Living conditions of Czech farmers according to the EU statistics on income

Životní podmínky českých zemědělců dle příjmové statistiky EU

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Abstract: The article deals with the assessment of income situation of the Czech households with the head person working or self-employed in the farm sector. The actual analyses result from initial consideration of the rise and dynamics of income disparities in our country. The primary data source are obtained from the European Union survey project – Statistics on Income and Living Conditions (EU-SILC). Our reference period, in view of the data availability at the time of the article processing, is represented by the year 2007. The core studied variable is represented by the volume of the income calculated for each household. The information obtained by the study of this variable was complemented by other variables enabling the logical validity check and analysis of the socioeconomic environment of households under examination. The main findings and conclusions are derived from the analysis of the decile and quintile classification of the relevant equivalized income data. The prime goal of the study was to quantify the share of the Czech agriculture related households living in the monthly income lower than 60% of the nationwide median value of the income variable under consideration. The households identified with such income position are referred to as the "households-at-risk-of-income poverty". The results are calculated per 1 physical household member, which the authors found more illustrative and easy to understand. The household size equalization procedures according to the EU and the OECD methodology will follow. This will enable the international comparison of the achieved results.

Key words: EU-SILC, farm households, income per person, income disparities, income situation, income poverty

Abstrakt: Článek je věnován hodnocení příjmové situace domácností českých obyvatel působících, ať už jako zaměstnanci, či osoby samostatně výdělečně činné, v zemědělském sektoru. Vlastní analýzy jsou navázány na výchozí úvahy o vzniku a dynamice příjmových disparit u nás. Primárním datovým zdrojem jsou výsledky šetření European Union – Statistics on Income and Living Conditions (EU-SILC). Zvoleným obdobím, vzhledem k dostupnosti údajů v době zpracování článku, je rok 2007. Základní zvolenou proměnnou je výše příjmů konkrétních domácností, která je doplněna o další proměnné umožňující logickou kontrolu správnosti a analýzu daného sociálně-ekonomického prostředí zkoumaných jednotek. Závěry jsou vyslovovány na základě rozborů kvintilového členění respondetského souboru, průměrného měsíčního příjmu na jednoho člena domácnosti, analýz tzv. „příjmově ohrožených domácností", jejichž počet je dle metodiky Eurostatu vymezen dosažením, resp. nedosažením příjmů na úrovni 60 % důchodového mediánu a výpočtů hodnot hloubky chudoby, tedy příjmového deficitu ohrožených domácností.

Klíčová slova: EU-SILC, domácnosti zemědělců, příjem na osobu, příjmové nerovnosti, příjmová situace, příjmová chudoba

The phenomenon expected and also dreaded by the Czech population – a marked deepening of the income and property differentiation – appeared as the transition to the market economy started. The reason was that this process encompassed leaving of the mechanisms of control and avoidance of the

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formation of income disparities, whether by the private enterprise deregulation, the entry of foreign companies or legislative changes.

The criteria for definition and analysis of differences and inequalities can be of various demographic and sociological aspects, as presented, for instance, by Stávková et al (2008). In the article, the authors focus on the agricultural sector, accordingly they proceed from the society segmentation according to the primary source of household incomes.

While the post-communist EU countries, in comparison with the other EU member countries, show generally flatness of in their income distribution functions, their property differentiations (understood in the broad sense) grow over time and are more and more evident even without a deeper investigation. The interpretation of the past development and its impact is at the same time a very important and also politically sensitive matter.

Income and property inequality are admittedly, on one hand, natural characteristics of the healthy functioning society. However, if the degree of the inequality reaches a certain "extreme limit", it becomes an essential obstacle to the internal development and international competitiveness. The examples, according to Kohout (2005), could be found in African and Latin American countries, characterized by very high income disparities[1].

The gradual break-up of income leveling in our country impacts very intensely especially the households, the head members of which work, whether as employees or self-employed persons, in the agricultural sector. For instance, the report of the Agricultural Association of the Czech Republic (Zemědělský svaz České republiky) states that "in connection with the climatic changes and the extreme price fluctuations, the incomes of farmers are deep below other sectors[2]". In connection with the wording and the proposed changes in first two pillars of the EU Common Agricultural Policy for the year 2013, the Czech agriculture is directly defined as "the sector at risk of income poverty".

The connection of the analysis of income disparities with the segmentation according to the sector classification, in which the incomes are generated, and with focus on the agrarian sector is the main research topic of this publication. In addition to the evaluation of the aforesaid claims, it will be used primarily as a way-out of other research works, which perhaps will contribute to the improvement of the existing situation in future.

MATERIAL AND METHODS

The Czech Statistical Office (Český statistický úřad) is entrusted by law to monitor the income indicators. For these purposes, theHousehold Accounts Statistics carrying the information on living standards of households according to the the particular population groups are processed. This enquiry is an extremely valuable source of information but presently it is not sufficient. The reason is the higher requirements of the European Statistical System for the data quality (especially with respect to timeliness, accuracy and availability).

The actual tool, implementing a new methodology of the reference data acquisition for income analysis at the EU level, is the project initiated by the Directive of the European Parliament and Council (EC) No. 1177/2003 of 16 June 2003 on statistics of the European Community in area of incomes and living conditions (European Union – Statistics on Income and Living Conditions, abbreviated EU-SILC). In 2003–2005, the EU-SILC was gradually initiated in all the EU member countries and became the data source for the analysis of income distribution and social integration at the EU level.

The project is based on the Regulation of the European Parliament and Council No. 50/2002/EC implementing the action program of the Association for the support of cooperation of member countries in their fight against the social exclusion. Concretely, in the action 1.2 area 1, concerning "the analysis of social exclusion", according to which the conditions for financing of measures related to the collection and publication of comparable statistics and especially improvement in the quality of survey and analysis of poverty and social exclusion are necessary[3].

Primary source of data on income distribution in our country will be the data from the national module

[1]Income inequality expressed by a standard difference of income quantiles amounts in most of these countries to more than 25 percent, whereas **the average values, typical of the developed European countries, Japan or USA, range about** 15 percent.

[2]Published on 25 March 2010, available at http://www.zscr.cz/aktuality|1/vystoupeni-predsedy-zs-cr-miroslava-jirovskeho-na-a1517101/? discussion_add_new_post=1; cited 11th April 2010.

[3]Note. The initial standard that defines **the basic concepts and with which the elaboration of all particular statistics of** the Community complies, is the Council Regulation (EC) No. 322/97 on statistics of the Community.

of the EU-SILC project for the last available period, which presently means the year 2007[4].

The statistical survey EU-SILC was carried out in all Czech regions. The surveyed unit was a household and consequently all persons living at the time of survey under the same household structure. The sampling plan was based on the two-stage random selection independently for each region, so that the total number of the selected households would be proportional to the size of the particular regions. At the first level, the so-called survey districts were selected randomly, from which ten households were subsequently selected. Thhe total number of households selected for the survey included almost ten thousand units[5].

The core studied variable is the volume of the average income per person. The further variables enabling the logical validation and analysis of the given socio-economic environment of units under examination were subsequently added.

The key studied characteristics and their symbols are the following:

A Household identification
A1 Household type
A2 Data on members
A3 Social characteristics
B Disposable income
C Number of physical members
D Recounted number of members
E Average income per one member

The A identification represents the number, through which the simple arrangement and check of the primary data from different user positions can be performed. The A1, A2 and A3 indicators enable a deeper and more detailed analysis of the collected data set. Data concerning the disposable income of households are reported under the EU-SILC project for the entire previous year, which is represented by the B indicator. For the purposes of further analysis, the disposable income per one month was recalculated too. The C indicator expresses the count of all members of the household. The D recounted the number of household members as acquired by the EU and the OECD methodology.

The average monthly income per one household member is subsequently acquired according to the formula E = B/C/12. The value of the variable of the average monthly income is used to determine the number of the so-called "households-at-risk-of-income-poverty" – in accordance with the Eurostat methodology, the threshold of income at risk or poverty risk is the 60% of the income median.

Last but not least, the so-called poverty depth, accordingly the income deficit of the at-risk-of-poverty for individual households, was calculated. The structure diagram is presented in the Figure 1, the poverty depth indicator is the (A–a) value. The value represents the theoretical amount of the additional income needed to get the household above the poverty line.

The quintile classification of the set of respondents was used to specify the income differentiation. For this purpose, we used the ratio of the disposable income of the top 20% of households against the income value calculated for the bottom 20% of

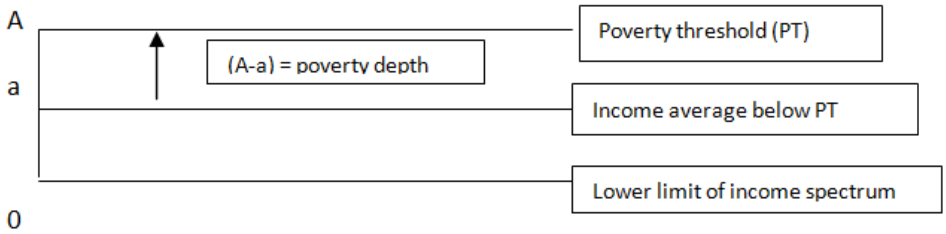

Figure 1. Structure diagram of the poverty depth indicator

Source: Kabát (2007)

[4]Next to the EU-SILC, three other data sources are used **for statistics on Agricultural Household Incomes in** the **EU Countries: Farm Accounts Surveys** that in some countries collect the data on household income, which is in addition to the requirements of the FADN/RICA system that is only concerned with the agricultural holdings. The **Household Budget Surveys,** though again the numbers of agricultural cases where farming is the main source of income are too small in these general surveys, the quality of the data on self-employment may not be high, and the data relate to the household unit (which is the dwelling rather than the single budget unit) and generally not to the individuals within it. **Taxation records and income statistics registers based on them.** Though potentially covering all households, or samples of them, these are only developed as a data source for income studies (as opposed to the taxation issues) in a few Member States. In others, there may be legal barriers to their use as a basis for statistics.

[5]The methodology of the data collection is described in details by Kabát (2007).

households. The general overview of the income situation within the entire set of studied households and its inequality parameter is calculated by the Gini coefficient, which is the numerical characteristics of the income diversification, used frequently for these studies. The Gini coefficient is calculated according to the following formula:

$$G = \left| 1 - \sum_{k=0}^{k=n-1} (X_{k+1} - X_k)(Y_{k+1} + Y_k) \right|$$

where X_k and Y_k represent the accumulated quantities for the population and the income variable**.** The Gini values can lie in the interval from 0 to 1, where the 0 value represents the ideal, uniform distribution of incomes. On the contrary, the 1 value is an extreme example of the zero diversification, accordingly of the acquisition of all incomes by only one subject.

RESULTS AND DISCUSSION

The Czech national module of the EU-SILC of the 2007 year contains 9 675 surveyed households. The geographical structure of the set of respondents results from the stratification methodology of collecting and processing the EU SILC data. The regional allocation of the surveyed households is presented in Table 1.

Table 1. Regional structure of respondents of EU-SILC 2007

Region	Absolute rate	Relative rate (%)
South Bohemian Region (Jihočeský kraj)	612	6.3
South Moravian Region (Jihomoravský kraj)	948	9.8
Carlsbad Region (Karlovarský kraj)	328	3.4
Hradec Králové Region (Královéhradecký kraj)	513	5.3
Liberec Region (Liberecký kraj)	391	4.0
Moravian-Silesian Region (Moravskoslezský kraj)	1 399	14.5
Olomouc Region (Olomoucký kraj)	666	6.9
Pardubice Region (Pardubický kraj)	513	5.3
Pilsner Region (Plzeňský kraj)	562	5.8
Prague (Praha)	864	8.9
Central Bohemian Region (Středočeský kraj)	1 006	10.4
Ústí Region (Ústecký kraj)	787	8.1
Vysočina Region (Vysočina)	510	5.3
Zlín Region (Zlínský kraj)	576	6.0
Total	9 675	100.0

Source: EU-SILC, modified

Table 2. Distribution of social groups in EU-SILC 2007

Social group of the leading personality of the household	Absolute rate	Relative rate (%)
1 – lower employee	2 385	24.7
2 – self-employed	802	8.3
3 – higher employee	2 279	23.6
6 – pensioner in household with EA* members	418	4.3
7 – pensioner in household without EA members	3 423	35.4
8 – unemployed	258	2.7
9 – others	110	1.1
Total	9 675	100.0

*economically active
Source: EU-SILC, modified

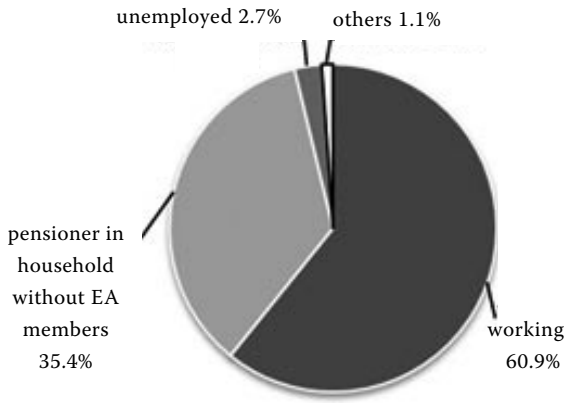

Figure 2. Distribution of social groups with the aggregation of economically active households

Source: EU-SILC, own calculation

Each head person of the household was assigned to one of the nine social groups. The social structure of the set is recorded in Table 2.

The group of pensioner households without economically active members is the most numerous. The data segmentation according to the criterion of economic activity or inactivity of the head member results in reduction of the number of social groups by joining the groups 1 – lower employee, 2 – self-employed person, 3 – higher employee and 4 – pensioner in the household with economically active members. This aggregated group is titled by the authors as "working". The modified share of social groups is then shown in Figure 2.

The group of the surveyed units marked as "working" is numerically the highest – it makes up 60.9% of the total number of the surveyed households. Given that the paper deals further with the income situation of households, it is interesting to mention that the disposable income of this aggregated group represents only 56.1% of the total disposable incomes found in the survey. This is an argument supporting our hypothesis on the significance of social transfers and income redistribution in society[6].

Farmers households

The main focus of the research was concentrated on the analysis of disposable income and living conditions of the households of Czech farmers. From the aforesaid summary data, 289 surveyed households were classified as farm households, because their head person was employed or carried business in the agrarian sector. The particular values of variables monitoring these characteristics in the EU-SILC are:

variable ZAM_P (employment of a head person of the household) with the possible alternative values of the answer:

– Skilled workers in agriculture, forestry, fishery and game management
– Workers acquiring their livelihood in agriculture and fishery (self-suppliers)
– Unskilled workers in agriculture, forestry, fishery and in related fields

variable ODV_P (branch of activity of a head person) with the only possible value:

– Agriculture, hunting and related activities
– Share of farm households in the total number amounted to 2.99%, which corresponds generally to the data of the Czech Statistical Office (Český statistický úřad) on the share of labour force in agriculture in the total number of active labour force[7].

The average value of income of the "farm" household in 2007, recounted per one physical member, amounted to CZK 9 740 per month. The average value for the entire surveyed population reached CZK 10 184 per month. This indicates that the average per person income of the Czech farm households is lower by 4.37% than the average monthly income in the Czech society.

As a measure to estimate the share and number of economically threatened households in the society, we have applied, in accordance with the OECD and the Eurostat metdodology, the median value of the relevant income variable. The median of disposable income, calculated per one physical member of the household, is equal to CZK 8 967 per month. The median value of the income of farm households is CZK 9 013 per month. In this regard, the situation is then balanced (respectively, the income median is 0.51% above the value for the entire set of respondents).

Our analysis of the median values is applied to identify the proportion of the at-risk-at-poverty households associated with the disposable income under the 60% of this median value.

[6]For instance, in 2007 the total so-called tax quota, i.e. the proportion of **the total tax yield and customs revenue to GDP,** amounted to 36.3% in our country. See **the report of the Ministry of Finance of the Czech Republic, published on 26** July 2007, available at http://www.sfinance.cz/zpravy/ finance/121559-cr-v-danovem-srovnani-s-okolnimi-zememi/; cited 18th April 2010.

[7]See **the Farm Structure Survey 2007 results, available at http://www.czso.cz/csu/2008edicniplan.nsf/engpubl/ 2126-**08-2007; cited 15th April 2010

In the survey, 829 of all households were identified, the incomes of which per one physical member did not reach the threshold value. There were 35 farm households, which represents 8.6% of the at-risk-of-income poverty living under the poverty line.

As for the farm households, every eighth of them (12.1%) has been jeopardized by the income poverty.

From the partial viewpoint, this finding would confirm the initial thesis, originally expressed by representatives of the Agricultural Association of the Czech Republic (Zemědělský svaz ČR), on the classification the Czech agriculture as "the sector at-risk-of-income poverty".

Nonetheless, the value of the poverty intensity indicator is not as high at farm households as in the summary set of all households – the monthly additional income of CZK 780 per one member would be sufficient for farm households in average to get all of them above the income poverty threshold. However, to achieve a general elimination of income poverty of the respondents of the survey, each member of the risk-at-poverty households would have to receive in average additional CZK 960 per month. The authors are inclined to explain this by fact that although agriculture is an economically weak sector, it provides anyway a possibility of financial security significantly above the frame of the social system of the government.

Income diversification

The analysis of the income quintiles resulted in the following findings:

The set of the surveyed households was structured according to their disposable incomes, recounted per one physical member and consequently it was split into quintiles. The particular measures of income inequality were subsequently expressed by the means of the Gini coefficients.

Having in mind the above data, we see that 68 of the total number of 289 farm households were included in the first, the lowest income quintile, and 51 in the fifth quintile, the highest one. Although it may be pointed out that the lowest income group contained more farmer households by 33.3% than the highest one, this statement cannot be regarded as statistically valid due to the low number of subjects. The verification of this statement would require a further research.

The mean value of the disposable income of all households in the first quintile reached CZK 5 604 and CZK 15 547 per month in the fifth quintile. Disposable incomes of the lowest group amounted then to 29.7% of the incomes of the highest group. By selecting only farm households in both boundary quintiles, the value of proportion 39.4% was acquired, the boundary incomes were then much "closer" – the limits of the income differentiation were narrower than for the entire set (however, when expressing conclusions, it is necessary to take into account a relatively low number of subjects in the analyzed sample again).

The Gini coefficient, calculated on the base of the obtained data, reached the values 0.25 for both datasets. It means that the income distribution among farm households had the same uniformity as the set of all households. The Gini coefficient of the surveyed segment showed a relatively even diversification of incomes among all quintiles, which indicates a higher stability in the long-term horizon. However, only one of indicators was regarded and the authors are aware that such conclusion cannot be expressed without taking into account more facts and relevant data.

CONCLUSION

The authors do not offer any exactly defined hypotheses or conclusions on the income situation of farm households. The presented outcomes should be understood as an input for subsequent research. The purpose of this paper is to measure the basic parameters of the living conditions of Czech farm households as well as to show the available methodological tools linked to the EU-SILC project.

Procedures used in further work will include, among others, the international comparisons of the same income variables and their parameters. For this purpose, indicators are constructed via the equivalized size of households[8] according to the OECD and Eurostat methodology.

Furthermore, the quintiles and deciles income analyses are worked out and other standpoints of the main data set structure and calculations of indicators of income inequality measure for further segments are used.

[8]Values are based on the so-called equivalized disposable income, defined as the total disposable income of the household divided by its equivalent size. The equivalent size is determined on the basis of the modified OECD scale (giving the weight 1.0 to the first adult, 0.5 to other persons of the age 14 years or more, living in the household, and 0.3 to each child younger than 14 years).

Conclusions will be connected with the parallel research of consumption expenditures of households, the partial results of which were presented by Stávková et al. (2008). They will be subsequently used not only for other derived research[9] and discussions within the academic community, but also to support the decision-making of the political institutions and the social policy formation and guidance. Last but not least, also for objective presentations to the general public.

REFERENCES

Ciaian P., Qineti A, Sojkova Z., Kabat L., Hanova M. (2001): European integration: The case of agricultural farms in Slovak Republic. Ekonomický časopis, *49*: 330–357.

Kabát L. (2007): Príjmová situácia a životné podmienky obyvateľstva Slovenska podľa štatistiky SILC 2005 (Situation in income and living conditions of Slovak population according EU SILC 2005 Statistics). Slovenská štatistika a demográfia, *17*: 5–30.

Kohout P. (2005): Nerovnost jako přirozený stav [online]. Available at www.rozhlas.cz/_binary/00150681.doc (accessed 28 March 2010).

Nagyova L., Krocanova M., Madarova L. (2007): Harmonization of European and national labels. Rural Development, *3*: 246–253.

Stavkova J., Stejskal L., Toufarova Z. (2008): Factors influencing consumer behaviour. Agricultural Economics – Czech, *54*: 276–284.

Strukturální výsledky za zemědělství v roce 2007 (Farm Structure Survey Results in 2007) (2008) [online]. Available at http://www.czso.cz/csu/2008%20edicniplan.nsf/engpubl/2126-08-2007 (accesed 15th April 2010).

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[9]For instance the research of the influence of the dynamism of income differentiations on international marketing applications, as Nagyová at al. deal with them (2007), and the "consequences on financial situation and the production structure and other regional differences", as the Cianian et al. (2001) speak about them, are considered to be analyzed.