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Housing Consumption in Russia and in Moscow: Transition-Period Trends

Abstract

In early 1990s, at the inception stage of the Russian housing market development, housing consumption was not really related to income or other household characteristics. This fact, along with the low rate of market housing transactions during that period, has considerably inhibited housing filtration and mobility, and contributed to fragmentation of local housing markets.

Based on sample households survey, the paper analyses the development of market mechanisms in the Russian housing sector during 2003-2007. Relationships between housing consumption and household income, housing quality and social and occupational characteristics of households and finally – between housing characteristics and age/household life cycle are analysed. Results are compared with similar data for early 1990s and interpreted in the context of their potential influence on the housing market's integration/fragmentation processes. The article concludes with findings and recommendations.

1. Introduction

In market economy the level of housing consumption by households depends on the resources they have at their disposal, first of all, their income, as well as on other characteristics.

However, the state housing policy measures, as well as the path dependency may considerably affect this general trend. Accordingly, the level of correlation between the volumes of consumption and incomes, the level of housing consumption by individual demographic and occupational groups may significantly vary from country to country.

Russia's specificity is in the long period of dominance of state distribution of housing, the results of which will impact the housing consumption characteristics for a long time to come.

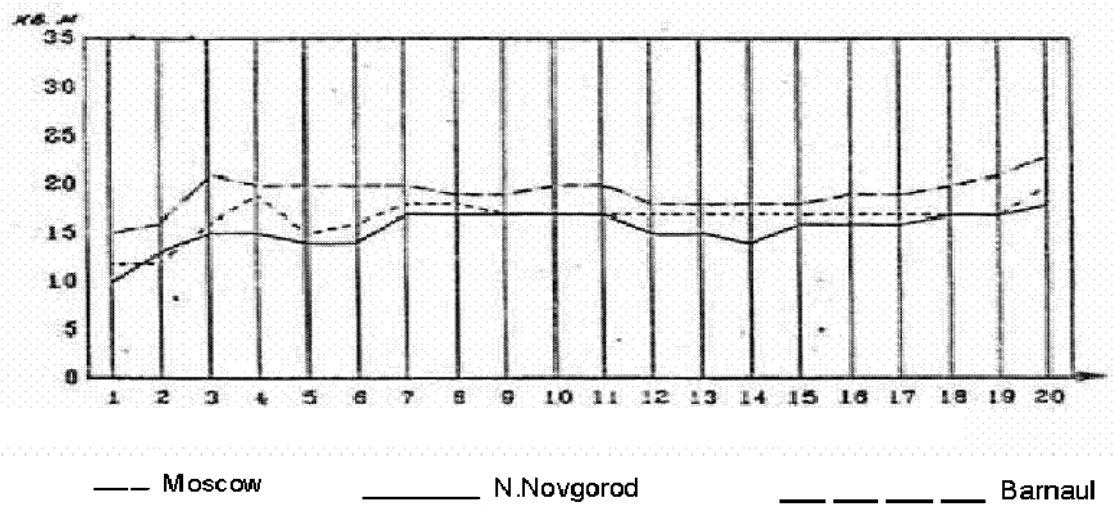
This distribution in no way depended on a household income. Moreover, since in a number of cases the availability of 'distributed' housing offset low incomes, one could expect an inverse correlation between the level of income and the housing consumption. However, it is obvious that some quasi-market mechanisms, for example, exchange of housing, were applied under the Soviet rule as well. There are examples (recorded in research literature) of positive correlation between the quality of housing and monetary incomes even in the Soviet period[1].

[1] N.B. Kosareva, "Housing Market and Social Guarantees", in "Problemy Prognozirovaniya" #1, 1992.

In early 1990s we tried to estimate the situation at the moment of transition to market relations in the housing sector by example of Moscow[2]. We detected a relevant, although quite a low degree of correlation between the household resources and housing consumption. An assumption was made that the unfolding situation implies the existence of an enormous outstanding demand of high-income groups of population and that in the foreseeable future this demand shall be able to consume the larger portion of housing supply, which will considerably limit the opportunities for improving housing conditions by other groups of population. Possibly, this was one of preconditions for the extreme monopolization of the housing construction market in Moscow and for the shift of supply towards 'elite' segments.

In addition, there was some evidence that the level of correlation for Moscow was lower than in other cities of Russia, and that the smaller the city, the higher the degree of correlation (a lot to our regret, during that period we were unable to obtain a reliable confirmation of this hypothesis) – (Figure 1). We explained it by the fact that at the stage of transition to market the 'blending of elites' in Moscow was considerably stronger than in other regional centers.

Figure 1. Housing consumption: total floor space (m2 per one household member) by per capita household income groups, 1992



The goal of this paper is to answer the question as to how market laws work in the housing sector of Russia and Moscow, for example:

1. how strong is the interrelation, in the Russian housing sector, between household incomes and the quality of dwellings
2. how strong is the interrelation between the age/household life cycle and the characteristics of dwellings
3. what are specific characteristics of Moscow compared to the average nationwide characteristics

[2] A.S. Puzanov, "Housing Quality in Moscow and Its Correlation with Household Resources"/ in "Voprosy Ekonomiki" #7, 1993.

4. how has the interrelation between the housing consumption and household characteristics changed over 15 years of transition in Moscow.

2. Description of data and methodology of expert evaluation

The paper is based on the data of sample surveys of household budgets that were conducted by the Federal Statistical Service (Rosstat) on permanent basis during 2004 and 2007 calendar years in all constituent entities of the Russian Federation and encompassed 48,700 households. In addition, the results of the survey conducted in December 1992 were also used. The latter survey was based on the random sampling of 2,000 Moscow households – tenants of municipal or departmental housing stock, as of January 1, 1992. Some of the apartments in question had been privatized by the beginning of this survey.

Prior to the expert evaluation, the data was converted into comparable individual indices of quality, which served as a basis for the subsequent designing of dummy indices. All indices are graded: from 1 (the lowest quality) to 5 (the highest quality).

Altogether, three indices of housing quality have been designed: the total number of rooms in one housing unit, its total floor space and a dummy index of sub-amenities. The latter index was calculated proceeding from the availability of the following housing amenities: a bath or douche; electricity (a dwelling was considered to have electric equipment if it was connected to electric networks and had an electric wiring in it); plumbing (a dwelling was considered to have plumbing if there was a water supply distribution network inside the building where the water was supplied on centralized basis from a water pipeline or an artesian well throughout the year); sewage; an apartment telephone.

To calculate the dummy index of sub-amenities (I_subud), the data on the availability of amenities were presented in the form of dummy-variables and summed up.

Continuous variables were brought to the transformed indices the following way: minimum and maximum values were calculated (VARmin и VARmax), and then equations were solved:

$$1 = A^* \text{VARmin} + B; \quad 5 = A^* \text{VARmax} + B.$$

Finally, a dummy index was designed on the basis of available subscripts.

Socioeconomic parameters of households were estimated the following way: all households were divided into 5 quintiles in accordance with the household income. The following types of households were selected: pensioners (all household members are older than 55), lone households (households consisting of one or two members who are neither children nor pensioners), adults with children (with at least one child up to 18 years old, but without pensioners), adults with parents (without children, but with pensioners and household members of working age), as well as complex families. The combination of distribution by the level of

income and by the type of a household made it possible to single out ten major household groups (see Attachments).

Several groups of households were selected, e.g.:

- Pensioners. All household members are older than 55.
- Lone households. There are not more than two household members, and there are neither children (younger than 18) nor pensioners (older than 55).
- Adults with children. There are no pensioners (older than 55) in the household, and there is at least one child (younger than 18).
- Adults with parents. There are no children (younger than 18), and there is at least one household member of pension age (older than 55).
- Others (or complex households). All other households.

Subsequently, some household groups were repeatedly divided into equal parts based on the criterion of the total household income. Accordingly, based on the level of income that was higher or lower than a median income, more or less well-off 'pensioners'; more or less well-off 'adults with children'; more or less well-off 'adults with parents'; more or less well-off 'others' were singled out.

It should be noted that the possibility of comparing the numerical values of indices calculated for 2004 and 2007 is limited. First of all, different households participated in the sample surveys in 2004 and 2007, which could interfere with the results regardless of the weighing of samples.

Secondly, we cannot ignore that fact that a more spacious housing appeared in 2007. This led to the situation when in the process of standardization of sampling in 2007 the indices based on the floor space of an apartment (m^2) moved to 0.

Finally, as a result of changes in the technique of maintaining official statistical data, when the index of amenities' availability was calculated for 2004 and 2007, a slightly different set of variables was applied, which couldn't but affect the final indices.

3. Major conclusions based on evaluation of housing consumption parameters in 2004-2007

The data contained in Table 1 confirms that there is a positive dependence of standardized indices of the housing floor space and the number of rooms on the income quintiles.

In other words, we can assert that the better-off households have housing with better characteristics.

Table 1. Mean values of indices of housing consumption in Russia

Quintile[3]	Housing floor space		Number of rooms		Availability of amenities	
	2004	2007	2004	2007	2004	2007
Mean	**1,2**	**1,019**	**1,53**	**1,50**	**4,04**	**4,17**
1	1,17	1,016	1,38	1,37	3,72	3,85
2	1,19	1,018	1,5	1,47	3,85	4,03
3	1,2	1,019	1,55	1,5	4,01	4,17
4	1,21	1,020	1,59	1,54	4,17	4,31
5	1,23	1,021	1,65	1,61	4,43	4,51

The analysis of the correlation indices (Table 2) enables us to assert that there is a positive correlation of household incomes and housing quality indicators, and the closeness of correlation is considerably higher than the one registered in Moscow in early 1990s.

Table 2. Indices of correlation of housing consumption and income parameters for Russia

	Housing floor space		Number of rooms		Availability of amenities	
	2004	2007	2004	2007	2004	2007
Incomes	0,179**	0,174**	0,194**	0,185**	0,191**	0,204**

* – index is significant at the 5% level, ** - index is significant at the 1% level

The differentiation of the housing consumption in Russia with regard to individual socio-demographic groups reflects the fact that the cycle of housing consumption is lagging behind the cycle of housing needs: the maximum consumption is registered in the category “adults with parents”, the so-called “empty nesters”. The category “adults with children under age 18” looks pretty well in terms of such parameters as “housing floor space” and “number of rooms”, although in terms of availability of amenities, they, along with households consisting of pensioners, are in the worst situation compared to other categories. No conspicuous difference was registered between the nationwide situation and the situation in Moscow in the standing of individual socio-demographic groups in terms of housing consumption.

[3] The technique of calculating mean values of indices and mean values of relevant quintiles slightly differed from the technique of calculating mean values in the rest of the paper. Therefore, the mean indices in this Table and those in the rest of the paper are slightly different. This was caused by the specifics of the inception data.

Table 3. Housing consumption by socio-demographic groups

(a mean index and the percentage of indices for various socio-demographic groups against the relevant mean value)

Index	2004		2007	
	Moscow	Russia	Moscow	Russia
Housing floor space	**2,32**	**1,2**	**2,25**	**1,02**
Pensioners, %	89,6	98,1	88,77	99,7
Lone, %	92,2	98,3	99,29	99,76
Adults with children, %	103,2	100,4	104,7	100,1
Adults with parents, %	105,4	101,3	107,1	100,1
Others, %	109,7	102,7	102,7	100,0
Number of rooms	**2,08**	**1,55**	**2,49**	**1,53**
Pensioners, %	83,2	92,1	81,5	93,3
Lone, %	82,0	92,1	89,2	93,8
Adults with children, %	104,9	100,0	106,2	101,9
Adults with parents, %	111,8	104,7	116,9	106,5
Others, %	115,8	108,8	102,7	102,8
Availability of amenities	**4,92**	**4,28**	**4,91**	**4,4**
Pensioners, %	101,0	97,9	100,9	96,3
Lone, %	98,7	103,5	99,3	101,3
Adults with children, %	99,6	97,6	99,9	97,9
Adults with parents, %	101,1	104,1	99,5	103,8
Others, %	99,7	103,6	100,2	102,7

% - as a percentage of a mean index value for a relevant parameter.

In accordance with the results obtained (Table 4), the degree of linear relationship between the income indicators and the floor space or number of rooms in Moscow is higher that in Russia as a whole. There are reasons to believe that the situation has changed compared to 1992, when the degree of such linear relationship in Moscow was lower than in many other Russian cities.

However, the income size and the index of sub-amenities in Moscow, unlike in Russia as a whole, are not interrelated: virtually all housing in Moscow is equipped with standard amenities, which are included in the aggregate index.

Table 4. Correlation indices between housing consumption parameters

	2004		2007	
	Moscow	Russia	Moscow	Russia
Income – Housing floor space	0,401**	0,179**	0,444**	0,174**
Income – Number of rooms	0,417**	0,194**	0,444**	0,000
Income – Amenities	0,005	0,191**	-0,006	0,204**
Housing floor space – Number of rooms	0,795**	0,699**	0,793**	0,606**
Housing floor space – Amenities	0,148**	-0,034**	0,105**	0,013**
Number of rooms – Amenities	0,126**	-0,061**	0,090**	-0,022**

* – index is significant at the 5% level, ** - index is significant at the 1% level

Aside from the paired correlation indices, regression equations were developed by the size of income and types of households (the variable "lone" was removed from the regression to avoid multi-collinearity). It is noteworthy that the index of determination in Moscow is much higher than the relevant average index in Russia, and in 2004-2007 this gap increased significantly (Table 5).

The relevant tables with such parameters as the number of rooms and availability of amenities are given in Attachments 7 and 8.

Table 5. Parameters of the multiple regression equation for Moscow and Russia – housing floor space

Index	2004		2007	
	Moscow	Russia	Moscow	Russia
Mean value	**2,32**	**1,2**	**2,25**	**1,02**
Index of determination R^2	**0,187**	**0,053**	**0,208**	**0,036**
Income	2,307E-6** (0,000)	2,101E-7** (0,000)	1,659E-6 (0,000)	7,694E-9 (0,000)
Pensioners	-0,010** (0,041)	0,001 (0,001)	-,0113 (0,045)	5,638E-5 (0,000)
Adults with children	0,111** (0,041)	0,015** (0,001)	-0,040 (0,048)	0,002 (0,000)
Adults with parents	0,205** (0,042)	0,031** (0,002)	0,056 (0,046)	0,003 (0,000)
Others	0,216** (0,042)	0,041** (0,002)	-0,030 (0,047)	0,002 (0,000)
Constant	2,038** (0,033)	1,174** (0,001)	2,029 (0,039)	1,017 (0,000)

Standard mistakes are given in brackets.

* – index is significant at the 5% level, ** - index is significant at the 1% level

4. Major conclusions based on evaluation of housing consumption parameters in Moscow in 1992-2007

The most interesting phase of work was the comparison of results for Moscow in 1992 with the results of 2004 and 2007.

The most important conclusion is that the stratification in terms of housing consumption in accordance with the level of income has considerably increased over the past period (Table 6).

For example, the difference between the fifth and the sixth quintiles in terms of the transformed indices of housing consumption by floor space increased from 1.19 to 1.34 over the estimated period. It is quite obvious that the housing consumption (by floor space) in the first quintile fell down in absolute figures as well.

Table 6. Mean values of the housing floor space index for Moscow

Quintile	Housing floor space index		
	1992	2004	2007
Mean	**2,22**	**2,32**	**2,25**
1	2,02	1,97	1,89
2	2,11	2,21	2,14
3	2,22	2,32	2,25
4	2,37	2,45	2,4
5	2,42	2,66	2,59

The equation of multiple regression demonstrates that over the past 15 years the dependence of housing consumption on income level and on belonging to a particular socio-demographic group has considerably increased (Table 7). The changes in the standing of "better-off adults with parents –" is particularly noteworthy. While in 1992 they consumed less housing (in terms of floor space) than medium-income and even low-income representatives of this category (and this was the only deviation from the general pattern, according to which households with higher income in every socio-demographic group consume more housing), by 2007 a market-driven pattern prevailed. Moreover, households from this category came out on top of all types of households in terms of housing consumption. On the other hand, households from the category of "adults with children" – less well-off and medium-income households (that belong to two bottom thirds in terms of their income) have seen a maximum aggravation of their condition compared to other socio-occupational groups. The condition of the category "Others", which, first of all, comprises complex households, has also relatively deteriorated.

The differentiation of housing consumption in accordance with the level of income took place in all selected socio-demographic groups. While in 1992 the better-off households of pensioners consumed 8% more housing than the less well-off households of pensioners, in 2007 this difference was already 13%. The relevant index for the categories "adults with children" and "others" increased from 11% to 21%.

Table 7. Mean values for Moscow – housing floor space (a mean index and the percentage for the group against the mean value of the index for the relevant year)

Index	Housing floor space		
	1992	2004	2007
Mean value	**2,22**	**2,32**	**2,25**
Index of determination R^2	**0,106**	**0,177**	**0,188**
Less well-off pensioners, %	80,2	86,2	83,34
Better-off pensioners, %	86,5	92,8	93,89
Less well-off adults with children, %	106,3	95,6	95,51
Medium-income adults with children, %	106,8	103,9	102,74
Better well-off adults with children, %	101,8	109,6	116,68
Less well-off adults with parents, %	92,3	99,3	100,58
Better-off adults with parents, %	102,7	111,3	113,24
Other less well-off households, %	104,5	103,7	92,78
Other better-off households, %	115,8	115,4	112,33
Lone households, %	91,9	109,5	99,12

These data enable us to conclude that while in Russia on the whole the determinacy of housing consumption by the level of income and other household characteristics is still rather low, the relevant process in Moscow has been gaining momentum. Over the estimated period, most households that ended up in the upper income groups managed to ensure that they have an appropriate housing consumption level. Due to the fact that during this period the supply of new housing in the market was rather limited, we can assume that the redistribution of the existing housing stock between various groups of population, including the cross-generational transfers, was of great importance. From the point of view of housing affordability in the market, young families with medium or low income ("adults with children" – less well-offs and those with medium income), as well as complex families, find themselves in a more difficult situation.

ATTACHMENTS

Attachment 1. Description of key housing quality indices for Russia

Index	Description	2004		2007	
		Mean value	Mean-square deviation	Mean value	Mean-square deviation
Obpl	Total floor space of the apartment (m^2)	1,2	0,09044	1,02	0,01180
Chiskom	Number of rooms	1,55	0,36432	1,53	0,35404
I_subud	Dummy index of sub-amenities	4,28	1,06239	4,4	1,01564

Attachment 2. Description of key housing quality indices for Moscow

Index	Description	2004		2007	
		Mean value	Mean-square deviation	Mean value	Mean-square deviation
Obpl	Total floor space of the apartment (m^2)	2,32	0,49583	2,2539	2,25
Chiskom	Number of rooms	2,08	0,73361	2,4851	2,49
I_subud	Dummy index of sub-amenities	4,92	0,38872	4,9118	4,91

Attachment 3. Types of households: an average monthly income and their share in all households for Russia

Types of households	2004		2007	
	Average monthly income, RUR	As a proportion of all households (%)	Average monthly income, RUR	As a proportion of all households (%)
«Pensioners»	18169,15	23,64	43666,89	24,95
«Lone»	40306,82	13,85	136170,4	10,76%
«Adults with children»	103354,2	36,04	268002,1	30,26
«Adults with parents»	79507,83	11,1	220022,3	12,71
«Complex»	118488,3	15,37	220885	21,33

Attachment 4. Types of households: an average monthly income and their share in all households for Moscow

Types of households	2004		2007	
	Average monthly income, RUR	As a proportion of all households (%)	Average monthly income, RUR	As a proportion of all households (%)
«Pensioners»	21888,18	21,94	49158,95	24,89
«Lone»	44114,33	14,74	116714,7	11,45
«Adults with children»	105778,8	26,0	221511,4	20,77
«Adults with parents»	87597,27	20,8	196168,5	22,19
«Complex»	126055,3	16,52	188413,4	20,70

Attachment 5. Characteristics of quintiles for Russia

Quintile	2004		2007	
	Average income	Income range, % of the average throughout the sampling	Average income	Income range, % of the average throughout the sampling
1	7328,7	0,28 - 17,33	15817,75	1,09 - 24,15
2	20093,8	17,33 - 36,26	43489,47	24,15 - 51,90
3	36737,9	36,26 - 61,98	81389,22	51,90 - 89,97
4	61753,8	61,98 - 105,19	137810,61	89,97 - 153,58
5	137031	105,19 - 1360,53	304603,40	153,59 -3524,51

Attachment 6. Characteristics of quintiles for Moscow

Quintile	2004		2007	
	Average income	Income range, % of the average throughout the sampling	Average income	Income range, % of the average throughout the sampling
1	14204,95	5,43 - 33,07	27403,65	4,83 - 31,65
2	37144,18	33,178 - 62,42	74623,15	31,81 - 63,26
3	62146,86	62,49 - 101,06	126329,12	63,28 - 100,34
4	96828,05	101,27 - 150,42	190315,52	100,70 - 150,56
5	179302,32	150,49 - 802,26	351291,55	150,57 - 576,35

Attachment 7. Parameters of the multiple regression equation for Moscow and Russia – number of rooms

Index	2004		2007	
	Moscow	Russia	Moscow	Russia
Mean value	2,08	1,55	2,49	1,53
Index of determination R^2	**0,216**	**0,075**	**0,225**	**0,060**
Income	3,517E-6** (0,000)	8,013E-7** (0,000)	2,978E-6 (0,000)	2,372E-7 (0,000)
Pensioners	0,103** (0,59)	0,012* (0,005)	-0,004 (0,083)	,015 (0,000)
Adults with children	0,259** (0,60)	0,087** (0,005)	0,098 (0,087)	,093 (0,000)
Adults with parents	0,467** (0,61)	0,178 (0,006)	0,440 (0,085)	,174 (0,000)
Others	0,416** (0,68)	0,217** (0,006)	0,110 (0,085)	117 (0,000)
Constant	1,550** (0,047)	1,404** (0,004)	1,886 (0,072)	1,403 (0,000)

Standard mistakes are given in brackets.

* – index is significant at the 5% level, ** - index is significant at the 1% level

Attachment 8. Parameters of the multiple regression equation for Moscow and Russia – availability of amenities

Index	2004		2007	
	Moscow	Russia	Moscow	Russia
Mean value	4,92	4,28	4,91	4,4
Index of determination R^2	**0,013**	**0,055**	**0,002**	**0,055**
Income	1,893E-7 (0,000)	5,119E-6** (0,000)	6,627E-8 (0,000)	9,491E-7 (0,000)
Pensioners	0,117** (0,035)	-0,151** (0,017)	0,083 (0,057)	-0,132 (0,001)
Adults with children	0,035 (0,036)	-0,465** (0,016)	0,021 (0,060)	-0,273 (0,000)
Adults with parents	0,109** (0,036)	-0,091** (0,020)	0,004 (0,058)	,032 (0,001)
Others	0,035 (0,040)	-0,269** (0,019)	,037 (0,059)	-0,019 (0,001)
Constant	4,847** (0,028)	4,021** (0,014)	4,868 (0,049)	4,327 (0,000)

Standard mistakes are given in brackets.

* – index is significant at the 5% level, ** - index is significant at the 1% level

Table 9. Regression for Moscow and Russia – number of rooms

Index	2004		2007	
	Moscow	Russia	Moscow	Russia
Mean value	2,08	1,55	2,49	1,53
Index of determination R^2	**0,208**	**0,089**	**0,188**	**0,086**
Less well-off pensioners	-0,114 (0,070)	-0,054** (0,000)	-0,455 (0,101)	-0,063 (0,000)
Better-off pensioners	0,165* (0,070)	0,057** (0,000)	-0,035 (0,092)	0,050 (0,000)
Less well-off adults with children	0,246** (0,075)	0,077** (0,000)	-0,156 (0,127)	0,055 (0,000)
Medium-income adults with children	0,435** (0,075)	0,153** (0,000)	0,486 (0,099)	0,124 (0,000)
Better well-off adults with children	0,746** (0,075)	0,212** (0,000)	0,795 (0,126)	0,193 (0,000)
Less well-off adults with parents	0,404** (0,071)	0,153** (0,000)	0,386 (0,101)	0,120 (0,000)
Better-off adults with parents	0,836** (0,071)	0,277** (0,000)	0,925 (0,097)	0,268 (0,000)
Other less well-off households	0,510** (0,076)	0,236** (0,000)	0,157 (0,090)	0,020 (0,000)
Other better-off households	0,898** (0,076)	0,272** (0,000)	0,966 (0,133)	0,253 (0,000)
Constant	1,705** (0,046)	1,426** (0,000)	2,234 (0,069)	1,435 (0,000)

Standard mistakes are given in brackets.

* – index is significant at the 5% level, ** - index is significant at the 1% level

Table 10. Regression for Moscow and Russia – index of sub-amenities

Index	2004		2007	
	Москва	Россия	Москва	Россия
Mean value	4,92	4,28	4,91	4,4
Index of determination R^2	**0,018**	**0,094**	**0,005**	**0,075**
Less well-off pensioners	0,093* (0,041)	-0,643** (0,001)	0,096 (0,068)	-0,474 (0,001)
Better-off pensioners	0,132 (0,041)	-0,125** (0,001)	0,067 (0,062)	0,043 (0,001)
Less well-off adults with children	0,030** (0,044)	-0,648** (0,001)	0,065 (0,085)	-0,562 (0,001)
Medium-income adults with children	-0,004** (0,044)	-0,197** (0,001)	0,021 (0,066)	-0,110 (0,001)
Better well-off adults with children	0,112* (0,044)	0,259** (0,001)	0,008 (0,085)	0,227 (0,001)
Less well-off adults with parents	0,131 (0,042)	-0,311** (0,001)	0,069 (0,067)	-0,137 (0,001)
Better-off adults with	0,104*	0,306**	-0,042	0,359

parents	(0,042)	(0,001)	(0,065)	(0,001)
Other less well-off households	0,024** (0,045)	-0,214** (0,001)	0,055 (0,060)	-0,122 (0,001)
Other better-off households	0,076** (0,045)	0,288** (0,001)	-0,009 (0,089)	0,244 (0,001)
Constant	4,855 (0,027)	4,414** (0,000)	4,876 (0,046)	4,456 (0,000)

Standard mistakes are given in brackets.

* – index is significant at the 5% level, ** - index is significant at the 1% level