages to gross domestic product of the country's economy, where a significant part of the population in Albania is poor and needs affordable housing costs. So, in a country like Albania, residential houses or in other words, the real estate market, is the most popular market, where individuals invest mainly their money or are mainly financed by the commercial banks.

For this reason, most of the loans issued, belong to mortgage loans in a value of approximately about 60% - 70% over the years. Given this fact, it seems that banks are highly

exposed to this phenomenon and in case of crises it may happen that all the risk is transferred to them, thus becoming one of the most discussed issues in recent years regarding the failure of mortgage loans. Also, the impact of macroeconomic factors on house prices and mortgage loans has been widely discussed by foreign authors, but regarding Albania their approach was lacking.

In general, the above hypothesis is important for the study, indicating that the alternative hypothesis cannot be rejected and is related to the impact of inflation, gross domestic product, and mortgage rates in the long run in Albania, from 2000 until 2020.

Descriptive statistics, performing the ADF (Augmented Dickey Fuller) level tests and differences were performed to ensure that all the variables considered are stationary. Furthermore, the author evaluated the VAR (Vector Autoregressive Model) and performed the cointegration to check and understand whether there was a long-term relationship between the variables under consideration or not. It was also important to understand if the series were integrated, to further evaluate the ARDL and VECM model.

The most substantial results from what was understood, according to the ARDL assessment, in the short term the mortgage rate is not significant and does not affect the price of housing, so in this case the zero hypothesis stands, and the alternative hypothesis falls. But in the long run the results reject the zero alternative for all macroeconomic variables considered. Finally, according to the battery tests performed, including Cusum and Cusum of Squares test, the findings of which show that the study model is robust and stable, and the value of the error correction term is negative, quite significant within the $[0, 1]$ range.

References

2022. [online] Available: https://www.researchgate.net/publication/314262317_Determinants_of_Housing_Prices_and_Bubble_Detection_Evidence_from_Seven_Advanced_Economies
2022. [online] Available: <https://www.worldbank.org/en/home>
2022. Institute of Statistics. [online] Available at: <http://www.instat.gov.al/en/home.aspx>
2022. Institute of Statistics. [online] Available: <http://www.instat.gov.al/en/home.aspx>
- Adams, Z. and Füss, R. (2010). Macroeconomic determinants of international housing markets, *Journal of Housing Economics*, (19), pp. 38 – 50. <https://doi.org/10.1016/j.jhe.2009.10.005>
- Andrews, D. (2010). Real House Prices in OECD Countries: The Role of Demand Shocks and Structural and Policy Factors, OECD Economics Department Working Papers, (831), OECD Publishing. Available: https://www.oecd-ilibrary.org/economics/real-house-prices-in-oecd-countries_5km33bqzhbzr-en
- Bank of Albania.org. 2022. Home. [online] Available at: <https://www.bankofalbania.org/home/> [Accessed 3 October 2021].
- Brunnermeier, M.K. and Julliard, C. (2008). Money illusion and housing frenzies. *Review of Financial Studies*, (21), pp.80-135. <https://doi.org/10.1093/rfs/hhm043>
- Case, K., Quigley, J. and Shiller, R. (2005). Comparing wealth effects: the stock market versus the housing market, NBER Working Paper Series, (8606). <https://doi.org/10.2202/1534-6013.1235>

- Dickey, D. A and W. A. Fuller. (1979). "Distribution of the Estimators of Autoregressive Time Series with a Unit Root." Journal of the American Statistical Association, (74), pp.427–431. <https://doi.org/10.1080/01621459.1979.10482531>
- Dickey, D.A., and Fuller, W.A. (1981). Likelihood Ratio Statistics for Autoregressive Time Series with a Unit Root; Econometrica, (49), pp.1057–1072. <https://doi.org/10.2307/1912517>
- IMF. 2021. Albania and the IMF. [online] Available : <https://www.imf.org/en/Countries/ALB>
- Islamoglu, B. and Nazlıoglu, S. (2019). EnflasyonveKonutFiyatları: İstanbul, Ankara ve İzmir için panel verianaliz, Siyaset, EkonomiveYönetimArastırmalarıDergisi, 7(1), pp. 93-99. Available: <https://dergipark.org.tr/en/download/article-file/1021175>
- Johansen, S. (1988). Statistical Analysis of Cointegration Vectors. Journal of Economic Dynamic Control, 12 (3), pp. 231–254. [https://doi.org/10.1016/0165-1889\(88\)90041-3](https://doi.org/10.1016/0165-1889(88)90041-3)
- Kabir, S.M.S. (2016). Basic Guidelines for Research: An Introductory Approach for All Disciplines. Book Zone Publication, ISBN: 978-984-33-9565-8, Chittagong-4203, Bangladesh. Available: <https://www.researchgate.net/publication/325846733>
INTRODUCTION TO RESEARCH
- Kahveci, M. (2018). Türkiye’deKonutFiyatlarınınBelirleyenleri: ÜçBoyutluAnaliz, _ İstanbul ÜniversitesiSosyalBilimlerEnstitüsü _ İktisatAnabilimDalıDoktoraTezi, _ İstanbul. Available: <file:///C:/Users/User/Downloads/518230.pdf>
- Krainer, J. (2010). Mortgage Choice and the Pricing of Fixed-Rate and Adjustable-Rate Mortgages. FRBSF Economic Letter, (3), pp.22-35. Available: <https://www.frbsf.org/economic-research/files/el2010-03.pdf>
- Kritayanavaj, B. (2008). Housing and real estate bubbles: Thailand's boom and bust cycles, Housing Finance International, 23(2), pp. 3–11. Available: <https://journals.sagepub.com/doi/10.1080/02690941003741184>
- Kuttner, K. N. (2012). Low Interest Rates and Housing Bubbles: Still No Smoking Gun, in The Role of Central Banks in Financial Stability: How Has It Changed?, World Scientific, pp. 159–185. https://doi.org/10.1142/9789814449922_0008
- Ley, D. and Judith, T. (2010). Immigration, Globalization and House Prices in Canada’s Gateway Cities. Journal of Housing Studies, pp. 199-223. <https://doi.org/10.1080/02673030120038483>
- Mah, J. (2000). "An Empirical Examination of the Disaggregated Import Demand of Korea – The Case of Information Technology Products." Journal of Asian Studies, (11), pp. 233–244. [https://doi.org/10.1016/S1049-0078\(00\)00053-1](https://doi.org/10.1016/S1049-0078(00)00053-1)
- Piazzesi, M. and Schneider, M. (2009). Momentum Traders in the Housing Market: Survey Evidence and a Search Model. American Economic Review: Papers & Proceedings, pp.406-411. <https://doi.org/10.1257/aer.99.2.406>
- Ping-Ma, Q. (2010). Housing market in China's growth recovery and house price determination. United Kingdom: Annual Conference. Available: <https://ceauk.org.uk/2010-conference-papers/full-papers/Qing-Ping-Ma-CEA-final.pdf>
- Piskorski, T. and Tchisty, A. (2011). Stochastic House Appreciation and Optimal Mortgage Lending. Review of Financial Studies, 24(5), pp.1407-1446. <https://doi.org/10.1093/rfs/hhq152>

- Saunders, M., Lewis, P. and Thornhill, A. (2016). Research methods for business students. 7th ed. Harlow: Pearson Education. Available: [https://www.scirp.org/\(S\(351jmbntvnsjt1-aadkposzje\)\)/reference/ReferencesPapers.aspx?ReferenceID=2397725](https://www.scirp.org/(S(351jmbntvnsjt1-aadkposzje))/reference/ReferencesPapers.aspx?ReferenceID=2397725)
- Tan, Y. K. (2011). An Hedonic Model for House Prices in Malaysia. International Real Estate Society Conference, pp. 12-15. Available: http://www.prres.net/papers/tan_an_hedonic_model_for_house_prices_in_malaysia.pdf
- Tsatsaronis, K. and Zhu, H. (2004). What Drives Housing Price Dynamics: Cross Country Evidence, BIS Quarterly Review, March, pp. 65-78. Available: https://www.bis.org/publ/qtrpdf/r_qt0403f.pdf
- Wang, K., Lee, Y. and Nguyen, T.T.B. (2008). Asymmetric inflation hedge of housing return: A nonlinear vector error correction approach, 11(1), pp. 65-82. Available: https://www.um.edu.mo/fba/irer/papers/past/vol11n1_pdf/Article%203.pdf