

**FEATURES OF PRICING OF THE MORTGAGE MARKET  
IN THE RUSSIAN FEDERATION AND THE REPUBLIC OF MOLDOVA  
(Part 2)**

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*In the second part of the article, based on the analysis of prices on the primary and secondary markets of residential real estate in the Russian Federation, carried out in the first part of the research, and study of the set of statistical indicators that reflect the status and development of the real estate market in Russia, there was carried out the measurement of relationship between the value of real estate on the primary / secondary markets and the volume of mortgage lending in Russian Federation, made up before the introduction of the current regulatory limit of interest rates on mortgages in Russian Federation. There were also considered are some statistical indicators on the development of mortgage real estate market in the Republic of Moldova, and there were studied trends in the development of primary and secondary real estate market, the scale of mortgage lending for different types of real property.*

**Keywords:** *mortgage, mortgage loans, residential mortgage loan (RML), residential real estate market (primary and secondary), correlation and regression analysis.*

*În partea a doua a articolului, în baza analizei prețurilor pe piețele imobiliare primare și secundare ale Federației Ruse, efectuate în prima parte a cercetării și studierii complexității indicilor statistici ce reflectă starea și dezvoltarea pieței imobiliare în Rusia, este efectuată măsurarea dependenței dintre valoarea bunurilor imobiliare pe piețele primare/secundare și volumul creditării ipotecare în FR, ce predomină până la introducerea reglementării normative a limitei ratelor la creditele ipotecare în această țară. De asemenea, sunt analizați anumiți indici statistici ai dezvoltării pieței imobiliare ipotecare în Republica Moldova, sunt cercetate tendințele dezvoltării piețelor imobiliare primare și secundare, scara creditării ipotecare pentru diferite tipuri de obiecte imobiliare.*

**Cuvinte-cheie:** *ipotecă, creditare ipotecară, credit ipotecar imobiliar (CII), piața imobiliară (primară și secundară), analiza de regresie și corelare.*

*Во второй части статьи на основе анализа цен на первичном и вторичном рынках жилой недвижимости в Российской Федерации, выполненного в первой части исследования и изучения совокупности статистических показателей, отражающих состояние и развитие рынка жилья в России, проведено измерение зависимости между стоимостью недвижимости на первичном/вторичном рынках и объемом ипотечного кредитования в РФ, сложившейся до введения нормативного регулирования лимита ставки по ипотеке в этой стране. Рассмотрены также некоторые статистические показатели развития рынка ипотеки жилья в Республике Молдова, исследованы тенденции развития первичного и вторичного рынка жилой недвижимости, масштабы ипотечного кредитования по разным видам объектов недвижимого имущества.*

**Ключевые слова:** *ипотека, ипотечное кредитование, ипотечный жилищный кредит (ИЖК), рынок жилой недвижимости (первичный и вторичный), корреляционно-регрессионный анализ.*

**JEL Classification: E51, F34, H81, L85, R3.  
CZU: 338.5:[336.77:332]**

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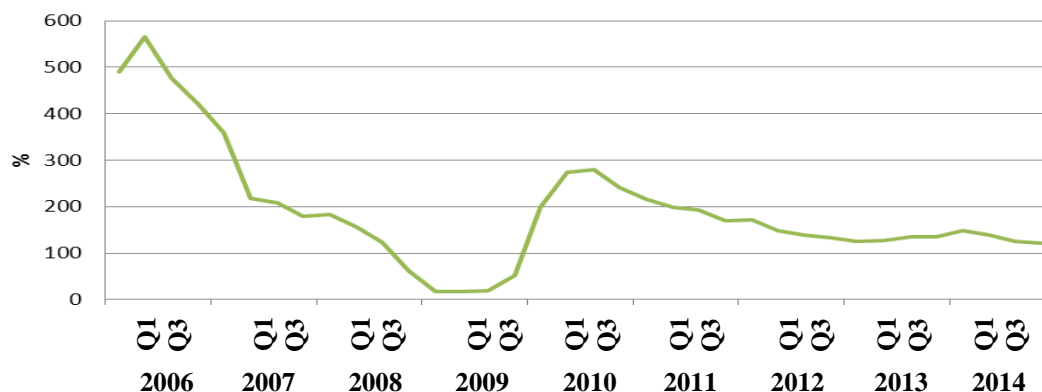
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**Introduction.** Real estate (and the real estate market) is currently an important object of economic research and analysis. The repeated setbacks and crises of the economy, the desire for a developed real estate market – all of these motivate market participants to constantly improve the tools of analysis of formation of the cost of the property and its assessment, as well as to study the impact of direct and indirect factors affecting the real estate market.

The importance of the mortgage market as the main instrument of social policy and its versatility determine the *relevance* of the study aimed at *identifying the relationship between the volume of mortgage lending and the value of residential real estate, both on primary and secondary markets.*

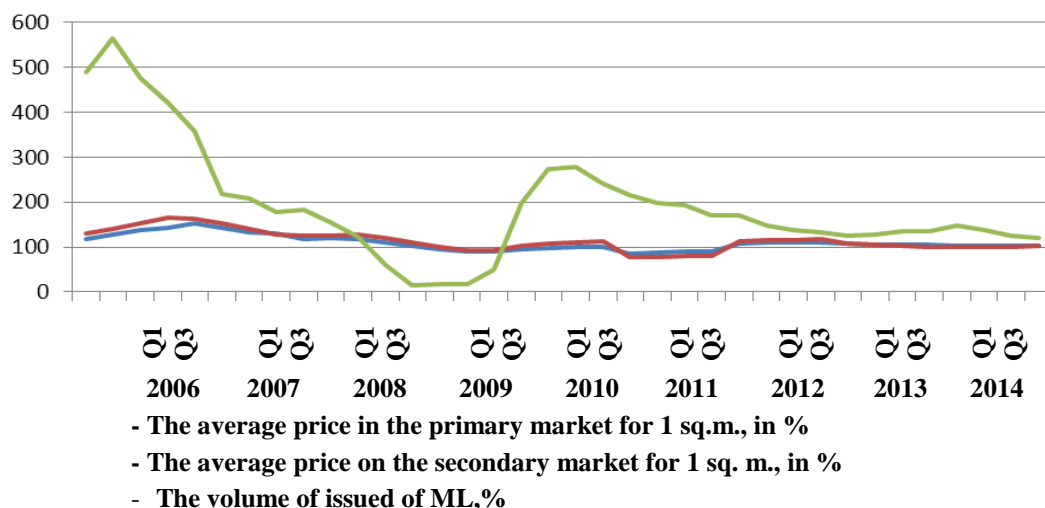
**1. The reaction of the mortgage market.** Based on the analysis of the dynamics of average prices in the real estate market (see figure 2 in the first part of the article) and the dynamics of the *volume of residential mortgage loans* (RML), figure 3)<sup>1</sup>, there can be concluded that the response to crisis events on these markets are reflected in different ways.



**Figure 3. Dynamics of the volume of the issued RML, %**

Source: Data from the website of the Central Bank of the Russian Federation [11] and author's calculations.

The mortgage market quickly reacted to the crisis of 2008, in contrast to the real estate market, whose reaction appeared in 2011 (figure 2), which indicates the presence of a lag. The analysis of data in a comparable scale is presented in figure 4.



**Figure 4. Dynamics of the average prices and the volume of the issued RML, %**

Source: Data from the website of the Central Bank of the Russian Federation [11] and author's calculations.

<sup>1</sup> Numbering of figures and tables in the second part of the article, for readability (avoid confusion with references) of the material is given as a continuation of their numbering from the first part.

To determine the relationship of the processes occurring in the target market, we identify the factors which characterize the situation on the real estate market and mortgage market. As an effective sign, we take the average price for 1 sq. m in rubles (Y1 – the primary market, Y2 – secondary market). As independent variables we choose the volume of issued mortgage loans (X1), the weighted average rate on issued RML in rubles (X2) and inflation by quarter in % (X3). We consider the values of the factors for the period from 2005 to 2014.

Table 3

Factors forming the dynamic of prices on the real estate market

Year, quarter		Y1	Y2	X1	X2	X3
		The average price on the primary market for 1 sq. m, in thous. rubles	The average price on the secondary market for 1 sq. m, in thous. rubles	Value of issued RML, mil. rubles	Weighted average rate on issued RML in rubles, %	Inflation by quarter, %
2005	I	22437,7	19588,5	4 690	14.8	5.3
	II	23223,1	20163,0	9 838	14.9	2.6
	III	24031,8	20963,0	16 163	15.0	0.6
	IV	25393,7	22165,6	25 650	14.9	2.1
2006	I	26641,0	25709,0	22 995	14.3	5.0
	II	29743,0	28192,0	55 542	14.1	1.1
	III	33290,0	32291,0	77 114	13.9	1.0
	IV	36221,0	36615,0	107 910	13.7	1.7
2007	I	40978,0	41901,0	82 316	13.4	3.4
	II	42595,0	43321,0	120 820	13.0	2.2
	III	44478,0	44993,0	160 619	12.7	1.8
	IV	47482,0	47206,0	192 734	12.6	4.1
2008	I	48729,0	52266,0	150 759	12.4	4.8
	II	51299,0	54816,0	188 424	12.5	3.8
	III	52799,0	57118,0	198 280	12.7	1.7
	IV	52504,0	56495,0	118 345	12.9	2.5
2009	I	50465,0	57806,0	24 546	14.4	5.4
	II	49313,0	55059,0	30 856	14.6	1.9
	III	47968,0	53636,0	36 111	14.6	0.6
	IV	47715,0	52895,0	60 773	14.3	0.7
2010	I	48261,0	59007,0	48 947	13.6	3.1
	II	48036,0	59206,0	84 415	13.5	1.2
	III	48050,0	59446,0	100 716	13.4	1.8
	IV	48144,0	59998,0	145 981	13.1	2.4
2011	I	41534,0	46158,0	105 272	12.4	3.8
	II	42201,0	46666,0	168 169	12.2	1.1
	III	42904,0	47133,0	194 561	12.1	-0.3
	IV	43686,0	48243,0	248 942	11.9	1.3
2012	I	44956,0	51907,0	180 950	12.0	1.5
	II	46360,0	53358,0	248 434	12.1	1.7
	III	47483,0	54848,0	269 185	12.2	1.9
	IV	48163,0	56370,0	330 378	12.3	1.3
2013	I	48795,0	55421,0	226 939	12.8	1.9
	II	49331,0	55998,0	315 513	12.7	1.6
	III	49959,0	56247,0	363 430	12.6	1.2
	IV	50208,0	56478,0	447 665	12.4	1.6
2014	I	49939,0	55925,0	334 817	12.2	2.3
	II	50919,0	56630,0	434 836	12.2	2.4
	III	51116,0	57119,0	452 217	12.2	1.4
	IV	51714,0	58085,0	540 661	12.5	4.7

Source: Data from the website of the Central Bank of the Russian Federation [11] and ARML [10], as well as [12].

Table 4

## Factors of the regression model

Year, quarter		Y1	Y2	X1	X2	X3
		The average price on the primary market for 1 sq. m, in thous. rubles	The average price on the secondary market for 1 sq. m, in thous. rubles	Value of issued RML, mil. rubles	Weighted average rate on issued RML in rubles, %	Inflation by quarter, %
2006	I	1,19	1,31	4,90	0.97	0.94
	II	1,28	1,40	5,65	0.95	0.42
	III	1,39	1,54	4,77	0.93	1.67
	IV	1,43	1,65	4,21	0.92	0.81
2007	I	1,54	1,63	3,58	0.94	0.68
	II	1,43	1,54	2,18	0.92	2.00
	III	1,34	1,39	2,08	0.91	1.80
	IV	1,31	1,29	1,79	0.92	2.41
2008	I	1,19	1,25	1,83	0.93	1.41
	II	1,20	1,27	1,56	0.96	1.73
	III	1,19	1,27	1,23	1.00	0.94
	IV	1,11	1,20	0,61	1.02	0.61
2009	I	1,04	1,11	0,16	1.16	1.13
	II	0,96	1,00	0,16	1.17	0.50
	III	0,91	0,94	0,18	1.15	0.35
	IV	0,91	0,94	0,51	1.11	0.28
2010	I	0,96	1,02	1,99	0.94	0.57
	II	0,97	1,08	2,74	0.92	0.63
	III	1,00	1,11	2,79	0.92	3.00
	IV	1,01	1,13	2,40	0.92	3.43
2011	I	0,86	0,78	2,15	0.91	1.23
	II	0,88	0,79	1,99	0.90	0.92
	III	0,89	0,79	1,93	0.90	-0.17
	IV	0,91	0,80	1,71	0.91	0.54
2012	I	1,08	1,12	1,72	0.97	0.39
	II	1,10	1,14	1,48	0.99	1.55
	III	1,11	1,16	1,38	1.01	-6.33
	IV	1,10	1,17	1,33	1.03	1.00
2013	I	1,09	1,07	1,25	1.07	1.27
	II	1,06	1,05	1,27	1.05	0.94
	III	1,05	1,03	1,35	1.03	0.63
	IV	1,04	1,00	1,36	1.01	1.23
2014	I	1,02	1,01	1,48	0.95	1.21
	II	1,03	1,01	1,38	0.96	1.50
	III	1,02	1,02	1,24	0.97	1.17
	IV	1,03	1,03	1,21	1.01	2.94

Source: Data from the website of the Central Bank of the Russian Federation [11] and ARML [10], author's calculations.

**2. Construction of regression models.** Linear regression model parameters were calculated using the MS Excel software package (regression). For building the regression model, the raw data of table 3 have been converted into chain codes shown in table 4. The results of development of one factor, two-factors, three-factor models are presented in tables 5-7. These models have been developed for the primary real estate markets.

Table 5

## Single-factor model in the primary housing market

## RESULTS

Regression statistics	
Multiple R	0,538419
R <sup>2</sup>	0,289895
Adjusted R <sup>2</sup>	0,26901
Standard Error	0,146187
Observation	36

Dispersion analysis					
	df	SS	MS	F	Significance F
Regression	1	0,2966295	0,296629	13,880267	0,0007055
Residual	34	0,7266	0,021371		
Total	35	1,0232294			

	Coefficient	Standard Error	t-Stat	P-Value	Lower 95%	Upper 95%	Lower 95,0%	Upper 95,0%
Y-intercept	0,962514	0,0443516	21,70188	1,686E-21	0,8723807	1,052647	0,872381	1,052647
Variable X 1	0,071462	0,0191813	3,725623	0,0007055	0,0324812	0,110444	0,032481	0,110444

Table 6

## Two-factor model in the primary housing market

## RESULTS

Regression statistics	
Multiple R	0,541544
R <sup>2</sup>	0,29327
Adjusted R <sup>2</sup>	0,250438
Standard Error	0,148032
Observation	36

Dispersion analysis					
	df	SS	MS	F	Significance F
Regression	2	0,3000824	0,150041	5,8469608	0,003256
Residual	33	0,723147	0,021914		
Total	35	1,0232294			

	Coefficient	Standard Error	t-Stat	P-Value	Lower 95%	Upper 95%	Lower 95,0%	Upper 95,0%
Y-intercept	0,78661	0,4454068	1,766049	0,0866386	-0,119577	1,692797	-0,11958	1,692797
Variable X 1	0,077399	0,024514	3,157337	0,0033935	0,0275249	0,127273	0,027525	0,127273
Variable X 2	0,167563	0,4221243	0,396951	0,693959	-0,691256	1,026381	-0,69126	1,026381

Table 7

## Three-factor model in the primary housing market

Regression statistics	
Multiple R	0,545009
R <sup>2</sup>	0,297035
Adjusted R <sup>2</sup>	0,231132
Standard Error	0,149926
Observation	36

Dispersion analysis					
	df	SS	MS	F	Significance F
Regression	3	0,3039349	0,101312	4,5071548	0,0095382
Residual	32	0,7192946	0,022478		
Total	35	1,0232294			

	Coefficient	Standard Error	t-Stat	P-Value	Lower 95%	Upper 95%	Lower 95,0%	Upper 95,0%
Y-intercept	0,74	0,4638226	1,59336	0,1209106	-0,205739	1,683812	-0,20574	1,683812
Variable X 1	0,08	0,0249756	3,127868	0,0037374	0,0272468	0,128994	0,027247	0,128994
Variable X 2	0,21	0,4369858	0,475391	0,6377372	-0,682372	1,09785	-0,68237	1,09785
Variable X 3	0,01	0,0174396	0,396818	0,694136	-0,028603	0,042444	-0,0286	0,042444

Situation on the secondary real estate market is presented in the one factor, two-factor, three-factor models of regression interdependence, presented in tables 8-10.

Table 8

Single-factor model in the secondary housing market

RESULTS

<i>Regression statistics</i>	
Multiple R	0,575106
R <sup>2</sup>	0,330747
Adjusted R <sup>2</sup>	0,311063
Standard Error	0,186366
Observation	36

Dispersion analysis

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	0,583605	0,583605	16,80293	0,000243
Residual	34	1,180898	0,034732		
Total	35	1,764503			

	<i>Coefficient</i>	<i>Standard Error</i>	<i>t-Stat</i>	<i>P-Value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Y-intercept	0,946106	0,056542	16,73292	5,55E-18	0,8312	1,061013	0,8312	1,061013
Variable X 1	0,100237	0,024453	4,099138	0,000243	0,050542	0,149932	0,050542	0,149932

Table 9

Two-factor model in the secondary housing market

RESULTS

<i>Regression statistics</i>	
Multiple R	0,597584
R <sup>2</sup>	0,357106
Adjusted R <sup>2</sup>	0,318143
Standard Error	0,185406
Observation	36

Dispersion analysis

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	2	0,630115	0,315058	9,165215	0,000683
Residual	33	1,134387	0,034375		
Total	35	1,764503			

	<i>Coefficient</i>	<i>Standard Error</i>	<i>t-Stat</i>	<i>P-Value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Y-intercept	0,30	0,560667	0,530135	0,599567	-0,84346	1,437916	-0,84346	1,437916
Variable X 1	0,12	0,030864	3,963529	0,000373	0,059538	0,185126	0,059538	0,185126
Variable X2	0,62	0,531154	1,163198	0,253091	-0,4628	1,698479	-0,4628	1,698479

Table 10

Three-factor model in the secondary housing market

RESULTS

<i>Regression statistics</i>	
Multiple R	0,601871
R <sup>2</sup>	0,362249
Adjusted R <sup>2</sup>	0,30246
Standard Error	0,187526
Observation	36

## Dispersion analysis

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	3	0,639189	0,213063	6,058768	0,002185
Residual	32	1,125314	0,035166		
Total	35	1,764503			

	<i>Coefficient</i>	<i>Standard Error</i>	<i>t-Stat</i>	<i>P-Value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Y-intercept	0,24	0,580143	0,405146	0,688066	-0,94667	1,416756	-0,94667	1,416756
Variable X 1	0,12	0,031239	3,93499	0,00042	0,059294	0,186558	0,059294	0,186558
Variable X 2	0,67	0,546576	1,223921	0,229917	-0,44437	1,782306	-0,44437	1,782306
Variable X 3	0,01	0,021813	0,507957	0,614968	-0,03335	0,055512	-0,03335	0,055512

All calculations received in the during the regression with lag in primary and in secondary markets are presented in the tables 11-12.

Table 11

## Single-factor model with lag in primary market

## RESULTS

<i>Regression statistics</i>	
Multiple R	0,458226
R <sup>2</sup>	0,209971
Adjusted R <sup>2</sup>	0,179585
Standard Error	0,173182
Observation	28

## Dispersion analysis

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	0,2072505	0,20725	6,9101742	0,0141973
Residual	26	0,7797941	0,029992		
Total	27	0,9870445			

	<i>Coefficient</i>	<i>Standard Error</i>	<i>t-Stat</i>	<i>P-Value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Y-intercept	1,300935	0,077343	16,82033	1,716E-15	1,1419538	1,459915	1,141954	1,459915
Variable X 1	-0,12766	0,0485629	-2,628721	0,0141973	-0,227481	-0,02784	-0,22748	-0,02784

Table 12

## Single-factor model with lag in secondary market

## RESULTS

<i>Regression statistics</i>	
Multiple R	0,364384
R <sup>2</sup>	0,132776
Adjusted R <sup>2</sup>	0,099421
Standard Error	0,233037
Observation	28

## Dispersion analysis

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	0,216178	0,216178	3,980709	0,056603
Residual	26	1,411967	0,054306		
Total	27	1,628145			

	<i>Coefficient</i>	<i>Standard Error</i>	<i>t-Stat</i>	<i>P-Value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Y-intercept	1,360386	0,104074	13,0713	6,16E-13	1,146458	1,574313	1,146458	1,574313
Variable X 1	-0,13038	0,065347	-1,99517	0,056603	-0,2647	0,003944	-0,2647	0,003944

We consider the regression statistics on primary and secondary markets on the basis of the obtained results (table 13).

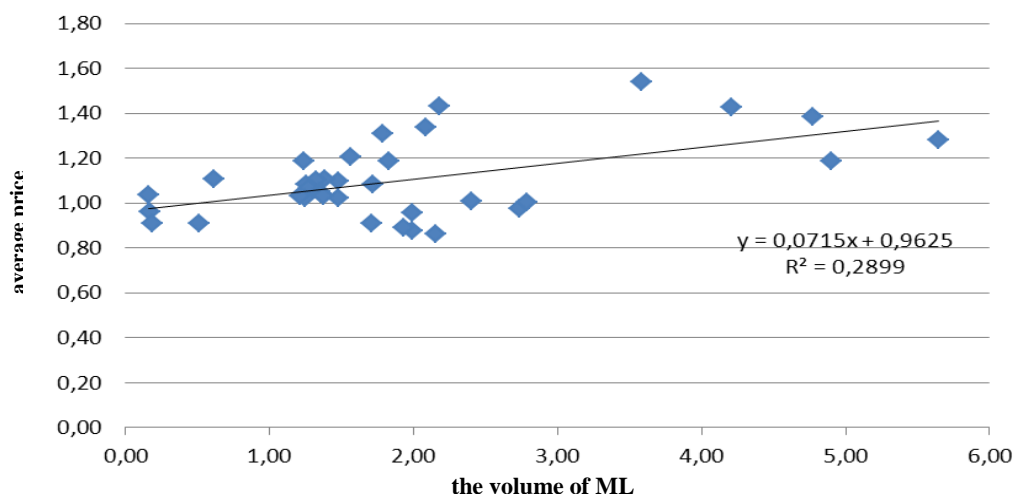
**Table 13**

**Assessment of the relationship of indicators**

Market	Model	Multiple R	R <sup>2</sup>
Primary market	Single-factor	<b>0,538</b>	0,290
	Two-factor	0,542	0,294
	Three-factor	0,545	0,297
Secondary market	Single-factor with lag	0,458	0,209
	Single-factor	<b>0,575</b>	0,331
	Two-factor	0,598	0,357
	Three-factor	0,602	0,362
	Single-factor with lag	0,364	0,133

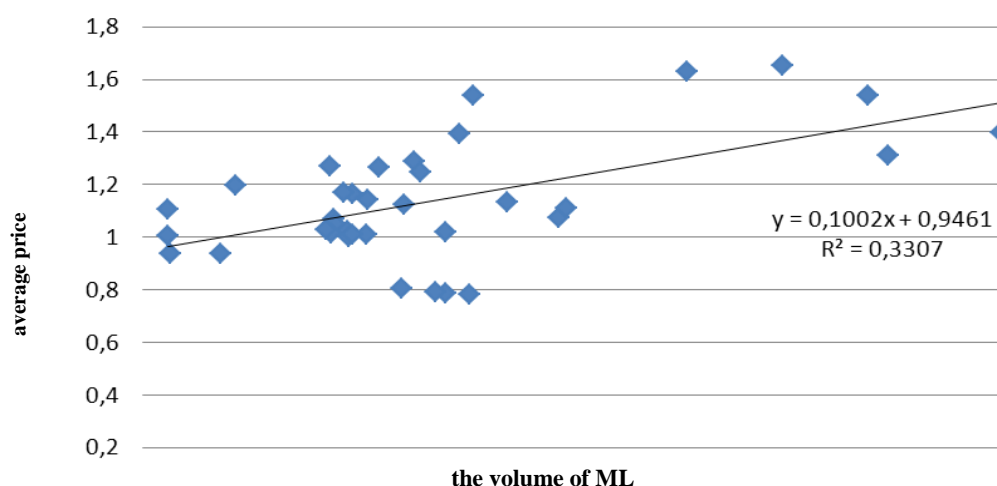
Source: Author's calculations.

The relationship between factors also reflects the construction of linear correlation on the primary and secondary markets (figure 5 and 6).



**Figure 5. Linear correlation on the primary market (single-factor)**

Source: Author's calculations.



**Figure 6. Linear correlation on the secondary market (single-factor)**

Source: Author's calculations.

An indicator of the link between factors is the selective *linear correlation coefficient R*, equal to 0.538 on the primary market, showing that the link is observed and direct. In two-factor and three-factor model, the connection is also confirmed. The secondary market is characterized by a close relationship, as



the correlation coefficient is greater than one-factor model on the primary market and accounts for  $R = 0,575$ . Thus, there is confirmed the assumption of the presence of moderate dependence between the volume of mortgage lending and the value of residential real estate, both on the primary and the secondary markets.

#### Characteristics of the real estate market and mortgage lending in the Republic of Moldova

The market of objects of real estate is one of the most developed real estate market segments in the Republic of Moldova. The residential fund of the Republic according to the National Bureau of Statistics on January 1, 2016 amounted to 81 531.3 thousand m<sup>3</sup>. In the urban areas it amounted to 32,485.3 thousand m<sup>2</sup> or 39.8% of the total volume of the real estate fund; in rural areas, respectively – 49046.0 thousand m<sup>2</sup> or – 60.2%. The per capita living area in the national average was 22.9 m<sup>2</sup>, in the urban area – 21.5 m<sup>2</sup>, in rural – 24.0 m<sup>2</sup>. The growth of the real estate fund is characterized by a slow pace: in the period from 2002 to 2016, it increased by only 7%, or by 0.5% per year.

Available statistic data are clearly insufficient for determining the gap between the actual rate of construction of new real estate objects and the demand for housing, as well as the need to replace the emergency houses that came in unsuitability due to the duration of use and poor maintenance. The residential fund of the Republic of Moldova as a whole is relatively young; most of the buildings were built in the period between 1975-1993 [15, p. 24]. But because of delays in the repair, it is generally in poor condition. This problem can be solved through new constructions, as well as through reconstructions and overhaul of the existing structures.

According to statistics, over the period 2002-2015, the highest growth rate of new constructions has been achieved in 2015 (table 14), when the amount of housing, completion of construction, increased in comparison with 2002 by 3.3 times. However, during the 2011-2015, the growth rate of giving of objects into operation has slowed, indicating the saturation of market with objects of residential real estate at the existing prices.

**Table 14**

#### Dynamics of volume of residential buildings and the average spare of apartments in the Republic of Moldova for the period 2002-2015 years

Indicators	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Average area of one apartment, m <sup>2</sup>	111,8	124,7	122,2	115,4	117,5	111,9	99,6	103,7	110,7	113,5	99,1	93,3	92,6	80,4
Growth rates	1,00	1,16	1,09	1,03	1,05	1,01	0,89	0,93	0,99	1,02	0,89	0,83	0,83	0,72
Number of apartments, thous.	2,3	2,3	2,8	4,0	4,9	5,0	6,8	4,8	4,9	5,2	5,1	5,5	5,4	7,6
Growth rates	-	1,00	1,22	1,74	2,13	2,17	2,99	2,09	2,13	2,26	2,22	2,39	2,35	3,30

Source: Calculations made by the authors based on the National Bureau of Statistics of the Republic of Moldova [14].

The tendency to reduce the average area of one apartment is also sustainable. If during the period 2002-2004 the average area of apartments handed in operation was large enough and was about 117-122 m<sup>2</sup>, this figure declined steadily in the last five years, amounting to 80.4 m<sup>2</sup> in 2015, which is close enough to the area of a standard 3-room apartments on the secondary market.

One of the indicators of housing provision of population is the number of housing units per 1,000 inhabitants. Currently, the figure accounts for 386 apartments, which is lower than the average of EU countries, where the rate accounts for 450 apartments. According to the review of the situation in the field of housing construction in the Republic of Moldova, the program of the United Nations Human Settlements Programme (UN – Habitat), in Moldova, a family with an average annual income can not afford to buy a house or an apartment even with using a mortgage loan. Getting a mortgage in the amount of 36 thousand Euros for 20 years at a rate of 12% per year would mean the need to make monthly payments of 395 Euros, which is higher than the average monthly wage of an average worker [15, p.59]. This fact clearly shows that for most of the country's population property of own house is not available.

Financing the construction and purchase of housing in Moldova is carried out by commercial banks. In Moldova, the mortgage market has not yet been used to its full potential. Until now, the mass of mortgage loans is not observed, and the conditions are not very appropriate: the inflated rates and short deadlines did not allow citizens to take out loans, and the banks themselves cautiously gave loans to buy housing under construction due to the risk of stopping the construction and loan defaults.

In recent years, the mortgage has become more accessible: competition in the financial market intensified and in the pursuit of customers, lenders have begun to offer loans at more attractive conditions. Today, mortgage loans in financial institutions are issued under the 10-12% for the period from 10 to 20 and even up to 25-30 years. During the period from 2009 to 2015, the total number of mortgage loans increased by 99%. The number of mortgage loans issued to the owners of apartments increased by 89%, while the number of loans issued to the owners of homes, increased by only 8% (table 15). There have been made changes in the share of mortgage in relation to the total number of transactions on real estate buying-selling.

Table 15

**Dynamics of the number of transactions of real estate and mortgage contracts  
for 2009-2015 in the Republic of Moldova**

Indicastsors	2009	2010	2011	2012	2013	2014	2015
Total number of transactions	286819	249690	277354	276539	291767	298656	318594
Mortgage registration	12664	17220	20311	21730	24048	27773	25189
Growth rates of the mortgage total, %	100	136	160	172	190	219	199
The number of transactions for the sale of apartments	11004	12357	14263	14692	14196	14690	15123
Mortgage of apartments	3193	4577	5398	5909	6541	7514	6020
The rate of growth of mortgage of apartments	100	143	169	185	205	235	189
The number of transactions for the sale of houses	7003	6831	7473	7313	7476	7755	7593
Mortgage of houses	1566	2451	3069	3069	2811	2819	1936
The rate of growth of mortgage of houses	100	98	107	104	107	111	108

Source: Calculations made by the authors based on the State Enterprise "Cadastru" data [16].

If in 2009 the share of mortgages in relation to the total number of transactions for the sale of apartments was 29%, then in 2015 it was about 40%. The share of mortgages in relation to the number of home sales was 22% in 2009 and 25.5% in 2015. According to the Cadastre data on real estate of mortgage registration, there is not possible to determine the number of mortgages on the primary and secondary markets.

According to real estate experts, the mortgage on the secondary market is developing more actively. On the development of the mortgage, the policy of financial institutions has a great influence. Credit conditions, particularly interest rates, have become more affordable, but still remain expensive

compared with European Union countries. There is a trend of annual decline of rates that become more acceptable for buying a house. In 2016, interest rates on mortgage loans accounted for 9.5-11%. For comparison, mortgage rates in the Western European countries range from 1.36% to 4.36%.

A more active promotion of mortgage is prevented by the economic situation in the country, low salaries, and lack of awareness of the possibilities of housing loans, the psychological barrier and the inability to calculate the income. At the moment, there is a slight movement, but it is hardly to be called a real growth of the market. Nevertheless, the prospects for mortgage lending in Moldova exist due to a lot of construction sites, and the large mass of the population is in need for housing.

The market value of 1m<sup>2</sup> of housing area on both the primary and secondary markets has changed significantly (table 16). On both segments of the real estate market there is a decrease in the prices. However, on the primary real estate market, this reduction occurs at a faster rate. In 2015, the price of 1m<sup>2</sup> area of apartments on the primary market amounted to 78% of the 2007 price level. On the secondary market in 2015, the selling price of 1 m<sup>2</sup> of housing accounted for 89% of the 2007 price level. It is obvious that the real estate market is at the stage of recession. This is due to the increase in supply of apartments in the primary and secondary markets, with the lack of effective demand, high credit interest rates on mortgage loans.

Table 16

Dynamics of changes in the market price of 1 m<sup>2</sup> in 2007-2015

Indicators	2007	2008	2009	2010	2011	2012	2013	2014	2015
Price of 1m <sup>2</sup> of housing on the secondary market (euro)	650	850	750	690	660	655	635	590	580
Growth rates	1,00	1,31	1,15	1,06	1,02	1,00	0,98	0,91	0,89
Price of 1m <sup>2</sup> of housing on the primary market (euro)	730	900	710	635	615	600	584	575	570
Growth rates	1,00	1,23	0,97	0,87	0,84	0,82	0,80	0,79	0,78

Source: Calculations made by author's based on data from „Nika Imobil” SRL [17] and the State Enterprise „Cadastru”[16].

Thus we can conclude that in the Republic of Moldova mortgage lending has not yet acquired the scale and does not significantly affect the decision to purchase housing units. Terms and conditions for payment of the loan are quite complex.

### Conclusion

The use of regression analysis revealed a connection between the volume of mortgage lending and the value of residential real estate, both on primary and secondary markets of the Russian Federation. The dependence of the price of the RML volume is amply represented graphically.

The assumption of the existence of the dependence of the average price of Russian real estate markets (Y1 and Y2) primarily on the volume of mortgage housing loans (X1) is confirmed by the calculation of correlation coefficients. On the basis of the study it can be concluded that there is a marked relationship between the effective sign Y (average price per 1 sq. M) and the independent variable X1 (the volume of housing mortgage loans).

Analytical results concerning the relationship between the residential real estate market in Russia with the market of residential mortgage loans (RML), representing the Russian experience in the sphere of housing reform, have been augmented by research of features of formation of the mortgage market in the Republic of Moldova. The mortgage market in Moldova is developing not rapidly enough, despite the fact that there exist the developed legal environment of mortgage lending procedures and technology of issuing loans. High interest rates on granted loans do not allow the majority of the population to consider the mortgage as an affordable way to improve their living conditions. Mortgage lending market is not transparent, making it impossible to be studied with the help of economic and mathematical methods.

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