

# **THE MANY DIMENSIONS OF POVERTY IN POLAND: ARE THE RESULTS ROBUST?**

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## **Executive Summary**

It is well-known that monetary measures of poverty may classify as poor the individuals that are not poor in terms of other dimensions of well-being. This paper discusses the issue of multidimensionality of poverty and consistency of its various dimensions.

The study captures three aspects of well-being: income and expenditure i.e. monetary measures, subjective income evaluations and dwelling conditions. It is based on Polish household data covering period 1997–2003. The main goal of the study is to check whether conclusions on trends in poverty involving three abovementioned definitions are consistent. Moreover, a type of “prosperity line” (in opposition to poverty line) is introduced. It is applied to the monetary poor to expand the consistency inspection.

The results reveal quite important discrepancies between trends in three analysed types of poverty. Though income and expenditures absolute poverty incidence generally decreased during the investigated period, the share of persons living in subjective poverty was higher in 2003 than in 1997, while dwelling deprivation substantially decreased at the same period.

Quite large discrepancies at the individual level can be observed. Less than two thirds of the monetary poor individuals are in subjective poverty. The discrepancy between monetary poverty and dwelling deprivation is even higher and increased over the investigated period. Relatively large and increasing share of the monetary poor are above the “prosperity line” constructed on the base of household assets and durables that are considered luxury in Poland.

Observation of trends in overlapping poverty, i.e. that passing all definitions considered here, demonstrate that multidimensional poverty decreased slightly over the investigated period. All measures incorporating deprivation display decreasing trends. Increase of subjective poverty between 1997 and 2003 overwhelmed modest drops of monetary poverty. The rates of individuals facing all types of poverty were very small as compared to monetary poverty rates. The individuals that are poor in accord with all definitions, including the highest degree of dwelling deprivation, represented about 3% of the whole population.

Some conflicting results were also found between the correlates of poverty of the three aforementioned types. The estimates were obtained by means of the probit regression of poverty occurrence on the household attributes. Living in a single-parent household reduces the risk of monetary poverty but increases the risk of poverty of subjective type. A presence of one or two children is a strong monetary poverty correlate but reduces probability of dwelling deprivation, as compared to childless households.

Analysis of correlates of inconsistent poverty yields some information on how different types of household can manage poverty. Higher than average probability of inconsistency may suggest higher ability to evade one type of poverty in spite of facing other forms of it. Lower probability may be interpreted as lower ability to manage multidimensional poverty. Households of farmers, farmer-employees and self-employed represent the previous type. The latter type is represented by the households with the following attributes: rural residence and female, pensioner or welfare state beneficiary as a household's head.

Generally, inconsistency of poverty in Poland increased over the investigated period. This finding coincides with some multinational studies for the European Union pointing out a positive relation between poverty inconsistency and the level of economic development. Therefore, it may be rational to include non-monetary indicators into the standard poverty statistics.

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## 1. Introduction

The question “how much poverty?” can hardly be answered unambiguously. One of the crucial problems is the definition of individual poverty, i.e. which aspects of welfare it should capture and what poverty threshold(s) should be applied. In the present paper the focus is made on analysis of various dimensions of poverty, related to its different definitions. The empirical part of the study is based on the Polish household data from the 1997–2003 period. The main question addressed here is: is it possible to reach similar conclusions on those dimensions and what are the relations between them?

The most common definition of poverty is based on equivalent income and/or consumer expenditure. In the present paper it is referred to as monetary poverty. Since the seminal paper by Townsend (1979) incorporating other non-monetary indicators into poverty research has gained wider recognition and is nowadays commonly accepted. More precisely, poverty in a broader sense also covers deprivation, i.e. lack or shortage of some particular items or resources, like a hot meal every day, hot running water, decent living space, etc. as well as some components of a psychological nature. There is one more aspect of such an approach: the individuals reported as poor in terms of current income or expenditure may reach a more than sufficient level of well-being in terms of their resources and vice versa. Subjective evaluations of well-being represent another dimension of poverty research. Like in the previous case, they may differ from the results obtained by means of “objective” measures. Those issues, which may be referred to as poverty consistency and inconsistency, represent the main focus of the present study.

Trends in monetary poverty are reported in this paper for all years from 1997 to 2003 (section 4). Comparisons between various aspects of poverty and well-being are performed for three years representing the beginning, the midpoint (2000) and the end of the investigated period (*sections 5a and 5b*). One class of measures indicate rates of individuals that are poor in accordance with one definition and non-poor in accordance with another one. They may be said to report inconsistency of poverty evaluations. Alternatively, inconsistency of poverty is gauged by observing the presence of individuals who can be said to be well-off in terms of one standard among those poor in terms of another one. Consistent poverty is measured by rates of those facing deprivation and/or subjective poverty among the monetary poor. The rates of those passing more than one definition of poverty, are produced in section 5b.

Distribution of poverty among socio–economic groups is another area of interest. Probit regression is used to indicate household attributes correlated with a high probability of being poor (section 5c). Probit models are also employed to find household attributes significantly correlated with the appearance of inconsistencies between various types of poverty (section 5d). Remaining sections of this paper capture an explanation of elements of this study (section 2), and a brief data description (section 3). Section 6 concludes.

## **2. Elements of the present study**

### **2 a. Well being and poverty**

Household equivalent income and expenditures on consumption (OECD 70/50<sup>1</sup> equivalence scales are applied) are indicators of household well–being. Income and expenditure poverty are analysed here both separately and simultaneously. The latter approach seems to produce measures that are more robust to volatility of current income and expenditure. This is especially relevant to households of self–employed and farmers. Household assets, durables and facilities are utilised in alternative measures of households’ material status (for the details see the section below). Furthermore, subjective income evaluations are used as additional indicators of standards of living.

### **2b. The poverty lines**

In this study the indicators of monetary poverty are based primarily on an absolute threshold. This type of poverty line is especially relevant in the case of transition countries undergoing huge alterations in well–being distribution. Moreover, other dimensions of poverty considered here usually represent an absolute type as well. The monetary poverty line is based on the so called social minimum calculated by the Institute of Labour and Social Studies (ILSS) in Warsaw. As it is not stable in real terms, the value of this indicator was corrected by Szulc (2000). Apart from poverty thresholds, a type of opposite measure is embedded into this research in order to indicate those individuals who have reached a high living standard in terms of one measure but are poor in terms of another. One could name this concept a “prosperity line”. It is created for all three dimensions of poverty. Monetary “prosperity” is defined as higher than double of median equivalent total expenditures on clothing, health care, transportation and communication, culture and recreation, and education.

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<sup>1</sup> Numerical values of these scales are not far from some econometric estimations for Poland (see Szulc, 2003).

Deprivation is defined as lacking at least one of the following: bath or shower, inside toilet, running hot water, adequate heating (for instance not with a fire basket). Such a definition allows ranking its degree from one (i.e. lacking one item) to four. The “prosperity” (or “affluence”) line is defined as an occurrence in a household of particular combinations of the following items: large dwelling size, possessing a car, dacha (cottage), computer with an access to the internet in 2000 and 2003 or with a printer in 1997, electric dish washer, cable or satellite TV, and video recorder. The threshold for a dwelling size is set at double of the median value per capita. Since there is a large variation of this variable with respect to the household size and type of residence, the thresholds are calculated separately for rural and for urban households as well as for households with one, two, and three or more persons. A household is classified as affluent in terms of its assets if at least one of the following conditions is held:

- owning a car and dacha,
- owning at least three of the following: car, computer plus internet or printer, dish washer, cable or satellite TV, and video recorder,
- owning a car and living in a large dwelling,
- living in a large dwelling and owning at least three of the following: computer plus internet or printer, dish washer, cable or satellite TV, and video recorder

Definition of subjective poverty is based on two income questions: i) what is your general income position (possible answers: poor, rather poor, fair, rather good, and good), and ii) what monthly income will you find: very poor, insufficient, scarcely enough, good, and very good.

To be considered poor in subjective terms a household should find its income less than “fair” (first question) and reach less than “scarcely enough” monthly income (second question). The subjective “prosperity line” was defined by an answer at least “rather good” to the first question and by reaching at least “good” income in the sense of the second. Using two components of subjective poverty makes this measure more robust.

## **2c The poverty indices**

The set of applied formulas is rather standard. Poverty rates are calculated for persons (all calculations) and for households (monetary poverty, absolute poverty line only). The poverty gap index is based on the measure proposed by Atkinson et al (2002) as the Laeken indicator of

monetary poverty depth. It is defined as a difference between a poverty line and median income of the poor divided by the poverty line value:

$$D = \frac{z - Me(inc_p)}{z} \quad (1)$$

where  $z$  is the poverty line and  $inc_p$  denotes income of the poor individual. In other words, this index indicates how poor the poor are. In the present study such an index is calculated by means of the absolute poverty line and: i) income, ii) expenditure, and iii) income and expenditure simultaneously. To combine income and expenditure in one indicator, some modification should be introduced to (1). First, for income and expenditure two poverty gaps are calculated:

$$D_{inc} = \frac{z - Me(inc_{p,ie})}{z} \quad \text{and} \quad D_{exp} = \frac{z - Me(exp_{p,ie})}{z} \quad (2)$$

where  $inc_{p,ie}$  and  $exp_{p,ie}$  stand for income and expenditures, respectively, of persons whose both incomes and expenditures are below the poverty line. The combined income and expenditure poverty gap is an arithmetic mean of both indices defined above.

## 2d Poverty distribution among socio-economic groups

In order to indicate the groups of high risk (probability) of poverty, national indices may be disaggregated by means of several key variables (see section 5c for more details). However, such a type of decomposition can provide a biased set of poverty correlates. For instance, rural households include, on average, more children than urban ones and are usually headed by less educated persons. As both these attributes are likely to be significant correlates of poverty, it would be impossible to check by means of simple decomposition whether a rural location itself is a “determinant” of poverty. Probit (or logit) models allow estimation of, informally speaking, pure effects of household attributes, as the regression is run on all variables simultaneously. Probit models of four types of poverty (monetary, subjective, deprivation of lowest degree, deprivation of highest degree<sup>2</sup>) are estimated to provide marginal effects of various household’s or person’s attributes on demographic composition, location, main source of income etc.

Probit regression is also utilised to find correlates of inconsistencies in poverty, conceived as holding one definition of poverty, while another one is not passed. Thus, an independent variable is binary, however using a standard probit regression for the poor individuals may result in biased

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<sup>2</sup> Respectively, one item missing and four items missing.

estimates due to self-selected sample (some determinants of monetary poverty may be also determinants of inconsistency) which results in correlation between the residual of the regression and the selection equations. To obtain unbiased estimates, the Heckman selection model is used. The procedure consists in estimation of poverty equation simultaneously with a selection equation<sup>3</sup>.

### **3. The data**

The individual data employed in this research come from the annual household budget survey (HBS). It covers information on household incomes and expenditures, assets, durables, living conditions, demographic and socio-economic attributes, and answers to subjective income questions. Since 1993 till recently, the yearly samples cover approximately 32,000 households (36,000 in 2000) and 100,000 persons. The reference period of observation is one month. A two-stage sampling scheme is being applied. Former administrative regions (voivodships) split into urban and rural areas are the first stage sampling units, from which primary sampling units (dwellings) are being drawn. Panel data has been collected in some two and four year periods till. More details on Polish HBS may be found in Kordos et al (2002).

### **4. Trends in monetary poverty**

Table 1 reports absolute and relative (70% median) poverty lines for 1997–2003, together with changes in median equivalent income and expenditures. After serious increases in 1998 real incomes and expenditures stagnated (this may be partly explained by slowdown in GDP growth, increased unemployment and tightening of the monetary policy by the Central Bank after inflation growth in 1999). Nevertheless, median income and expenditure in 2003 were above the initial levels in real terms.

Indices of monetary poverty obtained with the use of the absolute poverty line are reported in Table 2. The changes in poverty incidence based on three types of well-being (equivalent income and expenditure taken separately and simultaneously) were not equal. For income and expenditure, irrespectively whether for persons or for households, the highest values are observed for 1997. Bottom values were reached in 1998 for expenditure and in 1999 for income. For combined income and expenditure 2003 rates were the highest during the observed period. Unlike in the previous

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<sup>3</sup> For details see Heckman (1979).

years (see Szulc, 2006) indices calculated for persons<sup>4</sup> were changing at the pace similar to that calculated for households. Trends in poverty gaps were characterised by similar shapes, however 2003 values were well above 1997 levels. In other words, 2003 monetary poor were more poor than 1997 poor, though less numerous. Expenditure poverty gaps were on average higher than income gaps. Nevertheless, the highest poverty depth is indicated when income and expenditures are combined. This is hardly surprising, as these measures are based on a more restrictive definition of poverty, therefore those poor according to one definition only were excluded from the poverty zone. For all relative poverty lines (only that based on 70% median is reported here) and monetary well-being, measures of monetary poverty increase permanently.

Increases observed for expenditures were slightly more intense.

Table 1 Absolute and relative poverty lines and changes in median well-being

Year	Corrected social minimum <sup>1</sup>	70% of median (persons)		Real growth of median	
		Income	Expenditure	Income	Expenditure
1997	404.0	362.6	328.3	–	–
1998	451.3	425.1	386.0	1.045	1.048
1999	472.4	449.0	402.8	99.2	98.0
2000	520.1	484.0	442.2	99.6	99.6
2001	548.7	513.7	466.4	99.9	99.3
2002	559.1	518.9	467.1	99.4	98.6
2003	563.6	526.9	475.1	1.01	1.01

<sup>1</sup> In zloty per month per single person (in 2003 1 USD = 3.93 zloty and 1 Euro=4.44 zł)

Source: 1990 social minimum by ILSS and own calculations based on the HBS

<sup>4</sup> Incomes and expenditures attributed to them are obtained by dividing household's values by the equivalence scale.



Table 2. Monetary poverty rates and gaps for the absolute poverty line

Year	Poverty rate		Poverty depth	
	Persons	Households	Persons	Households
Expenditure				
1997	38.1	31.5	24.2	23.8
1998	34.3	27.4	23.4	23.0
1999	35.1	27.7	24.0	23.6
2000	35.3	28.4	24.6	24.2
2001	35.6	28.2	24.6	24.3
2002	36.9	29.2	25.8	25.3
2003	36.7	29.0	26.5	26.1
Income				
1997	30.1	23.9	23.6	23.1
1998	27.1	21.2	22.7	22.3
1999	26.3	20.3	24.6	24.2
2000	29.0	22.9	24.8	24.5
2001	28.7	22.3	24.7	24.2
2002	29.5	22.8	26.1	25.7
2003	29.6	22.9	25.4	25.2
Income and expenditure				
1997	23.4	17.8	28.1	27.8
1998	20.7	15.4	27.6	27.3
1999	20.8	15.3	29.0	28.6
2000	22.6	17.0	29.2	28.9
2001	23.1	17.2	29.1	28.8
2002	24.0	17.8	30.3	30.0
2003	24.0	17.9	30.4	30.2

*Source: Author's calculations based on the HBS data.*

Correspondence of trends in income and expenditure poverty does not necessarily mean their identity at individual levels. As the rates of poverty of the first type are significantly lower, it is

obvious that some people considered poor in terms of expenditures are not income poor. Nevertheless, the scale of such inconsistencies is higher than could result from those differences only. The inconsistencies were checked for 1997, 2000 and 2003. The proportion of the expenditure poor among those who are not income poor ranged from 18.0% (in 2003) to 21.2% (in 1997). At the same time, proportion of the income poor among the expenditure non-poor ranged from 8.8% (2003) to 10.9% (1997). Thus, the inconsistency between income and expenditure poverty decreased between 1997 and 2003 but remained noticeable. These results demonstrate that identification of poor individuals using a single measure may be misleading, even if the research is aimed solely at monetary poverty.

## 5. Monetary poverty versus other dimensions of poverty

### 5a. Consistency of poverty at individual levels

Two other dimensions of poverty – dwelling deprivation and subjective (see section 3b for the definitions) – were examined for 1997, 2000 and 2003. The respective national rates are displayed in Table 3 (in parentheses). The subjective poverty rate in 2003 was considerably higher than that in 1997 though it peaked in 2000. On the contrary, deprivation rates dropped significantly over the investigated period. The relative extent of those drops was highest for deprivation of degree four.

Table 3. Subjective poverty and deprivation rates: among the monetary poor and average.

Year	Subjective poverty	Deprivation of degree:			
		One	Two	Three	Four
1997	57.1 (27.5)	51.8 (31.5)	35.5 (18.7)	27.9 (14.1)	21.0 (10.3)
2000	66.9 (33.4)	51.9 (28.2)	32.1 (15.0)	24.6 (11.3)	18.1 (8.1)
2003	65.0 (32.3)	42.7 (22.8)	26.2 (12.3)	19.1 (8.8)	13.7 (6.3)

Whole sample averages in parentheses

Source: Author's calculations based on the HBS data.

Consistency and inconsistency of three dimensions of poverty at an individual level is examined in two ways. First, the rates of the subjectively poor and of the deprived for the whole sample and for the monetary poor are compared (see Table 3). Second, rates of people above the “prosperity lines” are calculated for the monetary poor (see Table 4). The results reported in Table 3 demonstrate how many poor in accordance with one definition are poor in accordance with another one. The proportion of the subjectively poor among the monetary poor varied from 57.1% in 1997 to 66.9%

in 2000. These changes resulted mainly from the changes in the overall subjective poverty rate, while the ratio of the rate of subjectively poor among the monetary poor to the overall rate of the subjectively poor was quite stable (from 2.0 in 2000 and 2003 to 2.1 in 1997). The proportion of deprived persons among the monetary poor is lower and this is true even when the overall rate of deprivation is higher than the rate of subjective poverty (in 1997) and decreased considerably over the investigated period. The increasing ratio of deprivation rate among the monetary poor to the overall rate of deprivation displays an increasing inconsistency of poverty of such a type. The fact that the monetary poor are less likely to be deprived than to be poor in subjective terms may be explained by the true that subjective poverty is based on current income. One should note, however, the impact of non-income factors on subjective poverty. Lokshin and Ravallion (2002) investigated this issue for Russia and found a much higher inconsistency between monetary and subjective poverty.

Table 4. Asset, subjective and expenditure prosperity: among the monetary poor and average.

Year	Monetary poverty and:			Expenditure poverty and subjective prosperity	Income poverty and expenditure prosperity
	asset prosperity	subjective prosperity	expenditure prosperity		
1997	11.4 (31.2)	1.0 (9.7)	0.1 (20.6)	2.7	4.2
2000	15.2 (36.3)	0.8 (8.7)	1.4 (22.8)	2.1	6.3
2003	18.1 (40.8)	0.7 (9.9)	1.9 (24.6)	2.0	6.1

Whole sample averages in parentheses

Source: Author's calculations based on the HBS data.

Table 4 displays how many people among the monetary poor reached prosperity in accordance with another definition. There are three types of the “prosperity line” (see section 3b), each one associated with a particular dimension of poverty. All those thresholds are set at reasonably high levels, to ensure a secure margin of error. The proportion of people living in households (in Poland) with luxury assets and durables that are monetary poor was relatively high and increased considerably over the investigated period (from 11% to 18%). This allows the rejection of the hypothesis that presence of such assets and durables is a heritage of communism. That increase was caused not only by an overall increase of this type of prosperity (by 31%) but also by an increase in the proportion of “prosperous households” among the monetary poor. This increasing inconsistency coincides with an inconsistency of poverty based on monetary poverty and deprivation, as reported in Table 3. The results demonstrated in the next two columns of Table 4 are rather inconclusive, due

to very small values (below 2%) resulting from contradictory definitions of monetary poverty and “prosperity”. The previous covers both income and expenditure and the latter also cover income (in subjective measures) and expenditure “prosperity”. Therefore, matching subjective “prosperity” with expenditure poverty only and expenditure “prosperity” with income poverty may be a better solution. The rates of “prosperous poor” defined in that way are much higher but still relatively low. On the other hand, the serious increase of the rate of “expenditure prosperity” among the income poor (by 45–50%) can be observed for 2000 and 2003, as compared to 1997.

Increasing inconsistency in poverty, especially recognizable when monetary poverty and deprivation is taken into consideration, may be at least partly matched with the results obtained by Förster (2005) for 17 countries of the European Union. The highest inconsistency was found for the richest nations and the lowest for the poorest ones, including all three post-communist new members incorporated into the study (The Czech Republic, Hungary and Slovenia). It should be noted, however that definitions of poverty and deprivation were different than in the present research. Monetary poverty was relative and income based while deprivation captured also food, clothes, some durables and leisure time.

## **5b. Trends in overlapping poverty**

The individuals passing more than one definition of poverty can be described as consistently poor or as being in “overlapping poverty” (in the literature being also referred to as “core poverty”). A degree of such a poverty may vary, depending on the number of definitions passed. Given the provided number of possible combinations, it is necessary to introduce a hierarchy of various types of poverty and “prosperity” which is to some extent arbitrary. The following definitions of overlapping poverty are applied:

- monetary poverty without a “prosperity” defined in the previous sub-section,
- monetary poverty and deprivation of degree one and four,
- monetary and subjective poverty,
- subjective poverty and deprivation of degree one and four,
- monetary and subjective poverty together with deprivation of degree one and four.

For 1997, 2000 and 2003 the aforementioned indices are presented in Table 5. The results are hardly surprising. Provided trends in separate types of poverty (i.e. monetary, subjective, deprivation taken separately), one could predict trends in poverty that capture more than one dimension. All measures incorporating deprivation (columns 3–4 and 6–9) display optimistic trends. On the contrary, an increase of subjective poverty between 1997 and 2003 meant an increase in the aggregate index reported in column 5 due to a modest decrease in monetary poverty for those years (column 3). The last column reports rates of the individuals that are poor in accordance with all definitions, including the highest degree of deprivation. They appeared to be very low – from 3.3% in 1997 to 2.6% in 2003 and were decreasing permanently between 1997 and 2003.

Table 5.Overlapping poverty.

Year	Monetary poverty and:				Subjective poverty and:		Subjective and monetary poverty, and:	
	lack of prosperity	deprivation of degree 1	deprivation of degree 4	subjective poverty	deprivation of degree 1	deprivation of degree 4	deprivation of degree 1	deprivation of degree 4
1997	20.5	12.1	4.9	13.3	12.6	5.2	7.6	3.3
2000	18.7	11.7	4.1	15.1	14.5	4.8	8.7	3.2
2003	19.2	10.2	3.3	15.6	11.7	3.7	7.5	2.6

*Source: Author's calculations based on the HBS data.*

### **5c. Poverty distribution**

In this section, correlates (or “determinants”) of various types of poverty are examined by means of probit regression in which probability of poverty is an independent variable. The set of explanatory variables capture information on: household head’s age, gender and education, number of children and adults, type of residence, and main source of income.

Some estimates do not correspond to the results obtained by a simple decomposition of the overall poverty indices. For instance, people living in households headed by farmers and farmer–employees as well as in single–parent households are characterised by monetary poverty rates higher than average. On contrary, probit estimates of respective parameters are negative. This means that those higher poverty rates are caused by other reasons, e. g. lower education or rural residence (farmers and farmer–employees) or by a larger number of children (single parents). The opposite event is observed for people living in pensioner households – probit estimate is positive while the poverty rate is very close to that of employees and much below the country average. The latter result may be explained by a much lower number of children and welfare beneficiaries, while these variables are included into the probit model and then their effects are separated from the effect of being a pensioner.

The set of positive correlates of subjective poverty is similar to that obtained for monetary poverty, with one exception. The estimate for single–parent households is positive. This may be caused to some extent by psychological reasons. The signs remain positive also when deprivation is taken into consideration. In that case more changes in the signs appear, as compared to monetary poverty. A presence of one or two children reduces the probability of deprivation of degree one and four, as compared to childless households. Those results, conflicting with the results on correlates of monetary poverty, may suggest switching allocation of incomes due to childbearing. The preference is given to dwelling resources rather than to current consumption. In other words, even if households with children cannot evade monetary poverty, they are more likely to avoid a dwelling deprivation.

To produce one set of multidimensional poverty correlates, an ordered probit regression was applied. An independent variable is ordinal in the sense that a higher value means a higher concentration of poverty. Value 0 means absence of poverty of any type. Higher values (from 1 to 7) are obtained by adding successively further types of poverty, namely: i) income or expenditure poverty, ii) income and expenditure poverty, iii) subjective poverty or deprivation of degree one, iv) subjective poverty and deprivation of degree one, and v–vii) subjective poverty and deprivation of

higher degrees. For most of the employed variables estimates were positive and significant. Negative and significant estimates were obtained for persons living in households of the following type: headed by persons aged 60 or over, self-employed, farmer–employee, and single–parent households. Moreover, in 1997, the estimate for farmers' households was negative.

#### **5d. Correlates of inconsistent poverty**

Four forms of inconsistent poverty are analysed in the present study. They are defined by matching monetary poverty with the following forms of absence of poverty:

- “prosperity” in terms of household assets and durables or subjective evaluations, or expenditures on non–food items (see sections 2b and 5a),
- lack of subjective poverty,
- lack of deprivation of degree one
- lack of deprivation of degree four.

For all definitions standard probit regression on censored sample (i.e. for the monetary poor only) and Heckman probit regressions were run on 2000 data. For the first and the third type of inconsistency, correlations between the residuals of the regression and selection equations were significant, therefore Heckman regression appeared to be more appropriate. For the two remaining definitions, estimates were obtained by means of standard probit<sup>5</sup>. The results demonstrate that inconsistencies between different sorts of poverty can be associated with some households' attributes on a regular basis. Households of farmers, farmer–employees and self–employed are characterised by positive and significant estimates for all types of inconsistency. Rural residence and the following attributes of the household's head reduce the probability of inconsistency in poverty: being female, pensioner or welfare state beneficiary. A positive estimate may suggest a higher ability to evade one type of poverty in spite of facing another form. A negative estimate may be interpreted as a lower ability to manage multidimensional poverty.

#### **6. Conclusions**

The study revealed relatively large discrepancies between the results obtained by means of the various definitions of poverty. The highest discrepancies may be observed between monetary poverty and deprivation (for some years less than half of the monetary poor suffer any form of

dwelling deprivation). The differences at individual levels result in significant differences between trends in various types of poverty. Monetary poverty, after a sharp drop in 1998 reached almost the initial level in 2003. Subjective poverty increased over the investigated period while deprivation at the same time declined substantially. The latter change may be at least partly explained by the tax policy encouraging investments in housing facilities and by the development of a hidden economy in relevant sectors. Changes in monetary poverty are related to changes in average incomes and expenditures (following the GDP and unemployment changes) and increases in inequality. It seems that changes in subjective poverty can hardly be explained by economic factors, as they are to a high degree of a psychological nature.

Regression analysis of poverty correlates produced similar sets of variables for all types of poverty, with two important exceptions. Living in a single-parent household reduces the probability of monetary poverty but increases the probability of subjective poverty and deprivation. Opposite relations may be observed for the impact of children on poverty. Their presence increases the probability of monetary and subjective poverty, as compared to persons living in childless households. However, the presence of one or two children reduces the relative probability of deprivation. This result suggests that childbearing may be a strong motivation for a more rational allocation of income, i.e. preferring investments in dwelling conditions rather than current consumption. These conflicting results represent an optimistic feature of Polish poverty. The number of persons who may be considered “entirely poor”, i.e. those passing all definitions of poverty is very small. This means that some people that are poor in accordance with one definition can evade other types of poverty. Therefore, indicators of inconsistency of poverty may be considered a type of measure of mobility in a broad sense, which is applicable also under the absence of panel data. This supposition is supported by the observation that the variables increasing the probability of “overlapping poverty”<sup>6</sup> are very likely to be also negative correlates of economic mobility.

The general conclusion derived from the results presented in this paper is rather unfavourable for poverty statistics based solely on monetary measures. It may be misleading both in terms of trends as well as for particular individuals. Some results obtained by other authors suggest that inconsistency of poverty is likely to increase due to economic development. Hence, it seems to be rational to recommend expanding poverty measurement onto non-monetary domains. This is one of the principles of construction of Laeken indicators of social exclusion, however the set of indicators

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<sup>5</sup> The estimates are not reported in this paper to save the space. They are available from the author upon request.



should be open for further discussion, especially after the EU enlargements in 2004 and 2007. Though the primary measure of risk of poverty (equivalent income below 60% of national median) seems to be acceptable for all nations, the measures of deprivation should be more country specific. This results mainly from different levels of development of the EU members. Hence, this type of measures should be included into Level 3 indicators, i.e. those highlighting specificities in particular countries. One could also consider the use of subjective indicators, however they are less informative due to high variability and sensitivity to psychological factors.

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<sup>6</sup> The following household’s head attributes: blue collar worker, female, pensioner and welfare state beneficiary.