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MEASURING POVERTY IN BULGARIA

The analysis of poverty is based on the statistical information from "Multi-topic Household Survey (MHS)" – a survey carried out in 2003 as a collaboration of the National Statistical Institute, the Ministry of Labour and Social Policy, and the World Bank. The paper presents a detailed interpretation of the statistical information and the basic characteristics of the aggregates "Net income" and "Consumption", used in poverty evaluation. Poverty is studied by applying the three widely used approaches (absolute, relative and subjective) and related methods. The critical evaluation of the advantages and disadvantages of the particular approaches and methods helps select a poverty line, suitable to our conditions. The obtained results are compared to the results from previous and similar studies in European countries.

A number of poverty investigations have been carried out in the country since the beginning of the 1990s.[1] They are based on applying different but commonly adopted methodological tools and separate information sources.[2] Depending on the applied methodology and statistical information, the results to a considerable extent differ from each other. Nevertheless, the results together shape a poverty expansion trend up to 1997 and a subsequent relative reduction of poverty.

The primary objective of the investigation is to produce diverse, up-to-date, and multi-aspect information regarding the living conditions and poverty in the country. It is also important to point out the most significant measures of poverty (threshold, degree, depth, and sharpness), that are obtained on the basis of the statistical information from the multi-topic household survey (MHS) and the application of the basic approaches and methods of measurement.

Statistical information – composing the aggregates of "Income" and "Consumption"

The multi-topic household survey was carried out in 2003 by the regional teams of the National Statistical Institute (NSI). The teams included 28 regional supervisors and 80 specially trained interviewers. The sample, formed in view of the survey objectives, included 3715 regular households, residing in the country. In the course of the survey, 9% of the households dropped out due to absence, rejection or other reasons. The sample design involved one rational model of households in the country with respect to basic territorial and socio-economic properties.

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[1] Larger scale developments on poverty in Bulgaria are contained in "Poverty during the transition. Assisting the formulation and application of "anti-poverty" policies and strategies. ILO, UNDP, 1998 and the specialized studies of the World Bank in 1995, 1997 and 2001.

[2] In principle the specific perimeters of poverty since the beginning of the 1990s have been carried out through purposeful sample studies, representative at national level (The World Bank). A basic source of the information on poverty in Bulgaria remains to be the regular observations of the household budgets, carried by the National statistical institute.

The tools of the survey consisted of ten separate modules, logically related as follows: Data on the household and its members; Dwelling, furnishing and durables; Employment, unemployment and labor incomes; Agricultural activity; Household incomes; Loans, credits, savings, taxes and transfers; Household consumption; Education; Health condition and health care; Subjective indicators; In real terms, these indicators reflect on the lifecycle of the members of the regular household in Bulgaria.

On the basis of this information, special methods have been developed for composing the aggregates "Income" and "Consumption" that are necessary for calculating the indicators that characterize poverty in the country (diverse poverty lines; coefficients of differentiation; ratios, reflecting the polarization of households by income; indices, measuring the depth and sharpness of poverty).

In the multi-purpose observation of the households, the aggregate "Net incomes" was composed on the basis of the main sources of incomes (monetary and in kind) after deducting taxes and social insurance payments (see Table 1). By definition the aggregate does not include incomes from selling property, heritage, insurance, gifts, and lottery. This definition of the net incomes allows for a complete description of the incomes of population. The regulations and recommendations by Eurostat have been considered in developing the methodology.

Table 1

Aggregate "Net incomes of households"
(annual average net income per household)

Indicators	BGL	Relative share (%)
Total income	5038.7	100.0
Monetary income	4309.4	85.5
Regular incomes	4006.0	79.5
Incomes from basic employment	2810.6	55.8
Incomes from additional employment	59.2	1.2
Social payments	1136.2	22.5
Pensions	1023.4	20.3
Unemployment benefits	31.1	0.6
Other	81.7	1.6
Irregular incomes	303.4	6.0
Renting	45.3	0.8
Social transfers	37.8	0.8
Incomes from agricultural activity	220.2	4.4
Incomes in kind	729.4	14.5
Food consumption	560.9	11.2
Financial aid for heating expenses	36.6	0.7
Produced agricultural goods	131.9	2.6

Source. MHS, 2003.

In 2003 the average annual net income of the Bulgarian household was composed mainly on the basis of monetary income. However, the share of income in

kind was relatively high (14.5%). This model of income is typical of Bulgaria and does not differ from income structure, obtained from household budget surveys. The share of income in kind was changing during the years, but in general, has remained relatively high. An increase was typical of the years of high inflation. In this way households strived to retain and compensate for the level of consumption under the conditions of a markedly unfavorable economic environment.

The household distribution according to the amount of net income to a large extent shaped the probability to slip into the category of the poor. A basic characteristic of the income distribution was the strong left side asymmetry (see Fig. 1). In practical terms it meant accumulation of households in the low-income groups. The evidence was the great discrepancy between the average and the median[3] income. The average annual income of one household amounted to 5038.8 BGL, while the median income was 4009 BGL – that is the first exceeded the second by 25%. In real terms, it meant that 50% of households had annual income below 4009 BGL.
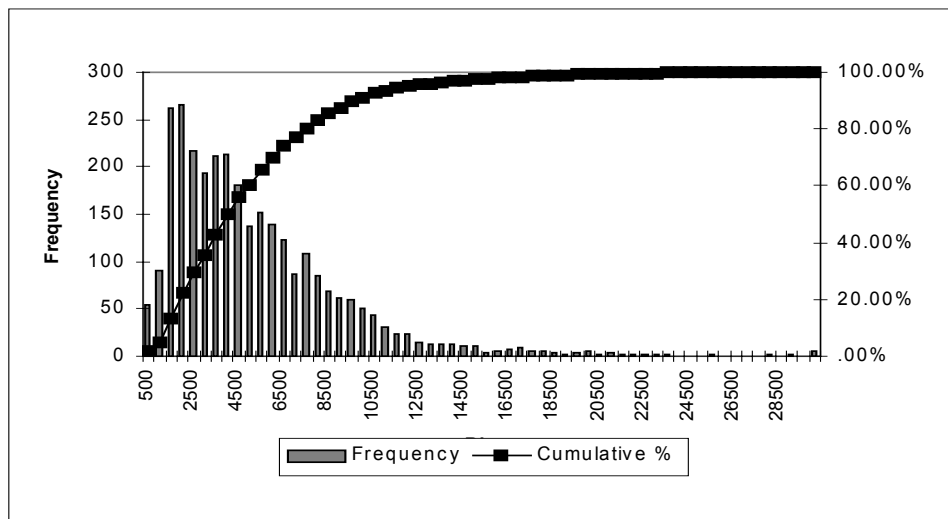

Fig. 1. Household distribution according to the amount of the net income
and accumulated frequencies of distribution

The relatively big steep of the accumulated curve demonstrates the high probability for the households from the low-income groups to fall into the category of the poor.

The second important conclusion of the analysis on household income distribution was the high sensitivity of the poverty lines to the number of the poor, regardless of the method applied for determining poverty. Since the number of low income households prevailed, the slight change in the poverty line would lead to a more considerable increase in the number of the poor. With this kind of distribution, it was logical to expect

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[3] The income that separates the sample into two equal parts.

that the lower poverty thresholds would be distinguished by a greater sensitivity to the number of the poor.

The asymmetry on the left side of the income distribution generated a relatively greater income inequality among households (see Table 2). The ratio between the incomes of the 1st and the 10th decile groups was 1:15.3, that is, the income of the richest 10% of the population was 15 times greater than that of the poorest 10% of households. The relative share of the incomes of the latter in the total income was hardly 1.8%, while the share of the richest was 27.3%.

Table 2

Average net income of households and their relative share
in the total income by decile groups

Indicators	I	II	III	IV	V	VI	VII	VIII	IX	X
Average annual income (BGL)	890	1582	2190	2918	3654	4449	5468	6682	8411	13596
Relative share in the total income (%)	1.8	3.2	4.4	5.9	7.3	8.9	11.0	13.4	16.9	27.3

Source. MHS, 2003.

The consumption model was based on the aggregate "Household consumption" that included the basic consumer expenditures that households made for food, drinks, and other essentials. The structure of these expenditures formed a model of consumption, typical of low standard societies (see Table 3). The regulations of Eurostat were taken into consideration in composing "consumption expenditure (total and monetary)" – HBS/COICOP (Household Budget Survey/Classification of Individual Consumption by Purpose).

Table 3

Aggregate "Household consumption"
(Average annual consumption per household)

Indicators	BGL	Structure (%)
Consumer expenditure	4936.7	100.0
Monetary consumer expenditure	4339.3	87.9
Food consumption	1666.5	33.8
Consumption outside home	430.5	8.7
Foods and services except food stuffs	1803.0	36.5
Education expenditure	191.2	3.9
Health care expenditure	248.1	5.0
In kind expenditure	597.5	12.1
Food and drink	560.9	11.4
Heating expenditure	36.6	0.7

Source. MHS, 2003.

The consumption model of the Bulgarian society in the end of 2003 was characterized by the following peculiarities:

1. The great share of the natural consumption – more than one tenth of the household consumer expenditure. This concerned mainly the production and consumption of food stuffs and drinks. Their share comprised 11.4% of the total consumer expenditure. The specifics of consumption were related not only to the low level of income, but to the traditions of basic subsistence, too.

2. A relatively great share of food and drink expenditures – they were more than the half of household expenditure – 53.9%. 33.8% out of them were monetary expenditure made exclusively for food and 8.7% - for consumption out of home.

3. Relatively low expenditures for goods and services except foodstuffs. This component of the total expenditure amounted to 46.1%. In it the expenditure for goods and services except foodstuffs occupied more than 2/3, while the expenditure for education and health care were 19.3%.

The household distribution according to the amount of consumer expenditure did not considerably differ from the income distribution (see Fig. 2). There was an asymmetry on the left side meaning that households with low consumer expenditure prevailed. The median consumer expenditure was lower than the average by about 15% meaning that half of households had annual expenditure lower than 4164.7 BGL or 347 BGL per month.
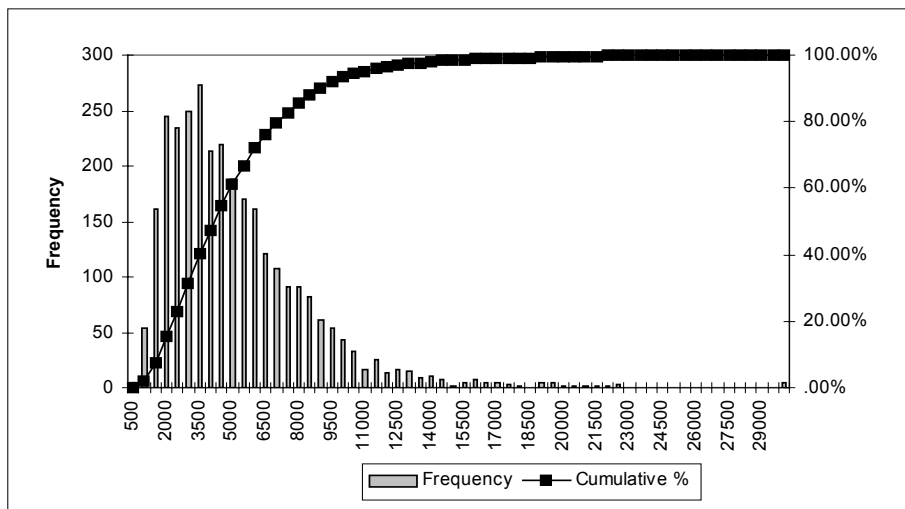

Fig. 2. Household distribution according to the amount of the consumer expenditure and accumulated frequencies of distribution

Despite the obvious similarities in household distribution according to the amount of incomes and consumption, there were considerable differences as well:

1. With consumption there was a lower degree of asymmetry, meaning a more equal distribution of consumption and a relatively smaller number of households with a level of consumption lower than the country's average. That

circumstance influenced the measures of poverty depending whether or not the poverty threshold was evaluated on the basis of income information or consumption.

2. Poverty thresholds, calculated on the basis of consumption, were characterized by a lower sensitivity to the number of poor households and a lower probability to slip into poverty.

3. The inequality at consumption level was more vaguely expressed than that of the income (see Table 4) - more tangible in the final intervals, that is, between the poorest and the richest. The difference in the average expenditure between the 1st and the 10th decile was 1:10, while with income it was 1:15.3.

Table 4

Average annual expenditure of households and their relative share in the total expenditure by decile groups

Indicators	I	II	III	IV	V	VI	VII	VIII	IX	X
Average annual expenditure (BGL)	1263	1982	2601	3191	3821	4518	5344	6379	7921	12124
Relative share in the total income (%)	2.6	4.0	5.3	6.5	7.8	9.2	10.8	12.9	16.1	24.9

Source. MHS, 2003.

At the same time, the share of expenditures of the poorest 10% of households in the total expenditure was considerably higher than the income share.

The reasons for the differences have to be sought in two circumstances: First, in general, households are more inclined to reveal their expenditure rather than their income. This is particularly valid for the low-income groups where the basic sources of income are social payments and transfers (social benefits). In such cases, households do not consider these grants as income, particularly grants for covering heating expenses, transport expenses, etc.). Second, the consumer expenditure of the richest households has a saturation limit and lower elasticity in respect to income. The increase in the income of this category of population does not lead to a proportional increase in expenditure. With them the percentage of savings grows.

Considering the selected tools for conducting the investigation, the basic conclusion to be made with respect to the information for defining poverty threshold is that the level of consumption represents a more realistic method of measuring poverty in Bulgaria.

Methodological tools for measuring poverty

In the theory of poverty and social practice there is a great variety of concepts and methods of defining the poverty line. These methods are integrated in two approaches: *objective and subjective*. The first one also includes two approaches: *absolute and relative.* The analysis makes use of the two basic

approaches and the most widely applied methods related.

The absolute poverty line is generally defined as to have less than an objectively defined absolute minimum. The modified method under Orshanski was applied in the survey.[4]

The poverty threshold calculated under this method in its original version is determined as a multiplication of the normatively defined basket of food products ($\sum_i(F_i{}^*P_i)$) by a coefficient obtained through the geometrical averaging of the ratios between the total expenditure and the food expenditure for each household (к) - PL = $\sum_i(F_i{}^*P_i){}^*k$. The normative food expenditure was defined through valuation in market prices (P_i) of a basket of the necessary food products (F_i).

The modified method under Orshanski[5] is based on the substitution of the expert evaluation of the food component by the average food expenditure (Ef) and coefficient (c), composing the non-food component:

$$PL = Ef \cdot c$$

In forming the parameters *Ef* and *c* the following aggregates were used:

1. Aggregate "Consumption" at the following three levels:

a) the ratio between the total expenditure and the food expenditure for each household - ρ_i, където ($i = 1 \div n$);

b) the ratio between the total consumer expenditure and the food expenditure for each household - $\rho_i{}^*$ ($i = 1 \div n$);

c) the ratio between the monetary consumer expenditure and the food expenditure for each household - $\rho_i{}^{**}$ ($i = 1 \div n$).

2. Aggregate "Food consumption" at the following three levels:

a) total food expenditure on average per equivalent unit (person) - Ef;

b) total consumer food expenditure on average per equivalent unit (person) - Ef* = Ef;

c) monetary consumer food expenditure on average per equivalent unit (person) - Ef**

There were three variants of poverty lines developed on this basis. They had the following prerequisites:

A) poverty threshold – multiplication of food expenditure on average per equivalent unit (person) and the average geometric[6] of the ratios between expenditures and these for food of the observed households at the three levels as follows:

    (1)   PL1 = Ef . c

    (2)   PL2 = Ef * . c*

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[4] *Orshansky, M.* Counting the Poor: Another Look at the Poverty Profile. Social Security Bulletin, 1965, Vol. 28, N 1, p. 3-29.

[5] *Bogdanov, B.* Poverty and poverty lines. - Statistics, 1994, N 6., p. 59-70.

[6] $\rho = \sqrt[n]{\rho_1 \cdot \rho_{2} \cdots \rho_n}$, where the three levels are calculated in order ρ_i, $\rho_i{}^*$ and $\rho_i{}^{**}$.

(3) $PL3 = Ef^{**} \cdot c^{**}$

B) poverty threshold – multiplication of food expenditure of the households from the II decile and the geometric average of the ratios between expenditures and food expenditures of the observed households at the three levels, as follows:

(4) $PL4 = Ef, II \cdot c$
(5) $PL5 = Ef^*, II \cdot c^*$
(6) $PL6 = Ef^{**}, II \cdot c^{**}$

C) poverty threshold – multiplication of food expenditure of the households from II decile and a normatively defined multiplier equal to 2 on the three levels, as follows:

(7) $PL7 = Ef, II \cdot 2$
(8) $PL8 = Ef^*, II \cdot 2$
(9) $PL9 = Ef^{**}, II \cdot 2$

The relative poverty line is defined "as to have less than the others in society". It measures poverty with respect to the country's average standard of living. In the survey the following percentages were used from:

Aggregate "Income"

A) poverty threshold – 60% of the median[7] equivalent income[8]
B) poverty threshold – 50% of the median equivalent income
C) poverty threshold – 2/3 of the median equivalent income

Aggregate "Expenditure"

A) poverty threshold – 60% of the median equivalent expenditure
B) poverty threshold – 50% of the median equivalent expenditure
C) poverty threshold – 2/3 of the median equivalent expenditure[9]

The subjective poverty threshold is generally defined as "the feeling of individuals that they don't have enough resources to be independent". This concept of poverty is based on the individual's evaluation of income with respect to the past and present circumstances.

Two methods were applied in the survey: the method of the so called "income evaluation question"[10] and one modification of this method.

The method of income evaluation is based on the subjective evaluation of the interviewed about their individual function of well-being, measured by the level of income - $U_i(y)$. In the specific case there are five distinguished verbal levels: "miserable"; "poor";

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[7] The median is in the middle position, equal to the value of the income (expenditure), possessed by the equivalent unit, situated in the middle of the ranged in income (expenditure) equivalent units.

[8] Method, used in the studies of Eurostat.

[9] Methods used in the studies of the World Bank.

[10] Known in the literature as "Income evaluation question (IEQ)" (*Van Praag, B. M. C., A. Kepteyn*. Further Evidence on the Individual Welfare Function of Income: An Empirical Investigation in the Netherlands. - European Economic Review, 1973, N 4, p. 33-62).

"good"; "very good"; "rich".

The individual functions of well-being $U_i(y)$ were calculated with the help of the log-normal function of distribution that gives the best approximation of the explored dependency. For each individual there was a following function of well-being specified:

(10) $U_n(y) = \Phi(y; \mu_n, \sigma^2_n) = N(\ln(y); \mu_n, \sigma^2_n)$,

Where $\Phi(...)$ and N (...) respectively mean log-normal and normal function of distribution with parameters μ and σ.

The parameters of the function were calculated for each household separately on the basis of the given responses for the particular levels:

(11) $\mu_i = 1/5 \sum_{j=1}^{5} \ln(C_{ij})$ $\sigma^2_i = 1/4 \sum_{j=1}^{4} (\ln(C_{ij}) - \mu_i)^2$,

Where C_{ij} were the responses of the asked question of i-nth household.

For the separate households μ_i and σ^2_i assumed different values. Their variation depended on a number of factors, related to the amount of the received current income and the personal characteristics of the household – size, age of household, number of children, place of residence, etc. In this case μ_i was taken as a linear function of the incomes (Y) and the number of members of households (Fs):

(12) $\mu_i = b_0 + b_1 . \ln(Y) + b_2 . \ln(Fs) + \varepsilon$,

Where b_0, b_1 and b_2 were the parameters of the model.

The poverty threshold was calculated on the basis of evaluations for b_i and arbitrary definition of one minimal level of well-being.[11] Therefore, a given household will be considered as poor, if its income is less than a priori set level:

(13) $U_i(y) \leq \delta$,

Where δ is a number in the interval [0,1], corresponding to a minimal level of well-being.

The inequality (13) can be represented through accumulated function of the normal distribution (Φ_i): $\Phi_i((\ln(y) - \mu_i) / \sigma_i) = \delta$. After solving with respect to ln(y) and eliminating the indices we have obtained:

(14) $\ln(y) = \mu + \sigma . \Phi^{-1}(\delta)$.

Replacing μ with (12) and accepting the average of the sample, (14) is transformed as follows:

(15) $\ln(y_\delta) = b_0 + b_1 . \ln(Y) + b_2 . \ln(Fs) + \sigma . \Phi^{-1}(\delta)$.

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[11] Here we have the presumption that the poverty is a condition of a low standard of living. Defining the minimal standard is in the competencies of the authorized authorities (government, parliament, etc.).

From here the poverty line (Y^*_δ) was calculated by assuming the condition that $\ln(y) = \ln(y_\delta)$, that is:

(16) $Y^*_\delta = \exp((b_0 + b_2 . \ln(Fs) + \sigma . \Phi^{-1}(\delta)) / (1 - b_1))$.

The obtained poverty threshold in this case could be differentiated according to the size of the household and the level of the minimal well-being δ. It is necessary to fix Fs and δ for this purpose.

The modified method of "income evaluation question" is based on the presumption that the poverty line corresponds to the minimal levels of well-being, evaluated by the individuals. In our case these are the estimations of households for the first two levels of well-being: "miserable" and "poor".

Poverty line has to be sought within the limits defied by these two levels:

(17) $\ln(c_1) <= \ln(y) <= \ln(c_2)$.

The levels $\ln(c_1)$ and $\ln(c_2)$ depended on the income (Y_n) and the size. In (Fs) of households and could be defined on the basis of the following regression equations:

(18) $\ln(c_1) = b_{01} + b_{11} . \ln(Y_n) + b_{21} . \ln(Fs) + \varepsilon_1$,

(19) $\ln(c_2) = b_{02} + b_{12} . \ln(Y_n) + b_{22} . \ln(Fs) + \varepsilon_2$.

For all incomes $\ln(Y_n)$, within these limits, estimates could be calculated for $\ln(c_1)$ and $\ln(c_2)$:

(20) $(b_{01} + b_{21}.\ln(Fs))/(1-b_{11}) <= \ln(y) <= (b_{02} + b_{22} . \ln(Fs))/(1 - b_{12})$

or after the respective substitution:

$$A <= \ln(y) <= B.$$

Poverty line was calculated as an average income within these two limits.

In the survey certain measures of poverty were applied (level, depth, and severity), that were defied on the basis of the index of Forester, Greer, and Thorbecke[12] (FGT):

$$FGT_\alpha = \frac{1}{n} \sum_{i=1}^{q} \left(\frac{Z - Y_i}{Z} \right)^{\alpha - 1},$$

Where: *n* is the number of the observed households; Z - the income, accepted as poverty threshold; Y_i - the income of i-nth household of the households falling under the threshold; α - the varying parameter having values 1, 2, 3.

Depending on the values of the varying parameter the following measures were defined:

A) level of poverty ($\alpha = 1$) – a share of poor households from the total number of those inquired.

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[12] *Foster, J, J. Greer, E. Thorbecke*. A Class of Decomposable Poverty Measures. - Econometrica, 1984, N 52, p. 761-766.

B) poverty depth ($\alpha = 2$) – the average relative deficit of resources of the poorer households under the accepted poverty threshold.

C) poverty severity ($\alpha = 3$) – the average relative deficit of resources of households under the adopted poverty threshold where the poorest households had greater weights in the formation of the total index.

Empirical results

Within the framework of presented approaches and methods 45 variants of poverty lines were evaluated. The latter, as well as the relative measures were calculated in three equivalent scales.[13] That circumstance substantiated the great number of evaluated variants. With a view to a greater comparability of results, we will present only these poverty lines that were calculated on the basis of the original scale of OECD (1, 0.7, and 0.5) and were based on the "Consumption" aggregate.[14] Besides, the selection involved variants that illustrated the great opportunities for evaluating the different poverty lines with one or other theoretical premises.

The results of the estimate of the absolute poverty lines indicated considerable differences between variant A, on the one hand, and variants B and C, on the other (see Table 5). The size of the poverty line in variant A was about 43% greater than in the other two variants.

Table 5

Absolute poverty lines per 1 equivalent person
(OECD (1,0.7,0.5)) per month

Variants	Poverty line (BGL.)	% of poor households
A (average food expenditure and ratio between the total consumer expenditure and the average food expenditure c = 1.98)	183	53.9
Б (food expenditure from the second decile group and ratio between the total consumer expenditure and the average food expenditure c = 1.98)	127	30.6
В (food expenditure from the second decile group and a normatively defined coefficient c = 2)	128	28.4

Source. MHS, 2003.

The reasons for these differences are due to the way of composing the food and non-food component. In the first case the food expenditure are defined on the basis of the average expenditure for all households, that is, they involved food expenditure for the

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[13]The equivalent scale guarantees comparability of the level of well-being between different in size households. It to one or another degree takes into account the economies in the consumption of the scale of households. Here we have used three equivalent scales: original of OECD with parameters (1 for the first adult, 0.7 for each subsequent adult and 0.5 for children); modified to OECD with parameters (1, 0.5, and 0.3) and on average per household with parameters (1, 1, 1).

[14] The exception is the estimations for the subjective poverty line that are based on the aggregate "Net incomes".

poor as well for the rich households. They amount to 92 BGL. per equivalent person. In the variants B and C they are restricted to the frames of II decile group.

This selection is made with in the view of determining the minimum quality food products that guarantees a daily intake of 2200 kilocalories per person. This minimum level is guaranteed [15] by the food expenditure in II decile group (64 BGL per equivalent person). Therefore, considering the presumption that the poverty threshold has to ensure the satisfaction of minimum necessities, it is logical to assume that variants B and C are more appropriate for measuring the poverty line. Variant A forms a consumption that exceeds the minimum necessities for food products.

With the second component the differences between the separate variants were not considerable. In variant A and B the multiplier (c) was calculated as a ratio between the total consumer expenditure to the food expenditure and equaled 1.98. In variant B the ratio of food and non-food products 1:1 (c=2) was accepted. These two methods for composing the coefficient of involving the non-food component in the absolute poverty line were not devoid of logical meaning - with poor households the average food expenditure was in the scale of 50%. The relative poverty lines, calculated on the basis of consumption, were placed within the interval between 85 and 114 BGL per month per equivalent person (see Table 6). They were a direct consequence of the household distribution according to the level of consumption, that is, they depended on the distributive and redistributive ratios in Bulgarian society.

Table 6

Relative poverty lines per 1 equivalent person
(OECD (1,0.7,0.5)) per month

	Poverty line (BGL.)	% of the poor households	Poverty depth
PL50% (50% of the median consumer expenditure)	85	7.8	0.016
PL60% (60% of the median consumer expenditure)	102	14.0	0.029
PL 2/3 (2/3 of the median consumer expenditure	114	18.7	0.042

Source. MHS, 2003.

The data indicate that PL60% is higher than PL50% by 20%, respectively PL2/3 is higher than PL50% by 34.1%. With respect to poverty levels (% of poor households) these differences are respectively 6.2 and 10.9 percentage points. This means that the ratios between the poverty lines and the percentage of poor households differ considerably. For the first, it is 1:1.2:1.3, and for the second –

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[15] Food expenditures in the first decile group do not provide the necessary calories, since these in the third and the next decile groups provide more calories.

1:1.9:2.4. Therefore, household distribution according to the size of the consumption generates high elasticity of the poverty line to the percentage of the poor. In other words, the change in the poverty threshold by one unit leads to greater change in the number of the poor. This peculiarity has a significant practical meaning in applying poverty lines as social policy instrument.

The selected poverty lines in the "Consumption" aggregate were comparable to these calculated in the aggregate "Net income" with the same equivalent scale of OECD: PL50% - 87 BGL; PL60% - 104 BGL; PL2/3 – 117 BGL. There were considerable differences with respect to the percentage of poor households. For the aggregate "Net income" they were respectively: PR50% - 14.2%; PR60% - 19.8%; PR2/3% - 25.0%. That was due to differences in the levels of incomes and consumption in the low-income groups that is, the registered incomes in the observation were lower than the declared consumption. It was pointed that obviously the respondents had more difficulties remembering and were more reluctant to give information on the amount of incomes received rather than on expenditures during the year. This peculiarity of the aggregates predetermined the differences in the household distribution, on the one hand, and consumption, on the other. In such a way, the final result was a comparatively higher share of poor households according to data in the aggregate   "Net income".

The subjective poverty lines were calculated for several levels of well-being (see Table 7). The data indicated considerable differences in the poverty lines and the respective measures of poverty. With a level of well-being δ = 0.3, which in the verbal scale of responses corresponds between good and poor existence, poverty threshold was evaluated at 150 BGL per equivalent person. With this threshold the number of poor households was described at about 40% and the income deficit necessary for attaining the poverty threshold was about 13%.

Table 7

Subjective poverty lines per 1 equivalent person
(OECD 1, 0.7, 0.5) with different levels of well-being

Level of well-being	Poverty line (BGL.)	% of poor households	Poverty Depth	Poverty Severity
PL(0.3)	150	40.4	0.129	0.063
PL(0.25)	124	27.5	0.085	0.042
PL(0.2)	99	16.2	0.053	0.028
Modified method	86	11.5	0.04	0.022

Source. MHS, 2003.

Poverty lines, corresponding to miserable and poor existence, were evaluated within the limits of 99 and 124 BGL. The ratio between the poverty lines and the percentage of poor households were close to these obtained with the relative method. For the first the ratio was 1:1.3:1.5 and for the second – 1:1.7:2.5.

Therefore, this method confirms the high elasticity of poverty lines with respect to the percentage of the poor.

Poverty line evaluation, obtained on the basis of the modified method of "income evaluation" was one of the lowest – 86 BGL per equivalent person. It was identical to the poverty threshold calculated as 50% of the median consumer expenditure.

On the basis of results obtained for poverty lines evaluated with the help of different approaches and methods the following conclusions can be drawn:

1. The poverty threshold, calculated per equivalent person on the original scale of OECD (1, 0.7, 0.5) falls into the interval 85 – 183 BGL. The length of the interval is a little bit greater than 2 minimal estimates. The most frequent estimates are in the interval 99 – 130 BGL.

2. The estimates indicate comparatively high sensitivity of the poverty lines with respect to the number of the poor. The additional analyses of the sensitivity indicate that with the increase of the poverty threshold the number of the poor households relatively decreases. The change in the low thresholds leads to a relatively greater increase in the number of the poor in comparison with the greater poverty lines.

3. The depth and sharpness of poverty that respectively measure the difference between the level of income (consumption) and the poverty threshold and the inequality among the poor, change proportionally to the changes in poverty lines.

4. The presented poverty lines illustrate the possible methodological and practical solutions for measuring poverty in the country.

Comparative advantages and disadvantages of the approaches and methods

The basic and widely applied approaches and methods for evaluating poverty, presented in this survey, have different properties. In selecting an official poverty line it is necessary to know the positive and negative sides of each method. The comparative advantages and disadvantages could be explored with the help of several criteria that reflect different aspects of their applicability.

The most commonly used are the following 10 criteria:[16]

1. Information value. Each approach and method carries distinct information about the standard of life used for evaluating poverty. The question is what information each approach or method provides. Whether the information presents a priori and only the number of the poor or considers something more.

2. Dependency on the changes in the income (consumption) distribution. This criterion pertains to the effect of the change in the income distribution

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[16] See *Van Praag, B. M. S., R.J. Flik*. Poverty lines and Equivalence scales. A Theoretical and Empirical Evaluation, 1991. Paper prepared for the conference "Poverty measurement for the Economies in Transition in Eastern European Countries". Warsaw, 7-9 October 1991.

(consumption) on the poverty line. The question is whether the changes in the income reflect on the poverty line and relatively the share of the poor. Methods that are not sensitive to the changes in the income distribution are more difficult to apply in measuring poverty.

3. *Reaction with respect to uniting nationalities with different living standards.* The question considers the extent to which the different approaches and methods reflect the changes in the poverty line and measures of poverty when they are united with nationalities of different standards of living. The problem is extremely valid in the process of EU enlargement. For example, depending on the used methodology for measuring poverty, it could turn out that after the EU enlargement into Central and Eastern Europe, there will be no poor people in the developed countries – something that is not realistic to expect.

4*. Internal consistency.* This means the extent to which people defined as poor feel poor, or just the opposite case - whether the opinion of the people defined as not poor coincides with their definition as such. In general, this is a question of empirical checking, but depending on the evaluation method, it is possible to specify such sub-majority in which there will be inner consistency.

5. *Flexibility.* Under flexibility we understand to what extent the distinctive approaches and methods allow for the evaluation of different states of poverty (extreme poverty, next to poverty, etc.) through changing the parameters of the method.

6. *Statistical adequacy (credibility).* The meaning of this criterion is expressed in defining the degree of credibility of the statistical information and respectively the poverty line and the measures of poverty. It is related to the methods that evaluate the poverty line on the basis of statistical samples. With each statistical evaluation there is a certain confidence interval which defines the credibility of the evaluation. The low credibility of the evaluation of the poverty line means a greater uncertainty in determining the number of the poor.

7. *Systematic errors.* These are the mistakes, made in the process of collecting the statistical information and defining the relative aggregates. Since most of the methods use data on income and consumption of households the question of the systematic errors mainly affects the completeness of this information.

The main sources of information, used in the world practice, for evaluating the poverty threshold are the *taxation statistics*, *household budgets* and other *specialized studies.* Each of them possesses different applicability (in the sense of completeness of information) for evaluating poverty.

The taxation statistics is not an appropriate source of information for evaluating the poverty line due to two main reasons. The first one is that it does not include the low income groups of the population. In principle the minimum (below a definite level) income is not taxed. The second reason is related to the incompleteness of the information due to income underreporting. Finally, the

systematic error will be significant and the evaluated poverty line will be too low, not reflecting the reality.

The household budget statistics to a great extent corrects the incompleteness of the necessary statistical information though it cannot guarantee comprehensiveness in terms of income and consumption. The positive side of this information is based on taking into account all kinds of income and consumption in the household.

In this respect, it can be regarded as accurate. What is more, the sample of households captures a segment of the low income population. Despite this theoretical accuracy, it is not easy to achieve high reliability and comprehensiveness of the information in practice. The reason is the difficult access (practically impossible) to the lowest and highest income groups, if such groups fall into the sample. In this sense it is complicated to include the income of the marginal groups of the population, and they are the basic contingent of the poor. The other reason is the accuracy of the respondents. Practice shows that in Bulgaria household income is not a reliable indicator.

The specialized statistical observations are used, depending on the purpose of the investigation and evaluation approaches. The multi-topic household survey (2003) was constructed with the priority aim to investigate poverty in Bulgaria.

8. Expenses for conducting the investigation. The different methods demand different information in volume, scope, and content. In this respect, it is worth considering the quality of the poverty line evaluation in terms of the costs of providing it.

9. Updating the data. The up-to-date accuracy of the statistical information depends on the speed of the changes in the welfare of society. Under the conditions of sharp changes in the material well-being of households, high inflation, etc., the up-to-date accuracy of the information is too volatile – in the case of half a year delay the information is already obsolete. In such cases it is necessary to update the database more frequently which in its turn makes the investigation costly.

Under the present conditions in Bulgaria (relatively low inflation rate and gradual change in incomes) the frequent updating of information is not necessary in terms of measuring poverty. Determining the poverty line within the limits of one year will not lead to considerable underestimation or overestimation.

10. Possibility of achieving social consensus. Each method to some degree is related to the problem of achieving social consensus. Some methods predominantly use expert evaluations and arbitrary solutions that in many cases are not widely accepted or become disputable. With other methods, evaluation is obtained on the basis of public opinion which is equivalent to achieving social consensus.

The 10 criteria pointed above do not exclude the possibility of adding other criteria that would assist the selection of a more adequate methodology. Such criteria might be:

the ability of the method to generate equivalent scales; its simplicity; the broad publicity and transparency of the process in defining the poverty threshold, etc.

The qualities of the methods used for evaluating the poverty line could be considered in the light of the presented 10 criteria. For each individual method we have the following characteristics:

Absolute approach (modified method under Orshansky)

1. It has a good information value because it presents a poverty threshold that could be differentiated for different kinds of households. The method defines the minimum food expenditure and the share of complementing essentials in the minimum standard of living.

2. It has no connection with the income household distribution.

3. It has difficulties uniting poverty lines in societies with different standards of living due to different shares of expenses of products and services other than food.

4. It does not possess internal consistency because it is based on evaluations that not always coincide with the opinion of individuals.

5. The flexibility of the method is good. By changing the coefficient of the non-food component, it is possible to evaluate different poverty lines that can match the different levels of poverty.

6. The credibility of the statistical information in terms of the aggregate "Consumption" is good. The modified method under Orshansky defined the food component on the basis of information about the consumption in the II decile group; this is the consumption providing the necessary calories for a healthy way of life. In the decile group pointed above, however, there might be households whose consumer expenditure is greater or smaller than the necessary for providing these calories. In this case there is a probability for a greater credibility interval of error in defining the food component.

7. The systematic errors of the method depend on the definition of the aggregate "Consumption" or more correctly on the food component. As far as the selection of the food products matches the accepted standards, a big systematic mistake is not to be expected.

8. Expenditures are not considerable.

9. The up-to-date accuracy of the data is high. The possibility of a frequent updating depends on the periodical nature of observation.

10. It possesses certain opportunities to achieve social consensus because it is based on factual consumption.

Relative approach (fixed percentage of the median income/expenditure)

1. It has a good information value because it does not define a priori the number of the poor.

2. A very good reaction to the changes in income distribution or consumption distribution. If overall income is increased by x%, the poverty line will be increased by the same percentage. If the low income is increasing, the number of the poor

will be decreasing. If the income inequality is preserved, the share of the poor will be a constant value.

3. Acceptable solution of the problem by uniting nationalities with different standards of living. According to the definition of a poverty line there is a fixed percentage of the median (average) level for the country. If two different consumption distributions are united, the poverty line as well as the number of the poor will be changed. This approach, not surprisingly, is being used for making comparisons in the European Union and Eurostat.

4. There is no internal consistency. The people characterised as poor might not agree with this definition or visa versa.

5. There is a good flexibility that is defined by the possibility to change the fixed percentage.

6. The credibility of the statistical information in terms of the aggregates "Consumption" and "Income" is good. There are no additional opportunities for expanding the credibility interval of errors in contrast to the absolute approach.

7. The systematic errors depend on the sample errors. The aggregate "Consumption" is more realistic, since the people prefer to remember the consumer expenditure incurred (including the consumption in kind) rather than the income obtained (especially with income in kind and social transfers).

8. Small expenditures, in case statistical data from the household survey are used. In the case of conducting separate investigation the expenditures are greater.

9. It depends on the up-to-date accuracy of the statistical information.

10. Better opportunities for achieving social consensus, since poverty is defined in terms of the average level.

Subjective approach (method of income evaluation)

1. It has an information value. The method allows for evaluating different levels of well-being and on this basis to define a poverty line according to the political considerations of the minimum standard of living.

2. There exists a dependency on the changes in the income distribution. If the income is increasing proportionally, the poverty threshold will also be changed. The question is in what way? It is logical to expect that the poverty line will be less changeable than the proportional level. In this respect, the subjective approach could not match the relative approach.

3. It is possible to achieve a good mix of the poverty lines of different nationalities because there is comparability and equal understanding of the different levels of well-being.

4. There is a great internal consistency due to the fact that individuals alone define the poverty line through their subjective evaluations of the separate levels of well-being.

5. There is flexibility that is determined by the opportunity of selecting a border value of well-being. The method is appropriate for differentiating the

poverty line according to the size of the household, place of residence and other properties.

6. The statistical accuracy of the subjective poverty line is good, taking into account that there is no additional reason for expanding the credibility interval. In practice, it could turn out that it is bigger with the subjective poverty line, since the standard deviations with this method are greater than those with consumption.

7. Systematic errors are possible because the individuals are not always able to evaluate and differentiate the separate levels of well-being. Besides, there is a tendency toward underestimating the size of the income obtained.

8. The expenditures are related to questionnaire investigation.

9. There is a good up-to-date accuracy due to the fast processing of information. The up-to-date accuracy of the data considerably decreases under the conditions of high inflation. Moreover, studies indicate[17] that under these conditions, individuals are not able to make accurate estimations of the level of well-being.

10. Good opportunities for achieving consensus. The basic thing is that society alone determines the poverty line and there is a possibility of government interference.

The analysis of the advantages and disadvantages of the methods used is not providing an explicit answer in favor of any of them. Nevertheless, there are two approaches where the positive aspects exceed the negative ones. These are: the relative approach and the subjective approach.

Between these two approaches the preferences for determining the official poverty line are in favor of the relative. This is due to two main circumstances:

1. The subjective approach is based on a subjective evaluation by the people about the income, necessary to provide separate levels of well-being (in this case, 5 levels – "miserable", "poor", "good", "very good", and "rich"). These evaluations in principle are related to the ideas (shaped in a different way) of the respondents and to a less degree with the living standard obtained. In this sense the "objectivity" of evaluations could turn out to be underestimated and indirectly related to the material status of people.

2. The method does not guarantee a strong interdependency between the poverty threshold and the income distribution of households. Different studies of Bulgarian and international experts indicate that this link is underestimated. Moreover, under the conditions of high inflation, the method does not lead to adequate estimations.

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[17] See *Tsanov, V*. Estimation of the Subjective Poverty Line Using Data from the Household Budget survey. – In: Using data from the Household Budget Survey in Investigating the Socio-Economic Processes in Bulgaria. DFID, NSI, 2001, p. 117-128.

Opportunity to compare the results from the multi-purpose observation of households to other similar studies, carried out in Bulgaria

In principle, the most important factors for an accurate comparison of the results from the studies on the living standard are related to the identity of the used questionnaires and sample designs. Whenever it is necessary to update the used tools, "keys of transition" are developed in advance to create conditions for possible comparisons.

Besides the multi-topic observation of households, carried out by the National statistical institute in 2003, three similar studies were carried out in the previous years by "BBSS Gallup international" (1995, 1997, and 2001) financed by the World Bank. Each of them was titled "Bulgaria Integrated Households Survey" (BIHS). It is interesting to compare the Multi-topic household survey (2003) to the Integrated observation of households in Bulgaria (2001). However, it is necessary to point out that the questionnaires used in the two surveys differ. Under this condition, the comparison between them is possible when all the other conditions are held equal[18] – we define conditions that have equivalent importance and validity.

The comparison of results from these studies indicates that despite certain conditionality, there are changes in the level of poverty that could be characterized by a certain improvement (see Table 8).

Table 8

Measures of poverty in Bulgaria according to BIHS - 2001 and MHS - 2003

Measures of poverty	2001*	2003
Poverty line – one half of the median of consumption (PL50%)**	62.9 BGL	66.8 BGL
Share of the poor wit poverty line – one half of the median of consumption (PR50%)	12.3%	9.2%
Poverty line – two thirds of the median of consumption (PL2/3)	83.3 BGL	89.5 BGL
Share of the poor with a poverty line – two thirds of the median of consumption PR2/3)	20.1%	19.1%
Gini coefficient	29.6	28.5

* The data are from "Bulgaria: the changing profile of poverty. Poverty evaluation." World Bank. 2002.

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[18] These conditions are the following: 1. The studies are based on representative samples for the country; 2. In principle, a similar design is used in the formation of the samples containing the households to be observed; 3. Similar in content and volume tools are applied that have similarly influenced the process of work – in the contacts between the researchers' teams and the respondents, with obtaining the necessary information; 4. The duration of the observation period is one and the same; 5. Identical concepts are used for forming the aggregates "Income" and "Consumption"; 6.The same algorithms are used in calculating the poverty thresholds and poverty levels; 7. The same algorithms are used in calculating the indicators for differentiation of households in terms of income (expenditure), depth and sharpness of poverty.

**In the computation there are no equivalent scales used.

During the investigated period there was an increase in the poverty lines in comparison with the lines in 2001 as follows: for PL50% - by 6.2% and for PL2/3 – by 7.4%.

The possibility for international comparisons of the results from the Multi-topic Household Survey

The relative method, accepted by Eurostat, was also used for exploring poverty in Bulgaria. It was based on the income distribution of households as equivalent units.[19] The poverty threshold was regarded in terms of 60% of the median equivalent income. The comparative data are presented on Table 9.

Table 9

Basic indicators of poverty in Bulgaria, candidate countries and EU member countries in 2001

Indicators	Bulgaria	AC-10*	EU-15	EU-24**
Poverty threshold (BGL.)	1504	-	-	-
Euro	772	1799	8319	7312
PPS	1971	3240	8253	7472
Share of the poor (%)	21	14	15	15
Gini coefficient (%)	33	28	28	28
Quantile ratio S80/20	5.8	4.3	4.4	4.4
Poverty depth (%)	28	21	22	22
Share of the poor before social transfers (%)	42	44	39	40
Including pensions (%)	24	26	24	24
Population (ths.)	7910	74 824	378 766	448 199
Exchange rate – euro	1.948	-	-	-
Exchange rate - PPS	0.763	-	-	-

* Accession countries.
** Without Slovakia.

The data from the multi-purpose observation of households in 2003, allowing a comparison with all other conditions held equal, indicated that throughout the year, the poverty threshold in the country is 772 Euro on average per person (or monthly 64.3 Euro), and the relative share of the poor households was 21%. In 2001 for the EU candidate countries that threshold was considerably higher (more than twice) in comparison with Bulgaria.[20]

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[19] The equivalent scale of Eurostat is used: 1 – for the first member of the household; 0.5 - for each subsequent adult member; 0.3 – for a child under 14 years old.

[20] The data on poverty are obtained from the conducted household budget surveys in the 10 candidate countries (already accepted) to EU. For each of them the situation is as follows: The Czech

For the EU member countries the poverty threshold in 2001 was over 8319 Euro, and the share of the poor was 15%.[21]

Social transfers like pensions, social benefits, etc. have had considerable importance for reducing poverty in Bulgaria and other countries. If we assume that households do not receive income in the shape of social transfers or pensions, the share of the poor households in Bulgaria (according to data from the multi-purpose observation of households) will be 42%. Respectively, if pensions remain as a source of income, but other social transfers are eliminated (predominately social benefits) the share of the poor households decreases to 24%. The data indicate that in Bulgaria the system of social assistance has played a considerable role in restricting poverty. In 2001 the poor people in EU member countries increased to 39%, if social transfers and pensions were not paid. If these transfers were cancelled, but pensions are included, the share of the poor was 24%.

Summarizing the data obtained, it is obvious that Bulgaria is a country with a relatively high poverty. The share of the poor is greater than the share in other countries by some 6-7-percentage points. In accordance with the millennium goals the poverty threshold has to reach 170 Euro in 2015 and the relative share of the poor should not surpass 15%.[22]

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The multi-topic household survey conducted in the country and the proposed set of poverty measurements provide rich information about the situation of poverty in the country. The study has been constructed to provide information, covering a broad scope of indicators that shape the living standard of people. In this respect, the multi-purpose observation of households allows for poverty exploration and identification of the poor social strata according to different properties.

The evaluations, analyses, and comparative characteristics of widely applied in the world practice approaches and methods measuring poverty, provide sufficient evidence to select an official poverty line. The advantages of the relative share have been clearly formulated and the disadvantages can be compensated by information from both the absolute and subjective approaches.

9.IV.2004

Republic – 1897 Euro and the share of the poor households – 8%; Hungary – 1641 Euro and 10% poor; Poland – 1742 Euro and the share of the poor 14%; Estonia – 1208 Euro and 18% poor; Latvia – 1124 Euro and share of the poor 17%; Lithuania – 1215 Euro and 16% poor households (2002).

[21] The data on poverty for the EU countries are obtained from the conducted surveys of the households in the European panel.

[22] Millennium goals of the development. Program for development of the UN. Sofia, 2003.