

That means that the problem of small cities cannot be solved inside a region on regional policy level. Services industry has a considerable influence on population reproduction regime parameters in large cities only.

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LEVEL AND FLUCTUATIONS IN HOUSEHOLD EXPENDITURES IN THE YEARS 1998—2002 AND INCOME GROUPS IN POLAND

1. Introduction

The objective of the paper is presentation of household expenditures and analysis of changes in their level and structure in the years from 1998 to 2002 in Poland. Income was chosen as the basic classification criterion, on the basis of which households were broken down into ten groups according to the consecutive deciles of income per person in the given household.

This paper is a continuation (obviously, in a much narrower scope) of the research, whose results were published in the book: *Analysis of income and expenditures of the population* [cf. Podolec (2000)]. One of the objectives set by the author was to identify the current directions in behaviour of social and economic groups of the population in the scope of income shape and expenditures. This shaping was analysed for the period (1990—1997) in which Poland faced dynamic changes in the social and economic system, which was reflected in the results of the analyses made.

This paper refers to the period, in which dynamics of transformations in social and economic structures was definitely weaker against the first years of the transformation; yet we can still observe trends in the household income and expenditures structure shaping, which originated in the first years of the transformation.

2. The basic notions and the source of statistical data

The basic entity in Poland, which acquires statistical data for researching household budgets is the Central Statistical Office (GUS). Results of its research and analyses are presented in numerous publications. Therefore, the following notions and definitions are quoted after GUS [cf. GUS (2003)]. It is also justified by the fact that this paper will make use of the data acquired within a representative research of household budgets by GUS.

The basic research unit is a household. One-person and multi-person households are differentiated. The one-person household is assumed to be a person supporting himself/herself independently, irre-

spective of whether he/she lives alone or with other people. The multi-purpose household is understood to be a group of people living together and supporting themselves jointly.

Household budget is defined as a systematic statement (according to a classification) of receipts and outgoings (in cash and in kind) of the household for the given period.

The main category in the analysis of income household is available income, which consists of the following:

- income from hired work,
- income from a private farm in agriculture,
- income from self-employment outside a private farm in agriculture or from free profession,
- income from property,
- income from hiring (leasing) houses and buildings constructions not related to own business activity,
- benefits from social insurance,
- benefits from social support,
- other income.

The available income is dedicated for expenditures and savings. Expenditures, in turn, include expenditures for consumer goods and services and other expenditures. Expenditures for consumer goods and services are dedicated to satisfying needs of the household and include goods purchased for cash, credit purchase, free goods and natural consumption. Consumer goods are divided into non-durable goods (e.g. food), semi-durable (e.g. clothes) and durable use (e.g. vehicles). Other expenditures include, in general, gifts, some taxes (e.g. on real estate properties) and non-consumer expenditures.

This paper uses income available per person as a statistical feature for income analysis, with expenditures per person in the household used for expenditures. Expenditures in the following sections were analysed in more detail²⁴:

- section 1 — expenditures for food and non-alcoholic beverages,
- section 2 — expenditures for alcoholic beverages and tobacco products,
- section 3 — expenditures for clothes and shoes,
- section 4 — expenditures for housing, water and energy utilities,
- section 6 — expenditures for health care,
- section 9 — expenditures for recreation and culture,

²⁴ Particular sections are marked following markings used by GUS

- section 10 — expenditures for education

Statistical data collections for over 32,000 household observations for each of the analysed years were purchased from GUS.

3. Empirical results of the analysis of expenditures in reference to income

For statistical analysis, precise definition of the researched population is very important, in particular defining a statistical unit. In household budget research, a household or a person in the household may form such a unit. Both above units may be characterised with the same statistical features as, for example, in our case income per person or expenditures per person. Adopting one of the said units leads to not only different results in specific statistical measures, but also their different interpretation. When we have data for a household, obtaining results of the measures for a statistical unit, which is a person in the household, is in practice reduced to weighing observations, where weight is the number of persons in this household. Therefore, when talking about weighted distributions (observations) in the following presentation of calculation results, we will understand these results, which refer to persons in households, with the results referring to the household when talking about non-weighted distributions.

Both income and expenditures were expressed in Polish Zloty, with inflation taken into consideration assumed prices of 2002Q4.

Tables 1 and 2 present the basic descriptive parameters of the income distribution per person and expenditures distribution per person in the researched period, for non-weighted and weighted observations, respectively.

Table 1

BASIC DESCRIPTIVE MEASURES OF INCOME AND EXPENDITURES DISTRIBUTION IN 1998—2002 (NOT-WEIGHTED BY NUMBER OF PERSONS IN HOUSEHOLD, IN PRICES FROM IV QUARTER 2002)

Year	Income per capita in PLN				Expenditures per capita in PLN			
	Mean	St. dev.	V	Median	Mean	St. dev.	V	Median
1998	758,78	552,73	72,84	658,89	742,09	599,68	80,81	606,51
1999	767,63	661,69	86,20	666,53	740,70	567,13	76,57	605,29
2000	758,33	682,86	90,04	649,91	736,51	605,89	82,27	599,66
2001	773,54	595,58	76,99	660,20	742,65	585,32	78,82	607,53
2002	788,88	739,00	93,68	665,32	756,07	640,65	84,73	606,82

V — coefficient of variation,
Source: own calculations

Table 2

**BASIC DESCRIPTIVE MEASURES OF INCOME AND EXPENDITURES
 DISTRIBUTION IN 1998—2002 (WEIGHTED BY NUMBER OF PERSONS IN
 HOUSEHOLD, IN PRICES FROM IV QUARTER 2002)**

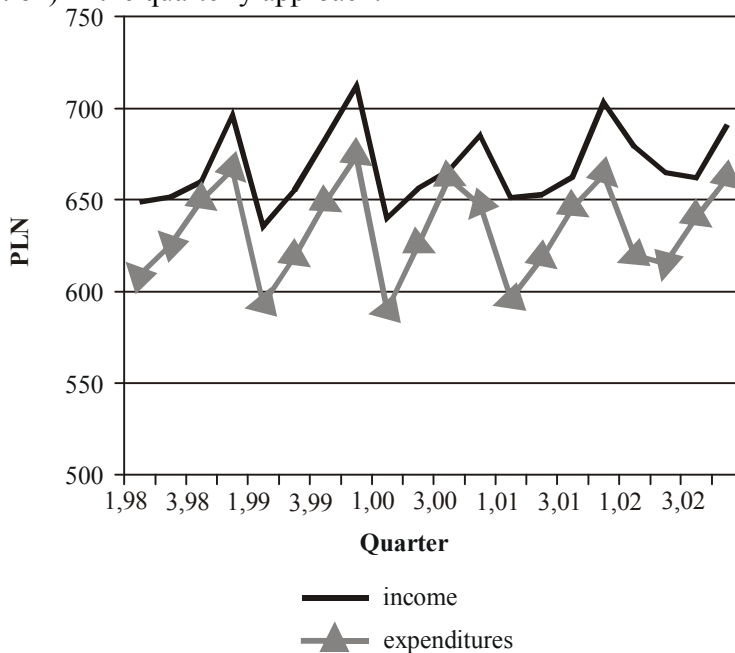
Year	Income per capita in PLN				Expenditures per capita in PLN			
	Mean	St. dev.	V	Median	Mean	St. dev.	V	Median
1998	664,39	491,77	74,02	573,30	637,75	511,19	80,16	516,64
1999	671,05	648,68	96,67	576,49	633,35	486,92	76,88	514,35
2000	662,06	639,58	96,60	563,66	631,24	511,44	81,02	511,32
2001	667,42	517,03	77,47	562,32	630,78	493,21	78,19	509,76
2002	674,35	650,08	96,40	559,40	634,38	527,95	83,22	501,93

V — coefficient of variation,
Source: own calculations

Table 1 shows a subtle increase in the average income per person and in the average expenditures per person in households in consecutive years. However, the median value does not confirm this finding. Apart from 2000, half of the households featured income per person of not more than ca. PLN 660, with expenditures not higher than ca. PLN 606. The coefficient of variation (*V*) suggests high variation of income and expenditures, which is typical of these phenomena.

Comparison of the results from Table 2 and Table 1 shows a clear difference in shaping of the average measures (the average and the median). It turns out that both the average and the median of the income per person for household members (weighted observations) take on basically lower values. Half the persons living in the analyzed households has income of not more than ca. PLN 560 (for 2002). These results come from the fact that households of lower income per person are relatively more numerous than those with higher income, which leads to higher weight being attributed to the former, thus a shift in the distribution towards lower values. Moreover, comparison of the average values between particular years cannot give reasons to speaking about an increase trend, and the median shows even a slight decreasing trend for both income and expenditures per person.

Figure 1 presents graphically this situation (for the weighted distribution) in the quarterly approach.

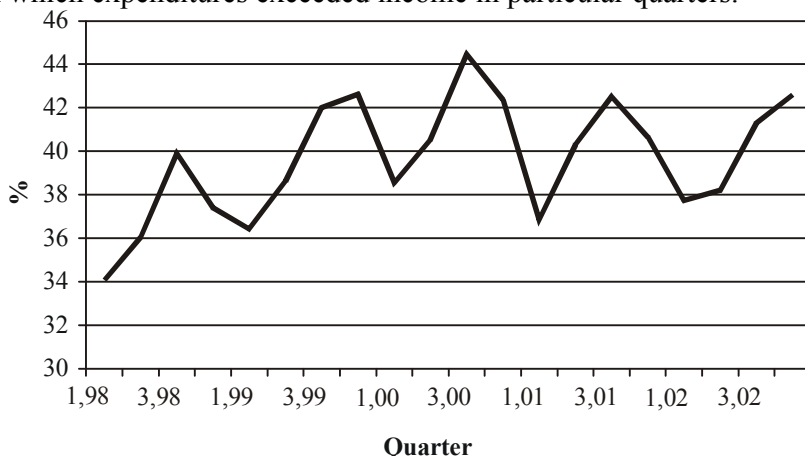


Source: own calculations

Figure 1. Averages of income and expenditures per capita by quarter from 1998 to 2002 (weighted by number of persons in household, in prices of IV quarter 2002).

On the basis of this figure, we can additionally notice a clear cycling of both the average income and expenditures per person. The maximum average value in both cases is observed in the 4th quarter of each year, with the minimum in the 1st quarter. Thus, the average expenditures do not exceed the average income per person in each of the analyzed periods. One can also notice differences in the levels of the average values of income and expenditures per person obtained in the 1st quarter (for the minimum) in reference to the 4th quarter (for the maximum). This situation might be explained with the fact that after expansive expenditures (in the 4th quarter), a stage of increased savings occur (1st quarter), when goods purchased in the earlier quarter are also consumed.

Figure 2 presents shaping of the fraction (in %) of the households, in which expenditures exceeded income in particular quarters.



Source: own calculations

Figure 2. Percent of households, where expenditures exceed income by quarter from 1998 to 2002

As above, we can observe a clear cyclic repetition of the discussed fraction of households. Its highest level comes at quarters 3 or 4, with the lowest being in quarter 1. Thus, a high level of expenditures in quarters 3 and 4 is in some households achieved from savings in the other two quarters.

When the fraction of households with higher expenditures than income in particular years is analyzed for income decile classes, it is easily noticeable that percentage of such households is in inverse proportion to increase in income. For the first decile class, it is ca. 64 % in each year, for the second—ca. 47 %, and for further classes up to the ninth included, it stabilises at the level of 35—40 %. However, even in the highest decile group, over 20 % households are found with expenditures exceeding income. An assumption is not justified, though, that this is a permanent situation for these households. Rather, it follows the adopted research method for household budgets, which assumes analysing the given household for one month during the year (the so-called monthly rotation). Major fluctuations in the observed income and expenditures may result from random factors. Estimation how these factors affect the fraction of households with higher expenditures

than income is difficult, as regards households from the lowest income decile classes.

The fraction of households with expenditures exceeding income in the analysed month shows the scope of the problem concerning insufficiency of income against expenditures made. The analysis of this problem may go deeper by research in the intensity of the said insufficiency according to the following formula:

$$I = \frac{1}{n} \sum_{i=1}^n \frac{(w_i - d_i)}{w_i} \cdot 100,$$

Where I stands for intensity in %, w_i — expenditures of the i household, d_i — income of this household, and n reports the number of such households with income insufficiency. In other words, I defines the average fraction of the difference between expenditures and income against the expenditures. Table 3 presents results of calculations of the discussed intensity in the system of years and decile classes.

Table 3

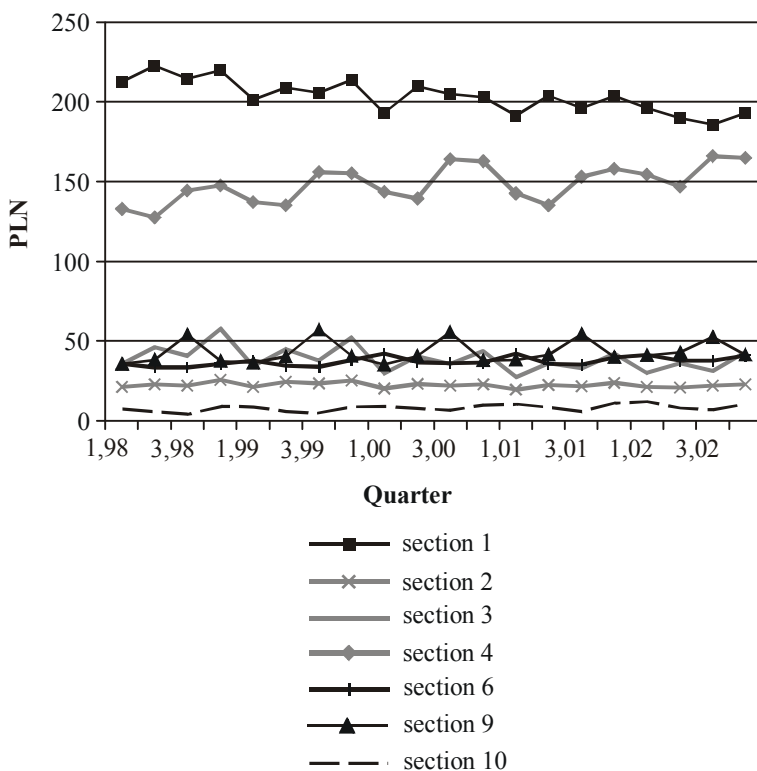
THE INTENSITY (IN %) OF THE DEFICIT OF INCOME IN RELATION TO EXPENDITURES BY YEAR AND DECILE CLASSES

Decile classes	1998	1999	2000	2001	2002
1	31,93	31,84	33,05	31,46	31,80
2	24,42	40,11	21,78	21,07	20,03
3	22,04	21,26	20,09	19,26	19,57
4	22,24	21,31	19,94	20,16	19,15
5	21,06	20,99	19,68	20,07	18,57
6	21,39	19,36	19,53	18,39	19,10
7	21,23	19,52	20,01	19,89	18,18
8	22,06	20,52	19,44	18,81	18,76
9	24,07	19,87	19,86	19,60	19,03
10	25,41	20,06	20,60	19,69	20,05
Total	24,06	24,78	22,24	21,62	21,16

Source: own calculations

As one could expect, the highest intensity of income insufficiency features households from the first income decile class, whereas, unexpectedly, the lowest intensity comes for middle-class households. However, in case of the last nine classes, the level of the researched intensity is quite balanced. The last row in Table 3 shows that along with the years, the general income insufficiency intensity is lower than expenditures, which may also be said about households from majority of income classes.

Another drawing (Fig. 3) presents shaping of the level of expenditures per person in the household for the analysed sections of expenditures²⁵.



Source: own calculations

Figure 3. Expenditures in expenditure sections by quarter from 1998 to 2002 (in prices of IV quarter of 2002)

²⁵ See section 2

From among the six researched groups of expenditures, the highest level features expenditures for food and expenditures for housing. Also, in case of these two section of expenditures, we may find a trend, decreasing for food expenditures and increasing for residential expenditures. One can also observe cyclic occurrence of expenditures in the following groups: food, location maintenance, recreation and culture and clothes and shoes.

Table 4 presents structure of household expenditures in the years 1998—2002 with a special attention paid to the selected sections of expenditures.

Table 4

**THE STRUCTURE OF EXPENDITURES (IN %)
BY SELECTED EXPENDITURE SECTIONS IN 1998—2002**

Year	Sec. 1	Sec. 2	Sec. 3	Sec. 4	Sec. 6	Sec. 9	Sec. 10	Others
1998	29,31	3,07	6,05	18,61	4,64	5,54	0,85	31,93
1999	28,02	3,17	5,68	19,68	4,86	5,86	0,93	31,79
2000	27,53	2,97	5,05	20,70	5,12	5,74	1,11	31,77
2001	26,78	2,93	4,65	19,81	5,12	5,86	1,17	33,68
2002	25,28	2,86	4,64	20,89	5,21	5,88	1,22	34,02

Source: own calculations

One can find a clear decrease in the share of expenditures for food in consecutive years. In case of other groups of expenditures, there are no reasons to talk about major changes of their share in the total expenditures. However, comparing appropriate structure indexes for particular sections from 1998 and from 2002, one can find out statistically insignificant²⁶ decrease in the share of expenditures for clothes and shoes (section 3). Increase in the share features location expenditures (section 4), health (section 6), recreation and culture (section 9) and education expenditures (section 10).

An interesting aspect of the research may be the analysis of differentiation in the structure of expenditures for income decile classes. The results of this analysis for 2002 are given in Table 5.

Table 5

THE STRUCTURE OF EXPENDITURES (IN %)

²⁶ The significance level of 0.05 was adopted.

BY SELECTED EXPENDITURE SECTIONS AND DECILE CLASSES IN 2002

Decile classes	Sec. 1	Sec. 2	Sec. 3	Sec. 4	Sec. 6	Sec. 9	Sec. 10	Others
1	34,64	4,25	3,92	15,87	3,33	4,04	0,77	33,19
2	33,99	3,87	4,05	18,53	3,58	4,22	1,10	30,65
3	31,94	3,51	4,61	19,59	3,92	4,80	1,26	30,38
4	31,10	3,25	4,54	21,00	4,74	4,84	1,25	29,28
5	29,80	3,16	4,41	21,89	5,29	5,03	1,21	29,19
6	27,86	2,81	4,33	22,35	5,93	4,81	1,34	30,57
7	26,86	2,66	4,40	23,00	6,08	5,18	1,26	30,55
8	25,31	2,58	4,35	23,19	6,05	5,61	1,02	31,89
9	22,68	2,51	4,61	21,90	5,98	6,14	1,17	35,00
10	16,72	2,48	5,41	18,86	4,72	8,14	1,37	42,30

Source: own calculations

One can find out a definite decrease in the share of expenditures for food in the total expenditures along with the increase in income per person (section 1). Moreover, significant²⁷ decrease in the share refers to expenditures for alcohol and tobacco products (section 2). Statistically significant increase in the share is noticed in case of expenditures for clothes and shoes (section 3) and recreation and culture (section 9). In case of expenditures for housing (section 4) and for health care (section 6), one can observe saturation of these expenditures for the seventh and eight decile groups. It turns out that there is an upper level of these expenditures, which is not crossed despite increasing welfare of the household.

In order to check whether population layering occurs in Poland for expenditures in particular sections of expenditures in the consecutive years, the ratio of the ninth and first income deciles was calculated. The results of these calculations are given in Table 6.

Table 6

THE RATIO OF AMOUNT OF EXPENDITURES FOR 10. DECILE TO EXPENDITURES FOR 1. DECILE BY EXPENDITURE SECTION IN 1998—2002

²⁷ The comparison of the first income decile class with the tenth class

Year	Sec. 1	Sec. 2	Sec. 3	Sec. 4	Sec. 6	Sec. 9	Sec. 10	Others	Total
1998	2,66	3,23	6,57	5,81	6,30	9,88	7,45	6,90	5,04
1999	2,70	3,25	6,99	6,31	6,33	10,54	7,69	6,56	5,10
2000	2,62	3,50	7,17	5,20	6,46	9,92	7,28	6,65	5,00
2001	2,73	3,73	8,03	6,29	7,48	12,25	11,53	7,40	5,57
2002	2,76	3,34	7,89	6,79	8,09	11,52	10,23	7,29	5,72

Source: own calculations

These indexes show how many times the lowest expenditures of households from the tenth income decile group exceed the highest expenditures of households from the first group. It turns out that, over the researched years, high-income households spent ca. 2.7 times more for food than poor households and this was the lowest ratio, along with expenditures for alcohol and tobacco products. The highest disproportion, increasing over time (by 2001), are noticed for expenditures for recreation and culture and education. For the total expenditures, the disproportion increased from the level of 5.04 in 1998 to 5.72 in 2002, which means that wealthy households spend more and more against the poor ones.

The last aspect analysed in this paper is presentation of the fraction of households, which do not incur certain expenditures. Table 7 presents results of these calculations based on income decile groups and particular expenditure sections²⁸.

Table 7

**THE PERCENT OF HOUSEHOLD WITHOUT EXPENDITURES
FOR SELECTED EXPENDITURE SECTIONS BY DECILE CLASSES IN 2002**

Decile classes	Sec. 2	Sec. 3	Sec. 4	Sec. 6	Sec. 9	Sec. 10
1	34,38	38,25	10,48	35,75	14,47	82,78
2	31,10	29,89	5,50	28,66	9,06	79,51
3	28,79	26,96	4,36	23,78	7,17	78,76
4	30,32	26,96	3,40	22,91	7,33	79,54
5	33,16	26,57	2,78	19,22	6,37	82,93
6	35,39	27,54	3,00	17,16	7,60	83,43
7	34,23	26,13	2,10	15,06	6,15	85,56

²⁸ Section 1 of expenditures was not taken into account, that is expenditures for food. All households, for obvious reasons, incurred such expenditures.

8	33,55	23,75	1,92	13,85	3,90	86,3
9	30,37	22,21	1,79	13,18	3,34	86,24
10	23,12	18,61	2,10	13,60	2,07	85,47

Source: own calculations

As it was expectable, resignation of incurring expenditures within particular sections occurs most often in households from the first decile group, with those in the last group resigning most rarely. It turns out that incurring expenditures for education is not corresponding with income per person in the household. In majority of households, over 80 % of them was not incurring such expenditures. Apart from this group of expenditures, households most often do not incur expenditures for health care, clothes and shoes and alcoholic beverages and tobacco. It seems that increase in income results in clear increase in the fraction of households incurring expenditures for health care and culture and recreation. After satisfying more immediate needs, the wealthier households can afford this type of expenditures. In the above analysis, one has to remember that expenditures in particular sections meet the needs of their own hierarchy. Therefore, on the basis of the results from Table 7, one can attempt to define this hierarchy. No doubt, the most urgent need is the need to quench hunger, then the need to maintain location, then recreation and culture, additional health care²⁹, clothes, alcohol and tobacco products and additional education³⁰.

4. Summary

The analysis undertaken in this paper is a small section of a broad issue concerning research in household budget. Every aspect of this analysis could be deepened and expanded. However, the size of this paper has been limited due to objective reasons.

Summarizing the obtained results one can state that in Poland the level of average expenditures per person is lower than average income per person. The ratio of these values ranges from 96 % to 98 %. In the analysed period, insignificant increase in average income and expenditures per person was noticed, which cannot be stated on the basis of values of the estimated median. Quarterly data significantly mark cyclic occurrence of the level of both income and expenditures per person. The maximum value of these categories is observed in the fourth quarter, with the minimum value in the first quarter. Parallel cyclic occurrence features

²⁹ One has to remember that expenditures for health care in this section refer to medical services provided outside the National Health Fund, that is within paid medicine domain.

³⁰ In case of expenditures for education (as with expenditures for health care), we speak here about expenditures incurred individually by household members, that is in excess of what could be obtained within free education.

the fraction of households, in which expenditures exceeded income. As it could be expected, the highest level of the said fraction concerns lowest-income households, with wealthy households with the lowest level. Unexpectedly, the lowest intensity of income insufficiency against the incurred expenditures characterises households from the middle income decile classes, and not from the expected last classes. Also, the decreasing trend was noticed in the level of expenditures for food and the increase trend in location maintenance expenditures and the fact that structure of expenditures depends on the amount of income obtained per person. The analysis of the fraction of households, which did not incur expenditures within particular expenditure sections allowed, with a dose of reservation, to define hierarchy in meeting household needs.

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STATISTICAL ESTIMATION OF THE UKRAINIAN HOUSEHOLD'S DIFFERENTIATION BY INCOME

It is important to estimate correctly the household's differentiation by the income at the present stage of the development of the Ukrainian economy. It is defined by the necessity to elaborate the effective and adequate state decisions for area of the realization social and economic actions, which must be directed on the rise of a living standard and decrease of property household's stratification.

The results of the analysis and modeling of the household's distribution by the income can be useful to tax bodies for comparison an actual and probable the taxes payment. Also, it is important at a microlevel, for instance for the formation of a policy of the production manufacture and selling by the producers of the goods and services, which are guided on different profitable household's groups.

The statistical data of sample survey of household living conditions have been chosen from existing sources of the information on household's incomes. The results of the surveys enable to carry out the distribution of the households by the material prosperity. Thus, it