

# Income aspects of Czech farmers' living conditions

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**Abstract:** The paper analyses the income and living conditions of farm households in the Czech Republic. The period under review were the years of 2005–2010 since more recent data was not available when this paper was being prepared. The primary source of data is the results of the European Union Statistics on Income and Living Conditions (EU SILC) survey. The structure of farm households is established by the household type, education, and economic activity. Households have been assigned to particular groups based on the situation of the household leader. The primary indicator is the average disposable income per 1 equivalent member. Other indicators under review include poverty, poverty depth, and material deprivation. The national poverty line has been defined as 60% of the median average equivalent income. Another important aspect also includes the households' subjective views of the selected matters.

**Key words:** EU SILC, farm household income, material deprivation, poverty

The population's standard of living is often associated with the financial situation of people; however, it is also important to consider the cultural, social, and moral dimensions. Despite some inherent insufficiencies, the living standard is commonly measured by the means of GDP per capita. It is not difficult to find out how specific industries and sectors contribute to the GDP, yet it is rather hard to describe what the living conditions are of households living on income in the given industry or sector that is included in the GDP. Agriculture is no exception, having undergone significant changes in the Czech Republic over the past decades. The accession to the EU, on the one hand, has brought significantly more options to receive various subsidies; on the other hand, it has also resulted in the ever intensifying competition in the single market. These facts have undoubtedly influenced the lives of farm households. The main purpose of this article is to establish the living conditions under which Czech farm households have lived after the Czech Republic acceded to the EU. The EU population's satisfaction with life has been surveyed under the COBEREN international project.

The outcome was that over one half of the Czech population is happy with their life (regardless of their financial situation), with some 7% being unhappy with it. The rest of the Czech people expressed a neutral position (Turčínková and Stávková 2011). It is appropriate to point out that there has not been any survey of the living conditions of people who work in the agricultural sector. For this reason, this paper to some extent aims to assess the living standard of

farm households compared to the Czech households as a whole.

The primary factor determining one's standard of living is income; it also reflects the social and economic situation of the country as such. Therefore, many specialized analyses focus on this factor (Vavřejnová 2002).

Income is "*the maximum amount that a person can spend while still being as well off at the end of the week as he was at the beginning*" (Hicks in: Sefton and Weale 2006, p. 219). Sefton and Weale (2006) specify that the phrase "being as well off" is to be understood as the present discounted value of the current and future utility that remains unchanged during the interval under review.

A lack of income may lead to an undesirable social phenomenon – poverty. Townsend (in Lister 2004) explains poverty as the inability to integrate into the society. It must be emphasized that this inability is caused by the lack of funds. Broadshaw and Finch (2003) consider poverty to be a categorical need.

For a long time, researchers have attempted to put the concept of poverty into practice in the empirical research. The range of approaches included (Broadshaw and Finch 2003):

- measuring income and expenses and comparing them with the budget;
- measuring income and expenses and managing a relative lack of income in poverty;
- determining a relative lack of an item or activities that are inevitable;
- questioning people as to whether they perceive any poverty or disadvantage;
- combining it with the social exclusion concept.

The income level below which people are defined as poor is called the national poverty line. The definition is based on the income level people require to buy the life's basic necessities – food, clothing, housing – and to satisfy their most important socio-cultural needs. The official national poverty line is determined by a country's government (The World Bank Group 2004). Whelan et al. (2008, p. 310) add that *“the EU social policy perspective continues to define being at risk of poverty in purely relative terms as falling below a percentage of median income.”* As Chakravarty et al. (2008) assert, poverty is also a demonstration of insufficient welfare, with income being just one of many attributes that contribute to one's welfare.

Nolan and Whelan (2010) state that it is questionable to rely just on income when determining a status of poverty. Low income may be used to identify poverty, yet it does not reveal how it feels to be poor, how people became poor, and how they have dealt with poverty. It is a significant argument that a low income cannot identify people who are unable to participate in the social life due to the lack of income.

Whelan et al. (2008, p. 16) point out that *“poverty is more than just about money”*. As Chakravarty et al. (2008) put it, poverty is a sign of lacking comfort, with income being just one of many attributes on which welfare is based.

According to Townsend (in Forster et al. 2004), two separate surveys need to be conducted in order to define poverty. The first one should focus on the non-income indicators that are considered to be typical for poverty, and the second should establish the respondents' income. When speaking about the non-income indicators, the term deprivation component has been used (comprising several different items, the lack of which causes a person to be deprived or to suffer, such as an insufficient heating at home, etc.).

The subjective perception is very important. Some people do not perceive deprivation although they are deprived according to the measurement results. If a person begins to suffer materially, it is likely that this will further bring about a mental and social deprivation (Stávková et al. 2011).

Results of measuring the welfare perception indicate that the standard of living is not just a function

of income and consumption opportunities either (Kahneman and Krueger 2006). Subjective tools used to measure the quality of life usually focus on the opinions and life experience of people, which are then complemented with the social, economic, and health indicators (Costanza et al. 2007).

Caminada et al. (2010) state that the issue of poverty is serious even in highly developed social states. Although such countries spend a great portion of their state budget on social security, poverty is not eliminated. According to the international poverty analysis, approximately every tenth household in the OECD countries lives in poverty. Andreou and Pashardes (2009) claim that poverty exists in the EU member states not due to the lack of income and funds but rather due to the insufficiently effective policies focused on redistributing income from the wealthy to the poor.

Atkinson and Marlier (2010) emphasize that the EU member states have undertaken to prepare action plans to fight poverty and social exclusion. According to Hallerod and Larsson (2008), bringing people out of poverty is an important goal of the social policy as poverty is connected with numerous social issues. Atkinson (2002) points out that social issues need to be complementary to the economic ones and jointly aim at improving the economic performance effectiveness. Thus, the social and the economic policies cannot be viewed and implemented independently.

The main purpose of this paper is to assess the situation of farm households in the Czech society based on analysing their income situation and the related factors.

## METHODOLOGY

The primary source of data used was the EU SILC survey as it covered both the objective and subjective aspects of income, poverty, social exclusion, and other living conditions. The selected period for analysis includes the years of 2005–2010. In 2005, the survey was also commenced in the Czech Republic.

The basic survey unit is the household. Table 1 shows the total number of households and in that of farm households that participated in the EU SILC survey in the Czech Republic in each year.

Table 1. Household sample size during 2005–2010

| Absolute number of households | 2005  | 2006  | 2007  | 2008   | 2009  | 2010  |
|-------------------------------|-------|-------|-------|--------|-------|-------|
| Total number of households    | 4 351 | 7 483 | 9 675 | 11 294 | 9 911 | 9 098 |
| Number of farm households     | 134   | 219   | 285   | 259    | 277   | 235   |

Source: the authors' own calculation

The primary variable is the monthly disposable income per 1 equivalent household member. Every household member was assigned a certain factor. The household head was assigned the value of 1, children up to 13 years of age the value of 0.3, and the rest of the people living in the household the value of 0.5 (Atkinson et al. 2010). Aspects such as education, economic activity and the like were assessed based on the household head. According to the definition used by the Czech Statistical Office (2012), as the head of a complete family, there is always to be understood the husband or male partner, as the case may be; in the incomplete two-generation families it is the parent; in three-generation families it is a member of the middle generation, and in the multiple-generation households that are not viewed as families it is the person identified as the head of the income-generating household.

Gross monthly income is to be understood as an amount that is usually specified in the employment contract. However, this amount also includes the potential overtime work, the compensation for the paid vacation leave, the extra pay for night shifts or work on weekends or public holidays, the wage compensation during obstacles to work, or "emoluments". The term also includes the income from the seasonal, short-term and temporary or occasional jobs, such as the income of working pensioners, students, parents receiving a parental contribution, and that of the unemployed.

An employee is to be understood as a person with a paid job as an employee, working under an employment or a tenure contract or based on a short-term contract (contract for a job, contract for a work activity).

Income-threatened households are to be understood as those whose income is below the poverty line calculated, according to the Eurostat's definition, as 60% of the median average equivalent income.

The poverty threshold is based on the knowledge of the theoretical distribution of the income variable, specifically the log-normal distribution, which allows us to estimate the proportion of low-income vulnerable population as a median value of 0.6. In general, the share of income vulnerable households (PPOD) might be expressed as:

$$PPOD = \int_0^{0,6Med} \frac{1}{\sigma\sqrt{2\pi}} \exp\left\{-\frac{(\ln x - \mu)^2}{2\sigma^2}\right\} 2x dx$$

where the essential indicator used to determine income inequality of the monitored file is the Gini coefficient. Mathematically for the expression of its value, there is used the relationship where  $x_i$  is the

cumulative value of the population variable and  $d_i$  is the income variable:

$$Gini = 0.5 - \int_0^1 F(x, d) dx$$

The poverty risk index has also been used, which is calculated as a ratio of the percentage of poor households in a certain group to the percentage share of the given group in the population (Sirovatka et al. 2011).

In order to better assess poverty, we have used the poverty depth factor, which Proctor and Dalaker define as the ratio of the household's average income to the poverty line (in Turčinková and Stávková 2011). This calculation requires that we know the poverty line (A) and the average income of households living under the poverty line (a). The poverty depth factor, which is in the relative terms known as the Sen poverty index, can be calculated using the following formula:

$$\text{Sen index} = \frac{A - a}{A}$$

The more the value approaches 1, the more severe the poverty is (Kabát 2007).

Material deprivation is measured using nine items:

- ability to cope with an unexpected expense,
- ability to afford one week of vacation outside one's home once a year,
- ability to duly and timely settle debts,
- ability to afford eating meat regularly every other day,
- ability to heat the home as needed,
- ownership of a washing machine,
- ownership of a colour tv set,
- ownership of a telephone,
- ownership of a car.

A household is considered materially deprived if it lacks at least three of the nine items listed above (Fusco et al. 2010). According to the Eurostat's methodology, a case when a household lacks 4 and more items is classified as a serious material deprivation.

In terms of subjective indicators, households have been questioned about the degree to which they are able to satisfy their needs from the income generated, whether they bear any financial burdens and how well they manage to repay them, and to what degree the costs of living represent a burden for the household.

This paper uses comparative approaches of the descriptive statistics. The paper also applies the regression analysis to determine the dependency between the poverty rate (dependent variable) and the education level (independent variable). Education is expressed in percentage. The lowest education level has the value of 20%, while each subsequent level has by 20% higher value, i.e. the tertiary education

Table 2. Economic activity of household heads

| Household heads' social group | Relative share in farm households (%) |        | Relative share in households overall (%) |        |
|-------------------------------|---------------------------------------|--------|--|--------|
|                               | 2005                                  | 2010   | 2005                                     | 2010   |
| Employed                      | 83.57                                 | 73.19  | 49.37                                    | 47.59  |
| Self-employed                 | 12.69                                 | 26.81  | 9.05                                     | 9.36   |
| Pensioner with EA members     | 0.00                                  | 0.00   | 4.09                                     | 4.32   |
| Pensioner w/o EA members      | 0.00                                  | 0.00   | 32.75                                    | 34.97  |
| Unemployed                    | 2.99                                  | 0.00   | 3.01                                     | 2.53   |
| Other                         | 0.75                                  | 0.00   | 1.79                                     | 1.22   |
| Total                         | 100.00                                | 100.00 | 100.00                                   | 100.00 |

Source: the authors' own calculations

– Master and Doctoral degrees – has the value of 100%. The *F*-test at the significance level of  $\alpha = 0.05$  has been used to determine the regression function type suitability.

## RESULTS AND DISCUSSION

The share of agriculture in the Gross Domestic Product of the Czech Republic has been declining every year. Nevertheless, although the share has declined steadily since 2000, it still shows higher values than in other developed countries in Europe (Seifertová 2006). Before we look closer at the living conditions of farm households in the Czech Republic, we need to briefly mention their share in the population. The number of these households gradually declined from 3.08% in 2005 to 2.58% in 2010.

As to the type of households, the most frequent type of farm households includes adult couples younger than 65 years, but also their number dropped by 7.1% to 18.3% compared to 2005.

During the period under review, people working in agriculture steadily showed the lower secondary education. In 2005, this accounted for 59% and in 2010 for 51% of farm households. The share of university

educated continued to grow from 7% to 13% between 2005 and 2010. When looking at the economic activity of the household head, which is shown in Table 2 in more detail, we can conclude that employees still account for the greatest number of people working in agriculture, though their share declines. Following the accession to the European Union, the share of people employed in the Czech agricultural sector has steadily decreased, and the same applies to the contribution of agriculture to the national economy. The Ministry of Agriculture (2012) stated that in 2005 agriculture accounted for 2.25% of GDP, while in 2009 this percentage was at 1.76% of GDP.

On the other hand, the share of self-employed people showed a growing trend as their number more than doubled. It is interesting to note that households in general show a stable share of economically active pensioners, which fluctuated around 4%. However, no such households appeared in the sector of agriculture throughout the period under review.

It is noteworthy to look at the figures concerning unemployment in agriculture. The year 2005 can be considered as an exception in the period under review, when there were nearly 3% unemployed in agriculture. In the subsequent years, there were no households with this social status. Compared to the households in general, it is evident that there are mostly employees and the self-employed who work in agriculture, while pensioners play a significant role in the households total.

One of the factors crucial for the living standard is the housing costs. These include rent, utilities (electricity, gas, central heating, hot water, water supply and sewage), fuel and other services related to housing and the common house maintenance. The Figure 1 compares the costs of housing in farm households and in the households in general. In all the years under review, farm households showed lower housing costs than the households total.

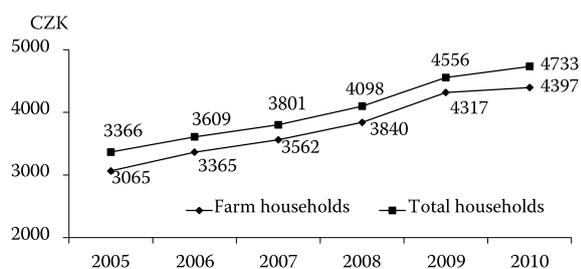


Figure 1. Households' annual costs of housing in CZK

Source: the authors' own calculations

Table 3. Gini coefficient

|                  | 2005   | 2006   | 2007   | 2008   | 2009   | 2010   | 2011   |
|------------------|--------|--------|--------|--------|--------|--------|--------|
| Gini coefficient | 0.2456 | 0.2397 | 0.2353 | 0.2396 | 0.2346 | 0.2351 | 0.2397 |

Source: the authors' own calculations

Income is a significant indicator that reveals the living standard of the population. Compared to 2005, the Czech population's average income grew by nearly 35% over the period under review. Farm households enjoyed an even faster growth as their income grew by nearly 40% and in 2010 it was 6% above the average equivalent income of the households in total. In terms of income, farmers enjoyed the best year in 2006, when their income was by 8.4% higher than the Czech average. Major changes occurred with the maximum monthly income levels of farm households in the period under review, the value of which dropped to CZK 47 190 in 2010 from CZK 75 115 in 2005. The development of the average equivalent monthly income and the monthly income extremes in the agricultural sector is shown in the Figure 2. The total households showed the maximum income of CZK 253 348 in 2005, while in 2010 it was CZK 264 721. It is particularly interesting to look at the minimum income values. While the overall households showed the minimum at CZK 750 in 2005, in the subsequent years the value was zero. During the period under review, farm households recorded much higher minimum income values.

The inequality of income in the Czech population, as measured by the Gini coefficient, is shown in the Table 3. It is evident that there is a little income inequality in the Czech Republic, with no significant changes recorded between the years 2005 and 2011. Between 2005 and 2010, the Gini coefficient slightly declined from 0.2456 to 0.2397.

Labour income accounted for 71.43% of the income of all Czech households in 2005, while in 2010 this percentage was at 69.4%. The farm households'

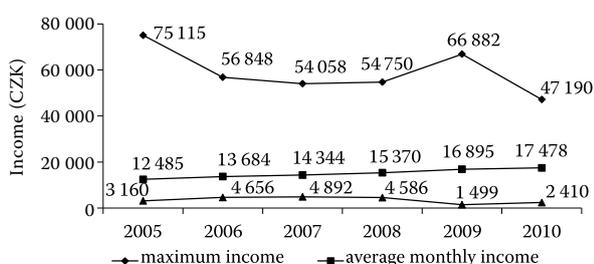


Figure 2. Average, maximum, and minimum equivalent monthly income values in farm households in 2005–2010

Source: the authors' own calculations

income structure is shown in the Table 4. Labour income proved to be a fairly stable income component throughout the entire period under review. In 2010 it accounted for 85%. Social transfers thus represent a smaller portion of the farm households' total income than in the case of the households in total (32.16%).

Living conditions depend on numerous factors influencing the particular households and their subjective view of their situation. Therefore, this means that living condition one family may view as excellent may be quite insufficient for a different family. For this reason, it is necessary to focus on the households' subjective opinions. Most farm households state that they get along with their income with a little difficulty or fairly easily. The group expressing this opinion increased from 53.73% in 2005 to 65.53 % in 2010. Figure 3 also shows that in 2010, one tenth of farm households had no problems getting along with their income, and nearly one quarter had major problems. When comparing them with the overall households, we can see that the farmers' situation is slightly better.

What could be the reasons behind their incapacity to cope with their income without problems? Most of these households do not even have any financial debt they have to repay regularly. Table 5 shows that in 2010, this was the case for 80% of them. In the years before, there were no significant fluctuations.

We can look for another reason in the costs of housing, which rose by 44% from 2005, reaching the average value of CZK 4397 in 2010. In 2010, 70% of farm households stated that the costs of housing pose a certain burden for them, 20% considered them a great burden, and one tenth did not view

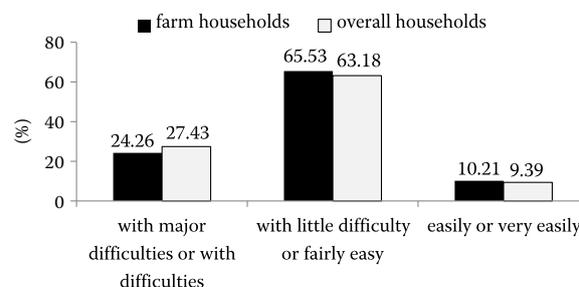


Figure 3. How households coped with their income in 2010

Source: the authors' own calculations

Table 4. Farm households' income structure

| Income components in CZK                                    | 2005       |                           | 2010        |                           |
|---|------------|---------------------------|-------------|---------------------------|
|   | sum        | share of gross income (%) | sum         | share of gross income (%) |
| Total yearly labour income (gross)                          | 40 258 923 | 83.18                     | 96 774 429  | 84.86                     |
| Total yearly social income                                  | 7 347 997  | 15.18                     | 14 142 996  | 12.40                     |
| – of which total pensions                                   | 4 754 970  | 64.71                     | 9 554 696   | 67.56                     |
| – of which old-age and widow/widower's pensions (transfers) | 3 533 846  | 48.09                     | 6 629 504   | 46.87                     |
| Other yearly monetary income (gross)                        | 791 698    | 1.64                      | 3 118 342   | 2.73                      |
| Yearly gross monetary income                                | 48 398 618 | 100.00                    | 114 035 767 | 100.00                    |

Source: the authors' own calculation

these costs as a burden at all. Again, there were no major changes in the period under review starting from 2005. Therefore, the costs of housing represent a cost item that is strongly related to the fact how the households assess their capability to cope with their income.

Households with insufficient funds may find themselves in a zone among the households facing an income threat. The upper limit of this zone for the Czech Republic gradually rose from 2005, reaching CZK 8661 in 2010. The number of farm households that can be considered as poor plummeted from 8.21% in 2005 to 1.83% in 2006. In the following years, it grew and reached 5.11% in 2010. The Czech Republic is a country with the lowest poverty level in the EU in the long run. Based on the Table 6, we can conclude that farmers are fairly well off; however, we must take the poverty risk index into consideration. This very indicator shows that farm households are not among the population groups that are too jeopardized.

We can find a cause of the income poverty in the level of the completed education. Figure 4 shows a plot of the regression analysis aimed at establishing a relation between education and the poverty level. We have established a strong negative dependency.

Table 5. Burden of regular debt repayments in 2005 and 2010

| Burden        | Relative share of households (%) |        |
|---------------|----------------------------------|--------|
|               | 2005                             | 2010   |
| Great         | 6.72                             | 3.83   |
| Somewhat      | 14.18                            | 12.77  |
| None          | 1.49                             | 2.98   |
| N/A (no debt) | 77.61                            | 80.43  |
| Total         | 100.00                           | 100.00 |

Source: the authors' own calculations

This means that the least jeopardized households are among those Czech households whose members have the highest education.

In order to better understand the various aspects of poverty, we need to look at the Sen poverty index in more detail. The values are shown in the Table 7. We can conclude that the poverty depth in farm households is modest although the factor value increased from 0.18 to 0.22 during the period under review, which is the same value as the overall households show. These faced a deeper poverty almost throughout the entire period under examination. The year of 2009 was an exception, with the farm households being a bit worse off than the overall households. It is also important to look closer at what the poverty depth actually means for the households in financial terms. In 2005, farm households needed just CZK 1107 to get above the poverty line, while in 2010 it was CZK 1894.

Living conditions are influenced not only by the income situation but also by the ownership of certain goods, which should form a common part of every household's equipment and render various processes in the household substantially easier or more pleasant. However, it is important to realize that some peo-

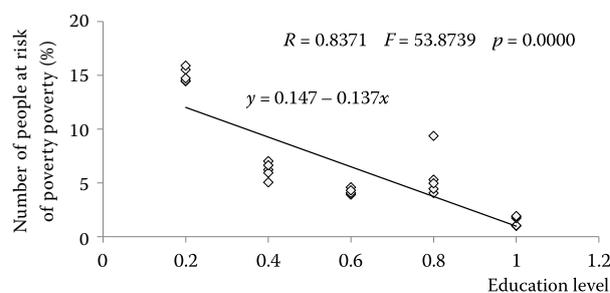


Figure 4. Regression analysis (education level vs. degree of poverty)

Source: the authors' own calculations

Table 6. Poverty indicators for the period 2005–2010

| Indicator   | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|------|------|------|------|------|------|
| Poverty line (CZK)                                    | 6300 | 6575 | 7089 | 7679 | 8314 | 8661 |
| Number of total households jeopardized by poverty (%) | 6.80 | 6.49 | 5.97 | 5.56 | 6.16 | 6.50 |
| Number of farm households jeopardized by poverty (%)  | 8.21 | 1.83 | 3.16 | 3.86 | 5.05 | 5.11 |
| Poverty risk index                                    | 2.67 | 0.63 | 1.07 | 1.68 | 1.81 | 1.98 |

Source: the authors' own calculations

ple explicitly do not wish to have specific goods for reasons other than because they cannot afford them. Material deprivation only reflects the households that cannot afford a particular product due to the lack of funds. It does not take the price level or the quality of the given goods into account. Approximately 16% of households in the Czech Republic are materially deprived. Farm households have a better position since only 10.21% of them could be regarded as materially deprived in 2010. Some 6.19% of all households and nearly 3% of farm households were affected by a serious material deprivation.

When comparing the number of poor and materially deprived households, we can discern a certain discrepancy. It means that not every poor household necessarily needs to be materially deprived and, at the same time, some households not classified as poor may lack certain goods and be thus considered as materially deprived. Thus, the greatest suffering affects those households whose income does not exceed the poverty line and that are materially deprived as well. Therefore, it is worthwhile looking more closely at the overlap of these two groups. In 2010, out of 24 farm households that were facing the Degree 3 or a higher deprivation, there was just one household that faced poverty at the same time. It is interesting that among seven households that were jeopardized with the Degree 4 or a higher level of material deprivation, there was no household that would struggle with too low an income.

## CONCLUSION

The authors of this paper consider it justified to look into the farm households' living conditions since

the agricultural sector is unique in many respects. The significance of this sector does not stem from its contribution to the national GDP but from the fact that its products are used to satisfy the basic existential needs of people. Agricultural production represents a key contribution to the living standard of the society. The nature of the products gives the agricultural sector a strategic importance. Presently, agricultural production no longer requires as much labour force as before, but a special qualification is needed all the more. The agricultural sector is an important stabilization factor in the country's economy; apart from producing foodstuffs, it also fulfils the landscaping, settlement, environmental, and non-food economic functions. Although the share of population actively working in agriculture is one of the indicators of the country's economic development, its role is irreplaceable. Therefore, the living conditions of people working in agriculture must be an area of interest so that the existence of this group is not jeopardized.

The survey results show that despite the declining number of farm households, the structure of people working in the sector has been developing positively in terms of their social structure (growing number of the self-employed in agriculture). One of the positive phenomena with farm households is the level of their disposable income, which significantly exceeded the level of the disposable income of the overall households in all the years under review. The average monthly income of farm households grew faster than that of Czech households in general, and the minimum income of farm households was always higher than the minimum income of households overall. Our analysis of housing costs showed that farm households are better off in this respect as well

Table 7. Poverty parameters in CZK

| Indicators | Average income of households under the poverty line ( <i>a</i> ) | Poverty line ( <i>A</i> ) | $A - a$ | Sen index $(A - a)/A$ |
|------------|--|---------------------------|---------|-----------------------|
| 2005       | 5193   | 6300                      | 1107    | 0.18                  |
| 2010       | 6767   | 8661                      | 1894    | 0.22                  |

Source: the authors' own calculations

since their costs of housing are lower than those of the households in general. The higher disposable income of farm households combined with their lower costs of housing shows that their living conditions should be viewed as better than those of the households overall. Further, it is significant that the number of farm households in agriculture jeopardized by poverty is also lower than that of the households in general. We can very positively assess the results of the regression analysis of the dependency between the highest education level achieved and the number of households jeopardized by poverty. The labour income of farm households forms a stable component of their total income, with social transfers being lower than those of the households overall. In their subjective view, farm households perceive their living standard more positively than other households, which is to some extent influenced by their way of life and the values and preferences they have.

From the results presented, we can make a clear conclusion that the living standard of Czech farm households is higher than that of Czech households in total and that it is also perceived as such by the farm households themselves.

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Received: 3<sup>rd</sup> December 2012

Accepted: 15<sup>th</sup> March 2013

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