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## PECULIARITIES OF HOUSING MARKET: DYNAMICS OF HOUSING AVAILABILITY IN UKRAINE

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*Received 20 February 2018; accepted 3 November 2018; published 30 December 2018*

**Abstract.** The article analyzes the dynamics of availability of housing for Ukrainian citizens in 1990-2017 years. The social and commercial availability of housing is investigated. The refined author's methodology for determining the commercial availability of housing was applied in the article. The actual values of social accessibility of housing in 1990-2017 years, and the commercial affordability of housing in 2011-2017, as well as trends in their dynamics are defined also. It is shown that the coefficient of social availability of housing has promptly fell from 1990 to 2010 years, and in 2011-2017 it has reached a critical low level. This proves that the government of Ukraine was actually discharged from the problem of social availability of housing and it has not developed modern effective tools for solving the housing problem of the poorest layer of citizens, who really need social housing. It is revealed that the mechanism of bank mortgage lending evolves in the direction opposite to the increase of affordability of housing. This indicates the need for radical changes in the state regulation of the mentioned mechanism. It is proposed to introduce new mortgage institutes in Ukraine, particularly, such as savings and credit, and to adapt the best examples of foreign experience for the sphere of state housing policy with the purpose of real increase of the level of availability of housing for Ukrainian citizens.

**Keywords:** availability of housing; social housing; housing problem; mortgage loan; state housing policy

**Reference** to this paper should be made as follows: Omelchuk, V. O. 2018. Peculiarities of housing market: dynamics of housing availability in Ukraine, *Entrepreneurship and Sustainability Issues*, 6(2): 538-547. [http://doi.org/10.9770/jesi.2018.6.2\(5\)](http://doi.org/10.9770/jesi.2018.6.2(5))

**JEL Classifications:** O18

**Additional disciplines:** law; political sciences.

### 1. Introduction

The aim of the article is to make a comprehensive assessment of the dynamics of housing availability for Ukrainian citizens in the period from 1990 to 2017 years, in order to identify the causes of negative tendencies and also development of practical recommendations for raising the level of either social or commercial availability of housing.

The problem of housing availability for Ukrainian citizens has remained as an inheritance from the Soviet Union and during the years of independence, it has only deepened. Citizens of Ukraine are provided with housing in 2-3 times worse than citizens of developed countries (Kovtun, 2014; Filipishyna et al. 2018), and, besides, the absolute majority of houses were built in Ukraine during the Soviet Union time and nowadays they are often in a transient condition. As for other countries, let us mention that after the war Germany built housing for public funds in large volumes and solid prices and did not transfer housing for free, but gave its citizens a lease. Almost 50% of Germany's population still lives in rented apartments (Serdyuk & Serdyuk, 2012).

From year to year, the number of Ukrainian families and single citizens who receive housing, from those who are in the housing register list decreases, and that means the social availability of housing decreases. So, in 2014, about 3000 families and single citizens, who were in the housing register list, have received housing, and this is twice lower than in 2013.

As of the beginning of 2015 year, 657 thousand families and single people were in the household register in Ukraine. At the same time, starting from 2015, the State statistical observation on the form №4-housing fund (annual) "Apartment queue and provision of housing accommodation" was canceled (Housing Fund of Ukraine, 2015). Taking into account that the average size of households in Ukraine in 2015 was 2,59 people (Characteristics of households, 2015), we can receive the total number of citizens, who were officially registered as those, who are in need of housing, and the total number is almost 1.7 million. However, the mentioned figures can be applied only to official statistics. In reality, a much larger number of members of Ukrainian society have unsatisfied need for housing. This applies, particularly, to young people who are officially registered in small towns and villages, but in reality they work in large cities and they form a huge shadow rental market.

A large amount of scientific researches are devoted to the housing problem in Ukraine (Klymenko, 2012; Oliynyk, 2013). Experts are unanimous: the availability of housing in our country is extremely low in comparison with developed countries. It is also related to the system of State control. The economic security indicators should create a system that allows quickly influencing socio-economic policy in the country. This in turn requires embedding control measures in the strategic and tactical plans for the economic development of the country (Akhmetshin & Vasilev, 2016; Tvaronavičienė 2018).

Let us take an example from EU: in 2016, more than 4 out of every 10 persons (41.8 %) in the EU lived in flats, close to one quarter (23.9 %) in semi-detached houses and just over one third (33.6 %) in detached houses. The proportion of people living in flats was highest, among the EU Member States, in Spain, Latvia (both 66.1 %) and Estonia (62.0 %), while a similar proportion of people lived in flats in Switzerland (62.7 %). The highest proportions of people living in semi-detached houses were reported in the United Kingdom (60.1 %), the Netherlands (58.4 %) and Ireland (52.4 %); these were the only Member States where more than two fifths of the population lived in semi-detached houses. The share of people living in detached houses peaked in Croatia (71.0 %), Slovenia (65.5 %), Hungary (62.8 %) and Romania (61.9 %); the former Yugoslav Republic of Macedonia (72.9 %), Serbia (64.2 %) and Norway (59.9 %) also reported that a high proportion of their populations were living in detached houses (Eurostat. Statistics..., 2017).

Besides, it should be noted that the actual estimates of the availability of housing for various categories of Ukrainian citizens are rarely carried out. Most authors identify the availability of housing with its value (Shcherbinina, 2009). But housing is one of the most expensive goods and the purchase of housing with one-time full payment of its total value not only in Ukraine, but also in the world practice is more often an exception (Kuzmin et al. 2018), than a rule.

In most cases, citizens use mortgage lending and various state support programs when they decide to buy home.

For example, in 2016, an 11.1 % share of the EU population lived in households that spent 40 % or more of their equivalised disposable income on housing. The proportion of the population whose housing costs exceeded 40 % of their equivalised disposable income was highest for tenants with market price rents (28.0 %) and lowest for persons in owner-occupied dwellings with a loan or mortgage (5.4 %) (Eurostat. Statistics..., 2017).

When you receive a mortgage for the purchase of housing, not only the ability of a citizen (households) to serve a mortgage loan is taken into account. Much attention is paid to such important element that determines the possibility of access to housing, as the availability of the necessary sum of money, sufficient to pay the initial instalment.

The down payment (advance) of the citizen to the purchase of housing is also significant (from 30% to 50% of the cost of housing) and acts as a limiting factor for the availability of housing.

## **2. Materials and Methods**

There are different methodological approaches for defining the availability of housing. The vast majority of researchers understand a possibility of acquisition of such housing by citizens as availability of housing. It is obvious that the availability of housing is directly proportional to the incomes of citizens and inversely proportional to the cost of housing.

According to such authors as: S.R. Khachatryan, E.Yu Fayerman, R.L. Fedorova and A.N. Kyrlyova (2000), the basis of the formation of commercial and social demand for housing are different basic concepts of satisfaction of housing needs. Therefore, it is necessary to mark out separately social and commercial availability of housing.

## **3. Results and Discussion**

"Social housing" is defined as housing, which is intended to meet the housing needs of people who do not have a home and who are unable, by their own efforts, to provide themselves with housing due to difficult living conditions and which is provided for permanent or temporary use on a paid or non-paid basis in cases and in the manner prescribed by law (Haliantych, 2008).

The generally accepted indicator of social accessibility of housing is the share of citizens who receive housing during the year in the total number of citizens, who need social housing.

Let's consider how social affordability of housing for Ukrainian citizens has changed during the 1990-2017 years.

We will determine the social accessibility of housing by the specific weight of families and single citizens who were in a residential queue and who have received housing during year in the total number of waiting lists (Table 1).

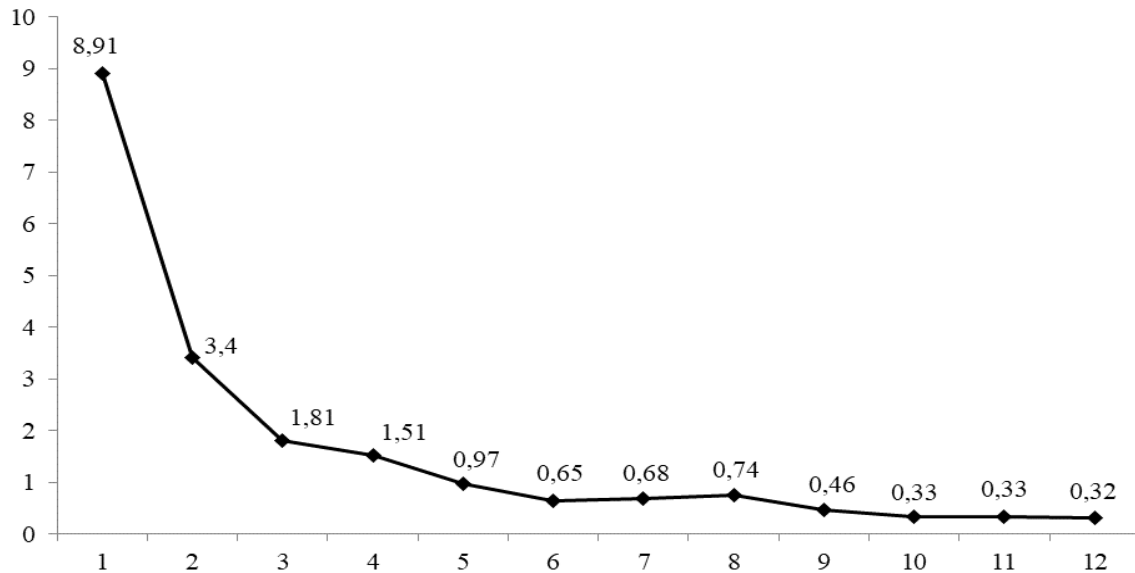
**Table 1.** The dynamics of social accessibility of housing in Ukraine during 1990-2017 years

Year	Number of families and single people, who were in the residential queue at the end of the year, thousand	Number of families and single people who received during the year, thousand	Share of citizens who have received housing in the total number of those who are in the residential queue, %	Conditional duration of stay on registration before receiving housing, years
1990	2638	235	8,91	11,23
1995	2411	82	3,40	29,40
2000	1765	32	1,81	55,16
2005	1323	20	1,51	66,15
2010	1139	11	0,97	103,55
2011	1084	7	0,65	154,86
2012	1022	7	0,68	146,00
2013	808	6	0,74	134,67
2014	657	3	0,46	219,07
2015*	590	2	0,33	295,00
2016*	540	1,8	0,33	300,00
2017*	500	1,6	0,32	313,00

*Source:* calculated by the author according to (Housing Fund of Ukraine, 2015); \* - according to the author (official statistical information is absent (Housing Fund of Ukraine, 2015)).

More clearly, the dynamics of social housing availability for Ukrainian citizens in 1990-2017 years is shown in Figure 1.

Analyzing the data presented in Table 1 and Figure1, we should note that the social affordability of housing in Ukraine was low during all years of independence. It is impossible to consider acceptable the average term of staying in residential queue of nearly 30 years (1995), and we not even mention 154 years (2011) and 313 years (2017). It should be emphasized that the coefficient of social accessibility of housing for citizens in Ukraine has rapidly fell from the period of 1990 to 2010, and in 2011-2017, it has reached a critical low level. This situation demonstrates that in recent year's government has essentially moved away from the problem of providing social housing availability and it has not developed any modern effective tools for solving the housing problem of citizens, who really are in need of social housing.



**Figure 1.** The coefficient of social accessibility of housing for Ukrainian citizens in 1990-2017 years.

Let's make analyze of the commercial availability of housing, since the vast majority of citizens improve living conditions by using market mechanisms.

Under the commercial availability of housing we understand, as a rule, the availability of mortgage loans, for which different researchers have developed a number of indicators (Rudy & Tropnikova, 2006).

An accessibility index is defined, as a rule, as a numerous characteristics of commercial availability of housing, which is defined as the ratio of solvent demand to the offer in the housing market.

In foreign and domestic economic theory various approaches to the withdrawal of its value are offered.

For example, the National Association of Realtors of the USA uses such indicator as the affordability index, which is calculated as follows (Rudy & Tropnikova, 2006) (1):

$$AI = \frac{MI \cdot 100\%}{I_m}, \quad (1)$$

where *MI* - the average household income, monetary units; *I<sub>m</sub>*- income necessary for obtaining and servicing a long-term mortgage, sufficient for the purchase of the average housing cost, monetary units.

The aim of this indicator is to determine the availability of housing through the mortgage mechanism. The value of the indicator, when it is equal to 100%, indicates the availability of housing in case of purchasing it through the borrowing of a long-term mortgage loan, because the average household income corresponds to the income necessary for obtaining such a loan. However, this indicator covers only one of the blocks of the mortgage scheme - the claims of mortgage lenders to the borrower, but leaves out the attention of another indicator- the borrower's ability to raise funds on the down payment.

After all, the formula (1) correctly defines the availability of housing only in the case of a zero down payment, whereas in the case of its large value, a citizen or family applying for a mortgage must first accumulate an amount equivalent to the down payment.

In the UN-HABITAT methodology, the housing availability index is determined by the number of years, which are necessary for the average family to raise money in order to purchase the average housing, in case that all household incomes will be directed to the mentioned aims (Rudy & Tropnikova, 2006) (2):

$$ID = \frac{C}{D} \quad (2)$$

where  $ID$  - is the housing affordability index;  $D$  - average household income, monetary units/per year;  $C$  - average cost of housing, monetary units (the area of the apartment is not taken into account).

The affordability index, defined by (2), is the simplest indicator calculated on the basis of statistical information on housing prices and household income.

Some authors use the UN-HABITAT methodology to calculate housing availability, but despite it, it is assumed that the household consists of three people, and the area of the required flat is 54 m<sup>2</sup> (Federal Target Program "Housing").

Taking into account all the mentioned above, the affordability index is calculated as follows (3):

$$Id = \frac{Vm \cdot 54}{Cd \cdot 3 \cdot 12} \quad (3)$$

where  $Vm$  - the cost of 1 m<sup>2</sup> of housing, monetary units;  $Cd$  - average monthly income, monetary units;  $54$  - the area of the conventional apartment, m<sup>2</sup>;  $3$  - number of household members, persons;  $12$  - the number of months in the year.

We should agree with A.V. Serdyuk (2010) that the disadvantage of the formula (3) is the lack of consideration of household expenses. Such expenses should be taken into account, at least at the subsistence level. Then the refined formula (3) will have the following view (4):

$$Id = \frac{Vm \cdot 54}{(Cd - Vd) \cdot 3 \cdot 12} \quad (4)$$

where  $Vd$  - the average monthly cost per family member.

In our opinion, the given methods need some improvement. We propose to evaluate the commercial affordability of housing by two parameters: the number of years required to accumulate an amount equivalent to the down payment, taking into account all costs, and the ratio of household incomes to the cost of servicing the loan (taking into account the requirements of banks).

The first indicator can be defined by the formula (5).

$$T = \frac{Vp}{(Cd - Vd) \cdot 3 \cdot 12} \quad (5)$$

where  $T$  - the period of accumulation of the down payment in years;  $V_p$  - an initial contribution to the purchase of housing under a mortgage scheme in monetary units. This indicator depends on such a parameter of the mortgage scheme as the share of the loan in the cost of housing (LTV).

The second indicator  $ID$  we can define by this formula (4).

Formulas (4) and (5) can be improved and simplified (Omelchuk, 2015). The first indicator we calculate by the formula (6):

$$T = \frac{V_p}{CD \cdot 2 \cdot 12}, \quad (6)$$

Where  $CD$  - actual incomes on average per month per household (family) in Ukraine in hryvnias; 2- coefficient, which determines that the share of payments on the mortgage in the borrower's income is 50%. The second indicator is the index of housing availability under the mortgage scheme and it can be calculated by the following formula (7):

$$ID_m = \frac{CD \cdot 2 \cdot 100\%}{I_m}, \quad (7)$$

where  $I_m$  - the income necessary to obtain and maintain a long-term mortgage loan.

Thus, the availability of housing under the mortgage scheme will be characterized by such point, whose coordinates will correspond to the index of affordability of the mortgage scheme (7) and the minimum period necessary to accumulate the amount of the initial contribution when purchasing housing under the mortgage scheme (6).

The calculation of the coordinates of commercial affordability of housing in 2011-2017 years under the mortgage scheme in Ukraine is given in Table 2.

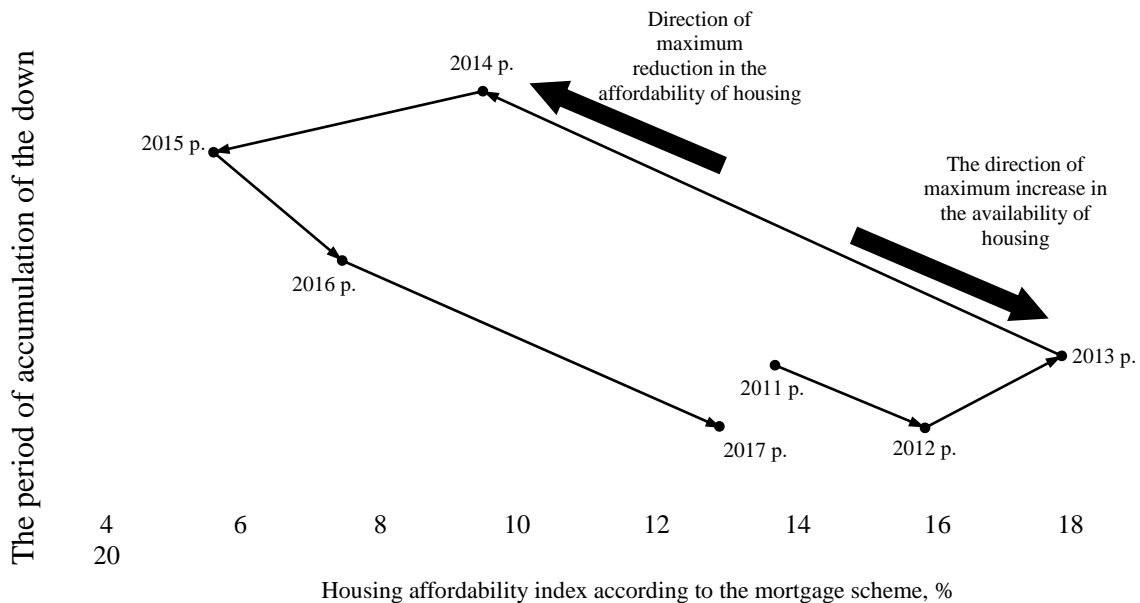
**Table 2.** Indicators of commercial affordability of housing in Ukraine in 2011-2017

Indicators	Years						
	2011	2012	2013	2014	2015	2016	2017
Cost of 1 sq. m of housing in Obolonsky district of Kiev, \$	1720	1558	1566	1497	1223	1172	860
Actual interest rates on mortgage loans in national currency, %	23	24	24	25	23	22	20
Term of the loan, years	15	15	10	10	10	10	10
The cost of the apartment, which is 54 square. m, \$	92880	84132	84564	80838	66042	63288	46440
Share of mortgage in housing cost, %	70	70	60	60	60	60	60
Amount of mortgage, \$	65016	58892	50738	48500	39625	37973	27864
Average annual rate, UAH / USD	7,97	7,99	7,99	15,77	24,00	27,19	27,27
Amount of mortgage loan, UAH.	518178	470547	405397	764845	951000	1023486	759851
Monthly payment, UAH	12811	12025	11486	22308	26184	27498	19022
The share of payments on a loan in the borrower's income, %	50	50	50	50	50	50	50
Required total income per month, UAH	25622	24050	22972	44616	52368	54996	38044
Actual income per month per household (family) in Ukraine, UAH.	3708	4032	4331	4471	6194	8531	10438
Initial deposit on a mortgage loan, UAH.	222076	201668	270269	509970	634008	688315	506568

Share of household income (family), which may be directed to accumulation of down payment and maintenance of a mortgage loan, UAH / month	1854	2016	2166	2236	3097	4266	5219
The period of accumulation of the down payment, years	10	8,3	10,4	19	17	13,5	8
Housing affordability index according to the mortgage scheme, %	14,5	16,8	18,9	10	5,9	7,8	13,7

Source: it is calculated by the author according to the data (Characteristics of households, 2015).

We can construct a trajectory for the availability of housing for citizens of Ukraine under the mortgage scheme (Image 2) on the basis of the results presented in the Table. 2.



**Figure 2.** The trajectory of commercial affordability of housing in 2011-2017.

Source: constructed by the author in accordance with the Table 2.

As we see in Figure 2, the commercial affordability of housing in 2011-2017 has changed over a complicated trajectory.

In 2011-2012, it has gained a positive direction, but in 2012-2013, housing availability has significantly decreased, and in 2013-2014, the housing availability trajectory has been directed towards the maximum reduction in the availability of housing.

Since 2015, and especially in 2016-2017 years, the tendency has changed to a positive one. That means that the trajectory of commercial affordability of housing for Ukrainian citizens was aimed at increasing the availability of housing.



Such tendencies can be explained by the fact that after the sharp collapse of the hryvnia exchange rate against the US dollar in 2014, housing prices in hryvnia have increased in many times, while the purchasing power of citizens has dropped dramatically. Respectively, housing availability has become minimal.

After that, in 2015-2017 years, housing prices fell sharply in dollar terms against the backdrop of stabilization of the hryvnia exchange rate. At the same time, a significant increase of the minimum wage by the Government of Ukraine has led to an increase in household incomes and, as a result, housing affordability index began to grow.

It should be noted that despite some positive changes that took place in 2017, the level of commercial affordability of housing for Ukrainian citizens remains extremely low, because the accumulation of the down payment for a mortgage loan requires 8 years, and the index of commercial affordability of housing is only 13.7 %.

## Conclusions

This research shows that in the period from 1990 to 2017 years there were negative changes in the field of housing availability for Ukrainian citizens.

The rate of social housing availability in Ukraine has rapidly decreased from 1990 to 2010, and in 2011-2017 years, it has reached a critical low level. This fact demonstrates that the government of Ukraine was actually discharged from the problem of social availability of housing and it has not developed modern effective tools for solving the housing problem of the poorest layer of citizens, who really need social housing.

The use of a refined author's methodology for determining the commercial affordability of housing has allowed revealing that the mechanism of bank mortgage lending is inaccessible for the most Ukrainian citizens and evolves in the direction opposite to increased affordability of housing. This indicates the necessity for radical changes in the state regulation of the mentioned mechanism (Omelchuk, 2015).

It is necessary to introduce new mortgage institutes in Ukraine, particularly, the savings and loan mechanisms, which we have proposed (Omelchuk, 2014), as well as we should implement the best examples of foreign experience in the sphere of state housing policy (Omelchuk, 2016) for the purpose of real increase of the level of affordability of housing for Ukrainian citizens.

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