



The Dynamic Transformation of the Real-Estate Market in Romania

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ABSTRACT

Today's political and economic situation has affected, among others, the relationship between the real estate market and the financial market. The ever-changing shape of the variables in the Romanian real estate market provide an important perspective on this economy sector and the generated results can be useful for all players on the market, especially when it comes to making portfolio-related decisions.

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1. Introduction

The Romanian real-estate market was affected by important historical events and also quite radical changes: the nationalization during the communist era (all properties belonged to the communist state), the return of real estate properties to their former owners during the post-communist era, the growth of the market after Romania's becoming a part of the European Union, the 2008 economic crisis. In spite of all that, the Romanian real estate market evolved and adapted to the economic and social changes. Nowadays, the market has to face numerous challenges, which require it to adapt and evolve even further: higher prices, inflation, the war in Ukraine, the real estate standstill, various factors negatively affecting people's purchasing power and also investing and development opportunities.

The real estate market has grown especially due to the wish of the Romanian people to own property. This led to Romanians scoring the highest percentage in house and apartment owning, with no less than 96.1%, compared to the EU average, which is only 70%. Investing in real estate can be very interesting, because it fulfills the middle-class need for autonomy and personal accomplishment [1].

People's income and especially discretionary income dictate investment objectives in Romania. Thus, the lower-income part of the population will be interested in buying a house or different goods, while the higher-income part of the population will invest in financial instruments, while also taking into account their ease of access, risks, yield and liquidity. Household savings can be a way to attract internal and build-up capital in a country, considering that the government and private companies can use these savings as a source of funding.

Saving or investing? Savings and investments are the two main ingredients composing the capital of every country. There are several options available for both saving and investing [2], both individually and macroeconomically. There are numerous factors influencing the balance towards saving or investing. Thus, the amount and the objectives of saving represent the factors which stimulate household savings, while risk and return factors stimulate the decision to invest in financial instruments. All these factors are tightly connected [3]. Essentially, they depend on market transparency and the population's trust in the banking system.

Like in any other economic sector, when it comes to real estate, the price is set by the ratio between demand and supply, but it can be also significantly altered by other factors: price fluctuations in the market of construction materials, price fluctuations for land and construction, wage fluctuations inside the work force and especially the one involved in the real-estate field, very specific legal demands, financial and banking policies and national or international economic forecasts [4].

The real estate market [5]: is a significant part of the national economy and has a very important role to play when it comes to achieving national stability and economic development goals. For this reason, a large number of authors have examined the influence of macroeconomic variables on real estate price trends from various perspectives and by using different approaches and methods.

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High inflation, which reduces the purchasing power of the population and erodes savings, will encourage people to protect their savings by buying property, and we have seen this trend manifesting itself during the pandemic, when a price divergence phenomenon could be observed, respectively the increase in real estate prices in certain areas considered attractive by the population [6].

Income, gross domestic product, inflation rate and exchange rate have all short-term and long-term effects when it comes to housing prices, while interest rates, diaspora remittances, construction output and urban population do not affect housing prices significantly, [7] neither on the short term nor on the long term. Specialized literature has approached the evolution of prices in different manners, depending on the factors which had to be analyzed. Thus, Bitila Shosha, Armela Anamali, Alma Zisi carry out a descriptive analysis of the main factors affecting the real estate market in Albania, stating that the important ones would be: price, economic growth, interest, interest rates, bank lending, demographic trends, exchange rate and GDP/place. [8]. Real-estate also have an impact in the financial and banking fields. Under these conditions, the credit market is an imperfect market in which information is asymmetric to the same extent as the existing asymmetry between creditor and debtor.

The effects of the change in housing prices on the bank lending decision have been highlighted by specialized literature, based on the fact that there is a positive correlation between real estate prices and bank loans in both developed and developing countries [9].

The need for capital and the financing capabilities are both important aspects, which connect the real estate market and the financial and banking markets. The relationship between capital and financing is approached differently by specialized literature. Belotti [10] analyzes the importance of a stable relationship between the state and financing, while Chang Chen, Haoyu Zhai, Zhiruo Wang, Shen Ma, Jie Sun, Chengliang Wu and Yang Zhang consider the relationship between capital and financing to be important in the macro-control of the real-estate market from China [11].

Real estate loans were and will remain an option for the purchase of a real estate property, and consumers of real estate loans have changed their behavior under the pressure of certain situational factors. In order to support this assertion, we can state that there are factors that lead to a certain behavior of the individual, respectively a speculative one and one that encourages lending. Shuai Shao & Hong Bo analyze mortgage loans in China from the perspective of the factors generated by the asymmetry of information and the transparency of the financial market, factors that lead to a certain behavior of the individual, respectively to a speculative one and another one which stimulates lending [12].

The decrease in the interest rates makes investments in real-estate attractive, as they are considered as safe investments.

Ogotu Austine Odhiambo and Dr. Benjamin Ombok analyzed the importance of real estate investment from the perspective of future income streams and the difficulties faced by real estate investors in Kenya, such as, for example, the increase in the cost of credit, irregular changes in the exchange rate, fluctuations significant interest rate fluctuations due to the fact that residential real estate properties are mostly debt-financed and unstable interest rates affect their market prices [13].

Romanians have to face an economic system full of uncertainties, generated by income levels, inflation, the high value of the ROBOR and IRCC indicators when making a decision to purchase real estate property and paying with real-estate loans. In 2023, considering the low demand for mortgage loans, the banking system changed the offers in its portfolio, also adjusting the level of mortgage interest. Real estate prices in Romania are high and will continue to rise, because for this sector there is practically no mechanism to temper the decrease in the cost of raw materials, labor, utilities, the monopolization of the construction materials market, with everything concerning the business ecosystem in this sector. Beside that, the increase in prices was also due to the alignment of prices with the ones in the European Union.

The increasing inflation influenced the price of construction materials, an increase which was also reflected in the dynamics of the real estate market. In addition to the psychological impact, the war in Ukraine also influenced the dynamics of the transactions made on this market, our country being on the border with this conflict zone, so that investing in a property was also considered from a perspective of safety concerning the population. Generally, real estate loans, followed the market trend, with a constant demand, regardless of the ever-increasing prices. Real estate loans existed before and will continue to exist regardless of IRCC or ROBOR values, these indicators evolving naturally along with the financial market and reflecting its evolution at any given moment.

Lending conditions, inflation, the increase in construction costs and the conflict in Ukraine are factors that have significantly influenced the evolution of the real estate market directly correlated with the financial and banking sectors. The increase in the interest rates for housing loans led to the worsening of lending conditions, limiting the population's access to such loans, which implicitly changed the behavior of buyers in relation with the financial market. Thus, we are talking about consumers who are much more cautious with their own financial resources in making major purchases on the real estate market, consumers who are less willing to put pressure on their personal budgets and personal level of indebtedness.

The real estate market in Romania still has the potential for growth, even if the growth rate is significantly slower, compared to its evolution before the pandemic, in general, due to the developers in this

sector who transferred their businesses to large commercial projects and to the dynamization of the residential market, to the development of the industrial segment and that of the office segment. The decrease of inflation and the support for the increase in salary income could contribute to the increase in the population's desire to spend or invest in real estate, aspects which will be reflected in the increasing transactions on the real estate market. The overcrowding of the big cities, and the increased degree of accessibility to the residential market will contribute, in the long term, to an increase in its demand. On the other hand, the relaxation of the monetary and fiscal policies, accompanied by the increase of salary income of the population will raise the interest in acquiring of real estate properties to a very high level and this will reflect, moreover, in the dynamics of loans made for this purpose. The high interest rates and the depreciation of the exchange rate are affecting and will keep affecting in a negative manner the credits granted to the population, from the perspective of an increasing risk of non-payment for the contracted credits and of a decreasing in the ability to pay the debts accumulated by the banking system.

There are numerous systemic risks in the real estate sector [14], because each national and regional market is affected by the same macroeconomic factors, such as interest rates. In the current economic system, when considering the financial and banking markets, there are numerous risks which can prevent the population from contracting loans in order to acquire real estate properties. First of all, the occurrence of certain dysfunctions from a macroeconomic point of view in all economic sectors and the existence of a very uncertain legal framework, especially in banking, directly impact the solvency of the population and also on the financial and banking fields themselves. Secondly, the possibility of increasing financing costs due to the increase in interest rates together with the depreciation of the national currency, lower the capability of the population to contract loans and to pay for them, which also affects the banking field. In addition, we are talking about factors that limit both the population's access to loans and also the dynamic of the economic system as a whole, such as: fiscal policy, budget policy, volatility of discretionary income, depreciation of national currency, inflationary pressure that erodes the savings of the population.

2. Data and results

The real estate sector's ability to adapt to various changing circumstances is conditioned by numerous challenges for buyers and business prospects for developers, especially when it comes to an economy where there are mostly owners. The preference of Romanians to invest their own savings in houses and land is much more attractive than the preference for liquidity and the openness to the use of certain financial instruments in order to increase their own income, which is affected by economic instability, inflation, unemployment, but also by distrust in the banking system.

Like the other markets composing the Economy, the real-estate market is permanently adapting, to both buyer needs and the global economy dynamics. The transaction volume for this market increased every year, in spite of the limitations imposed on its dynamics in time. The motive behind this research is to emphasize a paradox which characterizes romanian buyers: that of owning real-estate properties in spite of low discretionary income and a very dynamic economic environment.

In order to emphasize the causality between the banking and the real-estate markets and also the dynamics between them, we employed the error-correction vector model (VECM) for our analysis. This correction model allows us to estimate the analyzed economic variable system, the same time emphasizing any short-term diversions. The model considers both actual values and the past ones for the real-estate index, interest rates, loans and the population's average income, which provides a more accurate analysis for the dynamics of the real-estate market and its relationship with the banking sector and also a more precise forecast when it comes to analyzing the dynamics of these variables.

Considering that the evolution of any market is conditioned by a multitude of factors and conditions that are difficult to quantify and explain, the variables chosen for the model are: loans, the real estate index (IMO), interest rates and the income of the population. The modeling data is provided by official sources (the National Bank of Romania and the National Institute of Statistics) and is analyzed dynamically over a period of 11 years, starting with the third quarter of 2012 and ending with the third quarter of 2023, and the VECM type model has the following pattern:

$$Y_t = \alpha_0 + \alpha_1 X_{1,t} + \alpha_2 X_{2,t} + \dots + \alpha_{k-1} X_{k-1,t} + \beta_1 ECT_{1,t-1} + \beta_2 ECT_{2,t-1} + \dots + \beta_{k-1} ECT_{k-1,t-1} + u_t$$

where:

- Y_t – is the $K \times 1$ dimension vector for the endogenous variables at the t time frame;
- $X_{i,t}$ – are the exogenous variables, that is to say the ones which determine the trend influencing the endogenous variables;
- $ECT_{i,t-1}$ – represent the error-correction terms correspondent to the co-integration relationships between the variables;
- α_i – coefficients associated to the exogenous variables;
- β_i – coefficients associated to the error-correction terms;

- u_t represents the $K \times 1$ error-dimension vector at the t time frame.

Table 1 shows that all 4 data series are 1st order stationary, which leads to applying the VEC model (Vector Error Correction).

Table 1. Analysis of the stationary time frame series

	Credites		Real estate index (IMO)		DAE		Income	
	t-statistic	Prob*	t-statistic	Prob*	t-statistic	Prob*	t-statistic	Prob*
<i>Augmented Dickey-Fuller test statistic</i>	-3.165	0.030	-2.766	0.073	-3.273	0.022	-6.781	0.000
<i>1% level</i>	-3.610		-3.610		-3.592		-3.592	
<i>5% level</i>	-2.939		-2.939		-2.931		-2.931	
<i>10% level</i>	-2.608		-2.608		-2.604		-2.604	

Analyzing the lag selection criteria, the optimal delay can belong to the 3rd order, which is suggested by the Akaike criterion (AIC) (Table 2).

Table 2. Establishing the coefficient delay

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1620.543	NA	4.64e+28	77.35919	77.52469	77.41985
1	-1418.326	356.2869*	6.57e+24*	68.49172	69.31918*	68.79502*
2	-1403.747	22.90947	7.19e+24	68.55940	70.04883	69.10534
3	-1386.169	24.27539	7.06e+24	68.48422*	70.63562	69.27280

After estimating the VAR model, we proceeded to verify the co-integration test employing the Johansen test and we obtained the data presented in table 3.

Table 3. Johansen co-integration test

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	Critical Value 0.05	Prob.**
None *	0.628094	71.06260	47.85613	0.0001
At most 1 *	0.381825	30.50892	29.79707	0.0413
At most 2	0.208049	10.78860	15.49471	0.2248
At most 3	0.029439	1.225124	3.841466	0.2684
Trace test indicates 2 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Analyzing the data provided by the Johansen co-integration test, we can observe that the null hypothesis (there are no co-integration relationships between the time frame series) is being denied, thus the alternative hypothesis being accepted. We can also observe that the co-integration vector values are not zero (table 4).

Table 4. Vectors for the co-integration vector

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	Critical Value 0.05	Prob.**
None *	0.628094	40.55368	27.58434	0.0006
At most 1	0.381825	19.72032	21.13162	0.0778
At most 2	0.208049	9.563473	14.26460	0.2422
At most 3	0.029439	1.225124	3.841466	0.2684
Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

With the help of these two tests we can verify that the variables are tied to each other by one single long-term relationship which provides equilibrium. The co-integration equation provided by the Johansen test is present in table 5 and states that on a long term, IMO has a positive impact on loans, while the interest rate for real-estate loans and income have a negative impact on loans. The coefficients are statistically significant for a 5% significance threshold.

Table 5. Co-integration equation

Cointegrating Equation(s):		Log likelihood	-1340.208
Normalized cointegrating coefficients (standard error in parentheses)			
Credites	Real estate index (IMO)	DAE	Income
1.000000	-718328.2	5.83E+08	743045.4
	(86767.4)	(1.0E+08)	(151477)

To conclude, the null hypothesis concerning the lack of co-integration is being denied, and alternative hypothesis which states that there is a co-integration relationship inside the model is being accepted. Thus, the error-correction vector model looks like that:

$$\Delta credits_t = 0.156ECT_{t-1} - 0.395\Delta credits_{t-1} - 0.594\Delta credits_{t-2} + 470412.2\Delta IMO_{t-1} + 911410.6\Delta IMO_{t-2} - 1.45 * 10^8 \Delta DAE_{t-1} + 19398624\Delta DAE_{t-2} - 157640.5\Delta income_{t-1} + 75795.81\Delta income_{t-2} + 10289493$$

Beside that, the error-correction term value (ECT) or the co-integration vector has the following form:

$$ECT_{t-1} = [1.00 * credits_{t-1} - 774392.6 * IMO_{t-1} + 7.31 * 10^8 * DAE_{t-1} + 337162.2 * income_{t-1} - 1.99 * 10^9]$$

And is providing information on the long-term equilibrium relationship between new housing loans and the other variables included in the model. Thus, the deviation for the prior period from the long-term equilibrium is being corrected in the present time, with a 15.6% adjustment speed. In other words, the coefficient indicates that if there is a deviation during the prior period, it will be corrected in the present to a 15.64 percentage.

Each of the coefficients for the delayed variable differences impact the changes in the Δ credit (loan) variable as follows:

- the percentage change of real-estate loans negatively impacts loans on an average, when all other variables remain constant on a short term (there will be a decrease of loans, that is to say an increase of loan differences from prior periods);
- the price change for constructions per sqm will lead to a credit increase, that is to say they have a positive impact on housing loans if all the other variables remain constant on a short term;
- when it comes to loan interest rates, we can see that a closer period in time has a negative impact on loans, that is to say a one DAE unit increase representing a delayed difference, for the prior period, which will lead to a decrease in loans, while further periods positively impact loans;
- when it comes to average income per capita, the same like interest rates, we can observe the same impact (negative if we consider the prior period differences and positive on a long term).

Employing the error-correction model we observed that housing prices, interest and loans are co-integrated together, on a long term, into the actual value investments. This means that these three variables are linked to each other in a significant manner and that housing price changes influence loan and interest rates and this works both ways. Other economic factors, like population increase, unemployment, migration, inflation, construction, discretionary income, the tendency towards investment and consumption were also determinant factors in the dynamics of the real-estate market.

The results obtained with the help of modeling the variables integrated into the analysis which determine the evolution of the real-estate market dynamics provide an important perspective on this economy sector and the results can be used to predict the evolution of housing prices on a long term. Besides, the obtained results can be useful when making informed decisions concerning portfolio choices for all actors in the market.

3. Conclusions

The real-estate market today has to face a series of challenges from all directions, but remains attractive for the populace. The factors leading to increased prices for real-estate properties are: increased periods for finalizing constructions, increased edification costs, workforce crisis, increased manufacturing prices, increased construction materials prices, increased overall workforce costs. Also, we have to consider the increased interest rates, which drastically limit the access to the real-estate market. Beside the banking sector new regulations, real-estate markets will be globally affected, and especially in Europe, by the decreased purchasing power of average people and also by the exploding energy prices.

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