*STATISTICS IN TRANSITION-new series, Summer 2012*
*Vol. 13, No. 2, pp. 321—334*

# INCOME SATISFACTION AND RELATIVE DEPRIVATION

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## ABSTRACT

The main objective of the study is to identify determinants of income satisfaction in Poland. For this purpose, income situation of households in relative terms is analyzed. The effects of the relative deprivation on income satisfaction in various socio-demographic groups of households are also examined. The method of partially generalized ordered logit models is used in the paper. The empirical investigation is based on data from Household Budget Survey carried out by the Polish Central Statistical Office in 2009.

**Key words:** Income Satisfaction, Relative Deprivation, Partially Generalized Ordered Logit Model.

## 1. Introduction

Economic research on income satisfaction is sparse but growing rapidly. Many studies of household wealth in developed countries are not limited to the analysis of the consumption and the objective income condition. They take into account the issue of deprivation covering many areas of life including subjective deprivation. Understanding the determinants of income satisfaction may help in the creation of the social policy aimed at mitigating the effects of subjective poverty.

The main objective of the study is to identify determinants of income satisfaction in Poland. For this purpose, the income situation of households, both in absolute and relative terms, is analyzed. Some authors suggest that the natural relationship is greater between subjective well-being and relative deprivation rather than between subjective well-being and income itself (Easterlin, 1995). Relative deprivation is a concept assuming that people compare themselves with other individuals or groups when evaluating their own situation. Therefore, for

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each household the value of the relative deprivation function is computed in the form proposed by D'Ambrosio and Frick (D'Ambrosio, Frick, 2007). Regressors in the econometric model include not only relative deprivation index, but also the other socio-demographic characteristics such as gender, age, marital status, and dummies for employment status. The effects of relative deprivation on income satisfaction in various socio-demographic groups of households are examined.

The method of partially generalized ordered logit models is used. The empirical investigation is based on data from household budget surveys carried out by the Central Statistical Office (CSO) in 2009. The methodology proposed makes a modification of the approach presented in (Vera-Toscano et al., 2006) and (Ferrer-i-Carbonell, 2005), where to estimate the model explaining income satisfaction the authors used ordered logit and probit models without verifying strong assumptions imposed on these models.

## 2. Income satisfaction researches – review of empirical research

Since the end of the last century more and more work on the explanation of the satisfaction with income have begun to appear in the scientific literature in economics and sociology. Individual satisfaction is the satisfaction derived from income, with evidence showing that age, education and individual income appear to have significantly positive impact on individual's income satisfaction. The set of factors considered as potential explanatory variables in income satisfaction research may be divided into two groups: attributes of the household head and attributes of the whole household. The first group encompasses characteristics such as: age of the family head, gender of the household head, the level of education of the household head. The second group comprises, for instance, the following attributes: household disposable income, the number of household members, the place of residence (rural, small towns, large cities).

Many studies have found a negative correlation between age and subjective well-being, but only up until to a certain age (Ferrer-i-Carbonell, Van Praag, 2003; D'Ambrosio, Frick, 2007; Vera-Toscano et al., 2006; Van Praag et al., 2010). The relationship is U-shaped and has its turning point around a certain age and, after this point, subjective welfare is likely to increase with age. In the works cited (in addition to various socio-demographic characteristics) the level of current income in absolute or relative terms is used to explain the satisfaction with income. The paper (D'Ambrosio, Frick, 2007) explains the perception of the income situation of households by their own relative deprivation.

A personal determinant such as gender is also significant for subjective well-being. Some research studies prove males to be less satisfied than females (for example, (Van Praag et al., 2000, 2003) for Germany). Ulman has observed a positive impact of education on financial satisfaction - the higher the level of education, the less subjective poverty (Ulman, 2006).

The point of view approved by economists is that household income and size exert statistically significant influence on measures of subjective economic well-being. Having considered the type of residence, it is stated that there is no firm opinion.

A few papers on the analysis of Polish households' subjective assessment of their own income situation are (Liberda et al., 2011), (Dudek, 2009) and (Dudek, 2012). In the first one it is presented that the determinants of income satisfaction include age, gender and educational level of household heads, the source of income, the place of residence and affiliation to the income group. The main objective of the (Dudek, 2009) and (Dudek, 2012) studies was to estimate the equivalence scale so as to include explanatory variables: the logarithms of income, the number of persons in the household as well as age, sex, educational level, the fact of being in formal or informal relation to the household head, and the place of residence.

The literature lacks modelling of the impact of relative deprivation on subjective assessment of personal income of Polish households. This paper aims to fill in this gap. One of the purposes of this study is to examine the impact of various potential determinants of income satisfaction in Polish households.

## 3. The data

Data employed in this study come from the Household Budget Survey (HBS) carried out by the Central Statistical Office in 2009. The observation unit is a household. One-person household is defined as a person not sharing his/her income with any other person, whether living alone or not. Multi-person household is defined as a group of people living together and sharing their incomes and expenditures. The Household Budget Survey does not contain any information referring to households from collective homes, such as students' hostels, social welfare homes (the so-called collective households) as well as households of the diplomatic corps of foreign countries. The households of foreign citizens speaking Polish with permanent or long-lasting residence in Poland are included in the survey. The number of households participating in the survey in each year was about 30000. The monthly rotation of households implemented assumes that every month of the year a different group of households participated in the survey (*Household Budget Surveys in 2009*).

The study focuses on households of employees whose exclusive or prevailing source of livelihood is income from employment in either the public or private sector. Subjective measures are based on households' answers to the question: "Considering your monthly disposable income, is your household able to make ends meet: (1) with great difficulty, (2) with difficulty, (3) with some difficulty, (4) without difficulty, (5) with ease, (6) with great ease?"

Table 1 presents the structure of Polish employees' households according to the assessment of subjective income situation.

**Table 1.** Structure of households by categories with respect to income perception in 2009.

| Level of income satisfying household needs | Category | The percentage of employees' households |
|---|---|---|
| Very poor | *j*=1 | 6.72% |
| Poor | *j*=2 | 15.45% |
| Insufficient | *j*=3 | 42.30% |
| Scarcely enough | *j*=4 | 26.89% |
| Good | *j*=5 | 6.89% |
| Very good | *j*=6 | 1.76% |

*Source: Own calculations based on 2009 Household Budget Survey data.*

Due to the small number of households declaring their situation as very good, they are joined with those assessing their income position as good. Therefore, in the econometric analysis five levels (categories) of income assessment are taken into account.

## 4. Econometric Framework

In order to estimate the impact of relative deprivation on income satisfaction the so-called equivalent income was considered at the beginning, taking into account the modified OECD scale. The disposable income of each household was divided by the corresponding value of equivalence scale, yielding $y_1, y_2, \ldots, y_n$, where $y_i$ – the equivalent income of *i*-th household, $i = 1, 2, \ldots, n$, $n = 18240$ – number of households of employees in the sample. The equivalence scale values were calculated as follows: 1+0,5(*a*-1)+0,3*c*, where *a* – the number of adults, *c* – the number of children under 14 years of age in the household. This formula is applied to the data from the 2009 in CSO publications. Equivalence scales allow one to compare the situation of households of varying size and demographic structure. They reflect the influence of household demographic structure on its living costs.

The equivalent incomes were arranged in non-decreasing order obtaining $y_{(1)} \le y_{(2)} \le \ldots \le y_{(n)}$. For each household with income $y_{(i)}$ the value of the relative deprivation function is computed as follows:

$$d(y_{(i)}) = \frac{1}{n} \sum_{j=i+1}^{n} (y_{(j)} - y_{(i)}), \quad d(y_{(n)}) = 0 \text{ (D'Ambrosio, Frick, 2007).} \qquad (1)$$

The above formula shows that the higher the equivalent income, the lower the value of the relative deprivation of income. Setting the households from the smallest to the largest value of relative deprivation the same rank ordering is obtained as in terms of decreasing equivalent income (from largest to smallest income value). One of the first papers presenting the idea of relative deprivation in a descriptive way is the monograph (Runciman, 1966). The quantification of this concept was presented in the work (Yitzhaki, 1979).

Preliminary data analysis revealed subjective assessment of own income from relative deprivation. Basic information on this subject is provided in Table 2.

**Table 2.** Subjective assessment of own income and relative deprivation.

| Level of income satisfying household needs | Category | Value of relative deprivation | | |
|---|---|---|---|---|
| | | Median | Mean | Standard deviation |
| Very poor | *j*=1 | 974.10 | 964.92 | 335.05 |
| Poor | *j*=2 | 811.38 | 810.81 | 331.53 |
| Insufficient | *j*=3 | 602.56 | 627.452 | 315.18 |
| Scarcely enough | *j*=4 | 351.54 | 402.58 | 271.77 |
| Good or very good | *j*=5 | 157.86 | 217.31 | 208.55 |

*Source: Own calculations based on 2009 Household Budget Survey data.*

To compare the strength of the relationship between subjective assessment of income, relative deprivation and equivalent income in the study of D'Ambrosio and Frick (D'Ambrosio, Frick, 2007), the Pearson correlation coefficients were used. Just as in the present analysis a stronger relationship was found between the subjective assessment of income and relative deprivation than between the subjective assessment of income and equivalent income.

To analyze the formation of income satisfaction in the paper (D'Ambrosio, Frick, 2007) the linear models for panel data were used. In works (Ferrer-i-Carbonell, Van Praag, 2003) (Schwarze, 2003) (Stanovnik, Verbič, 2006), (Vera-Toscano et al., 2006) more appropriate models were used to explain the variable

expressed at an ordinal scale. Subjective perception of income can be treated as a self-reported measure of utility. In order to explain it, the ordered logit model is applied. The starting point in such a case is usually a model with latent variable $y^*$:

$$y_i^* = \mathbf{x}_i\boldsymbol{\beta} + \varepsilon_i,\ i = 1, 2, \ldots, n, \tag{2}$$

where: $y^*$ – an unobserved latent variable which represents the response, if it could be measured accurately on the continuous scale,

$\mathbf{x}_i$ – a row vector of explanatory variables representing the characteristics of individual *i*,

$\boldsymbol{\beta}$ – a column vector of parameters $\beta_1, \beta_2, \ldots, \beta_k$ to be estimated,

$\varepsilon_i$ – a random component for the *i*-th observation,

*n* – a number of individuals,

the subscript *i* refers to the observation number.

Let us assume a set of cut-points $\delta_0, \delta_1, \ldots, \delta_m$, such that $-\infty = \delta_0 < \delta_1 < \ldots < \delta_m = \infty$, that divide $(-\infty, \infty)$ into *m* intervals. The relationship between the latent variable and the realized outcome is: $y_i = j$ if and only if

$$\delta_{j-1} < y_i^* \le \delta_j,\ i = 1, 2, \ldots, h,\ j = 1, 2, \ldots, m. \tag{3}$$

The $\delta_0, \delta_1, \ldots, \delta_m$ are unknown parameters to be estimated with $\beta_1, \beta_2, \ldots, \beta_k$. The substitution of (2) into (3) yields:

$$\delta_{j-1} - \mathbf{x}_i\boldsymbol{\beta} < \varepsilon_i \le \delta_j - \mathbf{x}_i\boldsymbol{\beta}. \tag{4}$$

It leads to the following probabilities of each outcome:

$$P(y_i = j \,|\, \mathbf{x}_i) = F(\delta_j - \mathbf{x}_i\boldsymbol{\beta}) - F(\delta_{j-1} - \mathbf{x}_i\boldsymbol{\beta}), \tag{5}$$

where $F$ – cdf of iid error terms $\varepsilon_i$. In practical applications the following models are usually used:

- ordered logit model with $F(z) = \Lambda(z) = \dfrac{1}{1 + \exp(-z)}$, (6)

- ordered probit model with $F(z) = \Phi(z) = \displaystyle\int_{-\infty}^{z} \frac{1}{\sqrt{2\pi}} \exp\left(-\frac{t^2}{2}\right) dt$. (7)

From an empirical point of view, it usually does not matter which model is used. Logit and probit models typically provide very similar results. This is all because the distribution functions for the logit and probit are comparable, differing slightly only in the tails of their respective distributions. In this research paper logit model is employed.

The slope parameters $\beta_1, \beta_2, \ldots, \beta_k$ have no intuitive interpretation. For the probabilities, the marginal effects of the regressors are:

$$\frac{\partial P(y_i = j \mid \mathbf{x}_i)}{\partial x_l} = -\beta_l \left\{ \frac{d\Lambda(\delta_j - \mathbf{x}_i\boldsymbol{\beta})}{dz} - \frac{d\Lambda(\delta_{j-1} - \mathbf{x}_i\boldsymbol{\beta})}{dz} \Big|_{z=\mathbf{x}_i\boldsymbol{\beta}} \right\} \tag{8}$$

The term in braces can be positive or negative, so one must be very careful in interpreting the slope parameters $\beta_1, \beta_2, \ldots, \beta_k$ in the ordered logit model. Only the signs of the changes in $P(y_i = 1 \mid \mathbf{x}_i)$ and $P(y_i = m \mid \mathbf{x}_i)$ are unequivocal. The marginal effects of the regressor $x_l$ on the probabilities $P(y_i = 1 \mid \mathbf{x}_i)$ are:

$$\frac{\partial P(y_i = 1 \mid \mathbf{x}_i)}{\partial x_l} = -\beta_l \left\{ \Lambda(\delta_1 - \mathbf{x}_i\boldsymbol{\beta}) \left(1 - \Lambda(\delta_1 - \mathbf{x}_i\boldsymbol{\beta})\right) \right\}, \; l = 1, 2, \ldots, k. \tag{9}$$

As $\Lambda(1-\Lambda) \geq 0$, the derivative of $P(y_i = 1 \mid \mathbf{x}_i)$ has the opposite sign from $\beta_l$. Similarly, as

$$\frac{\partial P(y_i = m \mid \mathbf{x}_i)}{\partial x_l} = \beta_l \left\{ \Lambda(\delta_{m-1} - \mathbf{x}_i\boldsymbol{\beta}) \left(1 - \Lambda(\delta_{m-1} - \mathbf{x}_i\boldsymbol{\beta})\right) \right\}, \tag{10}$$

the change in $P(y_i = m \mid \mathbf{x}_i)$ must have the same sign as $\beta_l$.

The parameters of ordered response model can be estimated by maximum likelihood method. *LR* test may be conducted for the selection between nested models. Akaike (AIC) and Bayesian (BIC) information criteria are used to compare alternative non-nested models. The model with smaller values of information criteria is preferred. Information criteria penalize models with additional parameters. Therefore, the AIC and BIC model order selection criteria are based on parsimony.

More information about the properties of ordered category models and their estimation and verification can be found in the works: (Dudek 2007), (Greene, Hensher 2010), (Książek 2010).

The models of ordered category are quite restrictive, because they assume that:

$$P(u_i \leq j \mid \mathbf{x}_i) = F(\delta_j - \mathbf{x}_i\boldsymbol{\beta}), \tag{11}$$

i.e. the parameters of the explanatory variables do not depend on the category $j$, $j = 1, 2, \ldots, m$. Ordered logit model approach embodies the restriction that the parameters $\beta_1, \beta_2, \ldots, \beta_k$ are to be the same for all categories. This assumption is called the parallel regression assumption. In order to verify it we used the test proposed in the publication (Brant, 1990). The idea of this test is based on the consideration of the *m*-1 binary regression for variables:

$$u_j^{**} = \begin{cases} 1, & \text{if} \quad u > j \\ 0, & \text{if} \quad u \leq j \end{cases}, \tag{12}$$

where $j = 1, 2, \ldots, m-1$ and the **β**'s are allowed to differ across regression. The parallel regression assumption implies that parameters slope vector **β** should be the same in every equation. The LR test is an omnibus test for all variables. It does not allow to determine whether the coefficients for some variables are identical across the binary equations while other coefficients are different. The Wald test developed by Brant allows to test the parallel regression assumption for each variable individually. This could be helpful in identifying individual variables that were problematic.

The following approach is presented in (Brant, 1990), (Long, 1997) and (Książek, 2010). After estimating the total variance and covariance matrix of parameters in all *m*-1 binomial models, Wald tests are carried out - total and individual tests for individual variables. The first test is used to verify the null hypothesis of equality of the relevant parameters for all m-1 binomial models jointly for the whole set of explanatory variables. The test statistic in the Brant test has the asymptotic chi-square distribution with *p* (*m*-2) degrees of freedom, where *p* - number of parameters by the explanatory variables, *m* - number of categories of an ordinal variable corresponding to the unobservable response variable. The rejection of the null hypothesis means that at least for one explanatory variable parameters significantly differ in at least two binomial models, following which the parallel regression assumption is not satisfied. Conducting individual Wald tests can identify the variables "responsible" for the violation of this assumption. The null hypothesis then says about the equality of parameters for a particular explanatory variable in all binomial models. As a consequence of rejecting the null hypothesis, the model for ordered categories should not be used, and then other methods to estimate parameters of the model (2) have to be applied. One of the approaches that can be used in this case is the estimation of a generalized model of an ordered category (Greene, Hensler, 2010):

$$P(u_i \leq j \,|\, \mathbf{x}_i) = F(\delta_j - \mathbf{x}_i \boldsymbol{\beta}_j), \text{ for } j = 1, 2, \ldots, m-1. \tag{13}$$

In the model above, it is allowed that the parameters by the explanatory variables are dependent on the category of an ordinal variable corresponding to the unobservable response variable. In the literature, such models are referred to

as partial proportional odds models for ordinal response variables (Peterson i Harrell, 1990; Williams, 2006). If the individual Wald tests do not require the rejection of the hypothesis of some parameters equality, it is possible to use partially generalized ordered models. In models of this type, the parameters for some of explanatory variables do not depend on the category of ordinal variable. This approach is on the one hand less restrictive than the use of generalized ordered model but, on the other hand, it is more "parsimonious" and allows easier interpretation of structural parameters due to the inclusion of a smaller number of parameters in the model.

In this paper we review the parallel regression assumption and propose some solutions in this field. The following model was considered:

$$u^* = \alpha_0 + \alpha_1 y + \sum_{k=1}^{K} \gamma_k s_k \tag{14}$$

where: $u^*$ – the income satisfaction (unobservable variable; only the level measured at an ordinal scale can be observed),
$y$ – the value of the relative income deprivation,
$s_k$ – $k$-th control variable, $k = 1, 2, \ldots, K$ ; e.g. such as gender, education level, age, marital status, place of residence,
$\alpha_0, \alpha_1, \gamma_1, \gamma_2, \ldots, \gamma_K$ – parameters.

We undertook to verify the hypothesis that the impact of relative deprivation on subjective assessment of income is the same in different groups defined by the above-mentioned features. For this purpose, models with different interactions between the explanatory variables were considered. For example, if $y$ is the value of the relative deprivation and $z$ refers to the dummy variable, such as gender, the expression $ay+bzy = y(a+bz)$ for $z = 0$ means an impact equal to $ay$ and for $z = 1$ the impact will be $y(a+b)$. The final model included those interactions of deprivation index with socio-demographic variables that were statistically significant.

## 5. Results and discussion

We estimated a number of models explaining the formation of income satisfaction. The selection of variables was influenced by the substantive and statistical considerations. To compare models with different set of explanatory variables we used Akaike and Bayesian information criteria.

In the first step ordered logit models were considered. After performing the total Brant test we found out that the parallel regression assumption should be rejected. The results of individual Brant test showed that the "responsibility" for the violation of this assumption bear some variables.

Finally, we obtained model, for which verification results are presented in table 3. As quantitative explanatory variables were included: deprivation index

(label: *depryw*), the number of people (label: *LOS*), the number of children, age of reference person, and some interaction of these characteristics. Qualitative variables (listed in the fourth column of the table) are binary variables receiving a value of 1 for the indicated variant and 0 otherwise. We considered all possible interactions of deprivation index with socio-demographic variables. In the model we included only those that are statistically significant at the 0.05 level.

**Table 3.** Results of the Brant test for ordered logit model.

| Variable | Value of the test statistic | p-value | Variable | Value of the test statistic | p-value |
|---|---|---|---|---|---|
| *depryw* | 6.21 | 0.102 | *higher education* | 5.04 | 0.169 |
| *depryw*LOS* | 1.25 | 0.742 | *secondary education* | 4.99 | 0.172 |
| *depryw*LOS*$^2$ | 1.55 | 0.671 | *vocational education* | 2.46 | 0.483 |
| *depryw*country side* | 2.01 | 0.571 | *countryside* | 3.33 | 0.343 |
| *number of children* | 4.83 | 0.183 | *workers position* | 5.44 | 0.142 |
| *age* | 0.12 | 0.990 | *women* | 5.81 | 0.121 |
| *age*$^2$ | 0.20 | 0.991 | *partnership* | 12.07 | 0.007 |

*Source: Own calculations made in the Stata v. 10.*

The results presented in Table 3 were obtained from data on households, which consist of a maximum of 7 persons, for whom the values of equivalent income and deprivation index values were from the interval $[Q_1\text{-}2*IQR; Q_3+2*IQR]$, where $Q_1$ and $Q_3$ are the first and third quartile, IQR - interquartile range. Other observations, representing approximately 4.5% of the sample, were considered outliers and were excluded from the analysis.

For the whole set of variables presented in Table 3, the value of the total Brant test statistic was 152.92, which indicates the rejection of the parallel regression assumption (the critical value, read from the tables for the chi-square distribution for 42 degrees of freedom and significance level 0.05 is equal to 58.12). Information presented in Table 3 show that only for the variable relating to the person staying in the relationship, the hypothesis that the parameters do not depend on the category was rejected. Therefore, the partially generalized ordered model was used. The estimation results of the models parameters whose values do

not depend on the category of ordinal variable, which refers to the subjective assessment of income, are presented in Table 4.

**Table 4**. The results of parameters estimation in the partially generalized ordered logit model.

| Variable | Coefficient | Standard error | Variable | Coefficient | Standard error |
|---|---|---|---|---|---|
| *depryw* | -0.0046 | 0.0002 | *higher education* | 0.7185 | 0.0695 |
| *depryw*LOS* | 0.0004 | 0.0001 | *secondary education* | 0.3931 | 0.0568 |
| *depryw*LOS*$^2$ | -0.00003 | 0.0000 | *vocational education* | 0.1955 | 0.0531 |
| *depryw*countryside* | 0.0007 | 0.0001 | *countryside* | -0.2031 | 0.0639 |
| *number of children* | -0.0937 | 0.0214 | *workers position* | -0.1833 | 0.0374 |
| *age* | -0.0563 | 0.0079 | *women* | -0.2832 | 0.0341 |
| *age*$^2$ | 0.0006 | 0.0001 | - | - | - |

*Source: Own calculations made in the Stata v. 10.*

Estimates of other parameters of the partially generalized ordered logit model, which differ in each category, are given in Table 5.

**Table 5.** The results of parameters estimation in the partially generalized ordered logit model, cont.

| Variable | For $u$>1 | For $u$>2 | For $u$>3 | For $u$>4 |
|---|---|---|---|---|
| *partnership* | 0.4339 (0.0774) | 0.3884 (0.0555) | 0.1959 (0.0510) | 0.3918 (0.0867) |

*Source: Own calculations made in the Stata v. 10, standard errors in the parentheses.*

Some important results can be derived under *ceteris paribus* assumption:

- the higher the education level of the reference person (head of household), the greater the likelihood that the disposable income of the household allows to make ends meet with ease or with great ease;
- the probability of higher levels of income satisfaction of household whose reference person is a blue-collar worker was lower than in the case of white-collar workers;
- the probability of higher levels of income satisfaction of household whose reference person is a women was lower than in the case of a man;

- the probability of higher levels of income satisfaction of household in the countryside was lower than in the case of household in a town;
- if the reference person remained in a partnership (formal or not), then the probability of good or very good self-assessment of the income situation was greater than that of a person not being in such a relationship;
- the likelihood of higher levels of income satisfaction initially decreased with the age of household head and increased with the age over 50.

The influence of relative deprivation on the income satisfaction depended on the place of residence and the number of persons living in the household. The results on this issue are presented in table 6.

**Table 6**. The calculation of parameters for the influence of relative deprivation on the income satisfaction.

| Place of residence | Number of persons living in the household | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| rural area | -0.0036 | -0.0032 | -0.0030 | -0.0028 | -0.0027 | -0.0026 | -0.0026 |
| town | -0.0042 | -0.0039 | -0.0036 | -0.0035 | -0.0033 | -0.0033 | -0.0033 |

*Source: Own calculations made in the Stata v. 10.*

For the age, education level, number of children *et cetera* assumed we have: $depryw*(-0.0046+0.0004*LOS-0.00003\ LOS^2+0.007*countryside)$.

## 6. Concluding remarks

This study improves the understanding of the mechanism underlying the expression of income satisfaction. The analysis allows us to conclude that household employees' perception of their own income situation in 2009 depended on many factors, in particular on their relative deprivation. Moreover, the following factors should be considered as determinants of subjective assessment of income: the place of residence, the number of children in the household as well as age, sex, education, type of employment and the fact of being in a partnership for the reference person (household head). Subjective economic assessment of being "very poor" was more frequent in households with female heads than in those with male ones. The income satisfaction was U-shaped with age. It was found that the impact of relative deprivation on the subjective assessment of income is different in households of different sizes and places of residence.

In the paper some problems of model specification were emphasized. The ordered response model makes the assumption that the explanatory variables of the model will have the same impact across each of the categories of the

dependent variable, which is known as the “parallel regression assumption”. This assumption was tested with a Brant test. It was found that the "ordinary" ordered logit model should not be used to analyze the situation in a considered sample. Therefore, using the method of partially generalized ordered logit models allows the dependence of structural parameters on the category of ordinal variable (which determines the degree of income satisfaction).

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