

Evaluation of the Tools of Ensuring the Housing Affordability

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Abstract: The objective of this study consists in the analysis of the housing affordability for the population of the Belgorod region with the use of the mortgage lending system and development of proposals concerning the enhancement of the methods of providing citizens with affordable housing. The following results are presented in the study: estimation of the possibility to purchase an apartment using the mortgage lending for an average-sized family from the Belgorod region on the basis of the affordability Index Analysis (HAI) traditionally used in the Foreign practice; estimation of the share of families that are able to purchase an apartment using the mortgage lending in the Belgrade region based on the analysis of the indicator 'Minimum aggregate monthly family income'. It was established that housing is affordable to 19% of the population only upon the minimum amount of the initial payment. The study discusses the priority necessity of formation of the structure of the rental housing market providing for the variety of proposals and demand stimulation on the basis of the public private partnership implemented according to different models as well as the necessity of specifying the criteria of the efficiency of construction of rental housing in the region; it was shown that upon the state support the rental payments will be much lower than the annuity payment in case of the mortgage lending.

Key words: Housing affordability, mortgage lending, housing affordability index, minimal aggregate family income, annuity payment, rental housing, guest houses

INTRODUCTION

As of today, the housing problem is one of the most acute ones for most of the population of our country since the low income of the significant part of population does not allow them satisfying their vital housing needs. This is why, it may be no accident that one of the priority trends of the socio-economic policy of our country is formation of the affordable housing market (Kosareva *et al.*, 2013).

Today in the Russian Federation the Federal Target Program 'Housing' (developed for different time periods) acts as the main mechanism of solution of the housing problem. Currently, the Federal Target Program 'Housing' for the years 2011-2015 is effective within the frameworks of which the mortgage lending system is used in order to increase the housing affordability.

Along with that for the main part of population of the Belgorod region housing with the use of the mortgage lending still remains to be unaffordable which necessitates the significant enhancement and differentiation of the measures aimed at development of different forms of satisfying the housing needs of the citizens with account of the prospects for the socio-economic development of regions (Serdiuk, 2011).

The international experience shows that formation of the rental housing market allows not only satisfying the housing needs of the population but also increasing the territorial mobility of the population, ensuring its employment as well and development of the new industries. Today, this fact is acknowledged by both the political elite and the scientific community of our country.

The present study provides the evaluation of the housing affordability for an average-sized family in the Belgorod region with the use of the mortgage lending and the estimation of the share of families that are able to purchase an apartment using the mortgage for the purpose of estimating to which extent the mortgage lending system is available to the population. The necessity of formation of the civilized rental housing market for increase in the housing affordability is substantiated.

MATERIALS AND METHODS

It shall be noted that as of today there is no single procedure of evaluation of the housing affordability. For evaluation of the housing affordability for the population of the Belgorod region the HAI (Engineering-Housing Affordability index) (Giuseppe, 2011) was used:

$$HAI = (\varepsilon \times R / C) \times 100\% \quad (1)$$

Where:

- R = Family average monthly income
- C = Monthly payment (annuity) for the loan with the use of which housing is purchased
- ε = Maximum fraction of the family income that can be spent on the loan repayment

The monthly payment (C) expressed as an annuity is calculated on the basis of the cost of the apartment purchased, the initial payment (borrower's own funds), credit term and interest rate according to the formula:

$$C = \frac{(S - D) \times r \times (1 + r)^{n \times 12}}{(1 + r)^{n \times 12} - 1} \quad (2)$$

Where:

- S = Total cost of the apartment
- D = Amount of the initial payment
- r = The month interest rate on credit in the form of a decimal ($r = p/12$, p-annual interest rate in the form of a decimal)
- n = Loan period (in years)

At that the value of the index equal to 100% means that an average-sized family has income that absolutely equals to revenues required for purchase of a standard apartment with the use of the mortgage loan.

In contrast to the coefficient of the housing affordability proposed by the FTP 'Housing' the HAI take into account funding with the use of mortgage lending (Korolkova *et al.*, 2014).

For estimation of the share of families that are able to purchase housing using the own and borrowed funds according to the Procedure of evaluation of efficiency of the federal target program 'Housing' for the years 2011-2015, the indicator 'minimum aggregate family income' is used according to the following formula:

$$TI = \frac{LTV}{100\%} \times P \times 54 \times \frac{i}{12 \times 100\%} \times \frac{100\%}{PI} \times \frac{1}{1 - (1 + \frac{i}{12 \times 100\%})^{t \times 12}} \quad (3)$$

Where:

- TI = The minimal aggregate family income (in rubles per month)
- LTV = The fraction of the borrowed funds in the cost of the apartment purchased (in percentage)
- P = Average market cost of 1 m² of housing (in rubles per year on average)
- i = Interest rate on credit (in percentage per year)
- t = Credit term (in years)
- PI = The share of the payment on the mortgage loan in the family income (in percentage)

The mortgage lending system provides for the necessity of making the initial contribution at that the minimal share of the own funds (mortgage) makes 20%. A household needs some time to accumulate the amount of the initial payment for purchase of an apartment according to the coefficient 'loan/mortgage'.

In the Foreign practice (Giuseppe, 2011) for estimation of the accumulation term the housing affordability index as adjusted for the current family demand is used (modified housing affordability index, I3):

$$I3 = D / (G - M) \quad (4)$$

Where:

- D = The amount of the initial payment made by the borrower
- G = Average family (from 3 persons) income ($G = R \times 12$)
- M = Annual family subsistence level

In our opinion, the use of it in the domestic practice is admissible as a family cannot content with the subsistence level only due to its amount that is inadequate to the realias. More real is the assumption that a family will save 50% of the income for accumulation of the initial payment; another 50% of the income will be spent for current consumption. Therefore, further calculations term accumulation of down payment will use the formula:

$$I3 = D / (\varepsilon \times G) \quad (5)$$

Where:

- D = The amount of the initial payment made by the borrower
- G = The average family (from 3 persons) income ($G = R \times 12$)
- ε = Maximum fraction of the family income that may be spent on accumulation (50%)

RESULTS AND DISCUSSION

Let's estimate the possibility of purchasing an apartment with the use of mortgage lending for an average-sized family in the Belgorod region on the basis of the Housing Affordability Index (HAI) (Giuseppe, 2011). Let's use the following as the source data for HAI estimation:

- An average-sized family-family consisting of 3 persons (one of those is a child), the monthly family income (R) is considered to be equal to the 2-fold amount of the average monthly salary for the Belgorod region (according to the Rosstat as of April 2015, average monthly salary made 24471.6 rubles). Accordingly, $R = 48942$ rubles

- For calculation of the annuity amount let's assume:
 - The purchased apartment with the total floor area of 54 m², the cost of which based on the average price of 1 m² of housing (61388 rubles) makes 3314952 rubles (S)
 - The terms of credit suggest payment of the initial contribution (mortgage) of no. <20% of the apartment cost ($D = S \times d$, where d shall make no <0.2 (20% expressed as a decimal)); the period (n-years) is determined by the creditor; the reduced rate (r) (due to the state subsidy) on the credit 12% per annum
- The maximum fraction of the family income (ε) that can be spent on the loan repayment (rated at 50%)

This is the most optimistic estimate, within the Strategy of development of the mortgage lending in the Russian Federation up to the year 2020 the share of the payment on the mortgage loan in the borrower's income is taken to be = 35%.

The variants calculations (with different 'loan/pledge' ratios) of the housing affordability index and the period of accumulation of the own funds are presented in the Table 1.

Thus, an average-sized family will not be able to purchase a standard apartment upon the minimum 'loan/pledge' ratio (80:20) a larger initial payment shall be needs to make the most of the original amount. Let's estimate the share of families that are able to purchase housing using the mortgage lending (Table 2).

The share of the households with the aggregate income exceeding the minimum monthly family income (TI) will determine the share of families that are able to purchase housing using the own and borrowed funds. Since, the data concerning distribution of households by the monthly income rate are not being currently represented in the statistical compilations, we will use the data about the population distribution by the per capita monthly income estimated by means of dividing the minimum aggregate family income (TI) by the average size of the family (3 persons) (Gorshkov, 2012).

The obtained minimum income per 1 person (per capita monthly income) is compared to the data about the population distribution by the per capita monthly income in the Belgorod region for estimation of the share of population with the income exceeding the minimum one and thus, being able to purchase housing using the own and borrowed funds.

According to the local agency of the Federal State Statistics Service for the Belgorod region 18.3% of population have the per capita cash income that exceeds 35000 rubles per month.

Table 1: Evaluation of the housing affordability and the accumulation period for the year 2015

The value of the 'loan/pledge' ratio	Index of the housing affordability in case of using a credit with the term (HAI) (%)			Period of accumulation own of the funds, years
	15 years	20 years	30 years	
30/70	205.01	223.40	239.2	7.9
40/60	153.70	167.60	179.4	6.7
50/50	123.01	134.08	143.5	5.6
60/40	102.50	111.70	119.6	4.5
70/30	87.80	95.70	102.5	3.3
80/20	76.80	83.80	89.7	2.2

Table 2: Share of families that are able to purchase housing using the own and borrowed funds

The value of the 'loan/pledge' ratio	Minima; aggregate monthly family income (RUR)	Per capita income (RUR)	Share of families able to purchase housing (%)
30/70	47559.93	15853.31	59.1
40/60	63413.24	21137.75	59.1
50/50	79266.55	26422.18	32.5
60/40	95119.86	31706.62	32.5
70/30	110973.17	36991.06	18.3
80/20	126826.48	42275.49	18.3

Thus, the possibility to purchase housing using the mortgage lending is unaffordable to most of the population, since only 19% of population of the Belgorod region are able to purchase housing.

Besides, there is a number of other constraint measures: a borrower can be any voting citizen at the age from 18 years that by the expiry of the credit term turns not older than 65 years; the duration of present employment shall be no. <6 months; permanent registration of a borrower shall be no. <6 months; calculation of the credit limit is performed on the basis of the customer's income; the payment-to-income ratio shall not exceed 50%.

It shall be noted that in the Belgorod region during the 1st half-year of the year 2015 the approval of mortgages reduced by 40% as compared to the same period in 2014. The banks began selecting the borrowers more carefully and take the most liquid housing as a pledge; some large banks also ceased granting loans for single-family houses. Also, the 'customer' itself has changed; the forged instruments are submitted more frequently, the clients attempt to hide the dependents and current credits.

The present study discusses the issues of formation of the rental housing market that will allow providing for the variety of proposals and enhancing the methods of providing citizens with housing and varying the mechanisms of increasing the housing affordability (Isaeva *et al.*, 2013).

It shall be noted that currently the scientific community activity discusses the issues of formation of the rental housing market. For example, in the work (Gorshkov, 2012) the following advantages of the rental

housing as compared to mortgage are specified: absence of the initial payment, reduction of credit risks and elimination of the threat of the property recovery by third party creditors.

The necessity of formation of the civilized rental housing market is also acknowledged by the political elite of our country. For the purpose of development of the legal framework and creation of conditions for normal operation of the market of affordable rental housing and development of the non-commercial housing stock the Federation Council of the Federal Assembly of the Russian Federation adopted on the 9th of July, 2014 the Federal Law 'On introducing amendments to the Housing Code of the Russian Federation and certain legislative acts of the Russian Federation in terms of relations arising out from the non-commercial lease of residential premises'.

At the same time, the committee of the State Duma on the housing policy and public actively promotes the idea of creation of the fund for non-commercial rental housing. The objective of development of the rental housing sector is included in the list of measures aimed at implementation of the Federal Target Program 'Housing' for the years 2011-2015: 'legislative, procedural and organizational promotion to development of the sector of housing granted under the lease contracts'. Along with development of the institutional establishment of the rental housing market in some regions (in the Kaluga, Nizhny Novgorod and Novosibirsk regions in Tatarstan and the Chuvash Republic) the pilot rental housing projects are actively developed that provide for construction of guest houses.

In the Belgorod region, it is also planned to launch the pilot project for development of the rental housing system that was announced on March 31, 2015 by the Chairman of the Supervisory Board of the Foundation for assisting the housing and utility sector restructuring S. Stepashin. Creation on the territory of the region of the civilized rental housing market providing for construction of guest houses find support of the administration of the region.

The issues of formation of the rental housing market consist primarily in creation of the market structure suggesting the variety of proposals and the demand stimulation.

In our opinion in terms of the market offers the guest houses shall be presented for different categories of population: mass housing (economy class and comfort class) and the housing increased comfort (business class and elite class). And at the same time each of these classes shall be characterized by certain features: architecture, interior furnishing, utility supply, housing infrastructure, etc.

In order to implement this, first of all, the state promotion measures are required that include the priority of the projects of construction of guest houses as compared to standard projects; the priority granting of the land plots for construction of the guest houses.

However, these measures do not suffice, this is why, the public-private partnership in different forms (BOOT build, own, operate, transfer, BOLB buy, own, lease back, BOO build, own, operate, etc.) is proposed for this purpose. In order to evaluate the efficiency of construction, it is proposed to design the system of criteria including the indicators: of the rental housing affordability based on the residual income, competitiveness of the rental housing as compared to mortgage, occupancy rate of the rental housing, etc. Besides, the infrastructural support at the cost of the public and municipal funds is required (Rogozhina, 2013).

In order to stimulate the demand it is primarily needed to introduce the reduced rental rate. Currently, it does not seem possible to estimate the index of profitability of rental housing for the Belgorod region as the pilot project is not yet completed. However, based on the data for the Chuvash republic where the bearing-wall guest houses were constructed the rental payments for which make 8 thousand rubles per month with 3-5 thousand rubles of rental payment compensated from the budget it is safe to state that the housing affordability will increase significantly. Indeed, upon the minimum 'loan/pledge' ratio the annuity mortgage payment for any credit term exceeds the rental payment by no less than three-fold: for the credit term of 10 years the annuity payment will make 38047 rubles for 30 years 27278 rubles.

CONCLUSION

The present study provides the evaluation of the housing affordability for the population of the Belgorod region with the use of mortgage lending, it was established that upon the minimum amount of the initial payment housing is affordable to 19% of the population only. The present study discusses the issues of formation of the structure of the rental housing market that will allow enhancing the methods of providing citizens with housing and varying the mechanisms of increasing the housing affordability as compared to mortgage, the priority necessity of formation of the market structure is specified that suggests variety of proposals and stimulation of demand on the basis of the Public-Private Partnership (PPP) implemented according to different models and the necessity of determining the criteria of the housing construction efficiency in the region.

REFERENCES

- Giuseppe, T., 2011. Housing Affordability and Methodological Principles: An Application. *Int. Res. J. Finance Econ.*, 79: 64-79.
- Gorshkov, R.K., 2012. Lizing: problemy i perspektivy razvitiya v Rossii. M-vo obrazovaniya i nauki Ross. Federatsii, FGBOU VPO "Mosk. gos. stroit. un-t". Moskva: MGSU, pp: 160 (In Russian).
- Isaeva, P.G., A.M. Abdulatipova and D.S. Mammaeva, 2013. Prospects for development of morgage lending. Theory and practice of management of the organization as a social and economic system: the identification, analysis and resolution of problems formation. Proceedings of the International Conference. Finland, Helsinki, 14-16 September 2013 P.G. Isaeva (Eds.), Helsinki, pp: 61-65.
- Korolkova, D.I., G.I. Tkachenko and N.A. Gerasimova, 2014. Dostupnost zhilya, kak indikator urovnya zhizni naseleniya v regione nego. *Fundamentalnyie issledovaniya*, 9 (chast 3): 635-638 (In Russian).
- Kosareva, I.P., N.V. Sarmatitskaya and N.V. Bondarenko, 2013. Assessment of possibilities of realization of the state programme "Affordable housing" in Ukraine. *Business Inform*, 3: 239-243.
- Rogozhina, N.N., 2013. Mezhdunarodnyiy opyt razvitiya arednogo zhilischnogo fonda. *Imuschestvennyie otnosheniya v Rossiyskoy Federatsii*, 8 (143): 72-82 (In Russian).
- Serdiuk, A.V., 2011. The formation of organizatioal and economic prerequisites for the development of affordable housing market. *Visnik Vimmitskogo Politekhnichnogo Institute* (In Ukrainian), 4 (97): 56-61.