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INFLUENCE OF EDUCATION ON LIVING CONDITIONS OF HOUSEHOLDS

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Abstract

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The paper deals with the analysis of the effect of education on the income situation of households and inhabitants' living standards. The increasing number of inhabitants with higher levels of education provides conditions for the creation and development of the knowledge or information society. Knowledge society is a society where an individual is able to seek information in information sources, to process and use the found information creatively and to consider knowledge one of the essential factors of life quality. In this society, the significance of education increases and the utilization of scientific findings becomes the key source of the society's competitiveness. Its characteristic feature is the structure of GDP reflecting a growing proportion of knowledge assets in contrast to physical capital. Education and work of educated people are essential factors of economic development. It is desirable that the society has an implemented system of valuation for educated people by means of financial rewards. This paper aims to provide information about the income situation of households in dependence on particular levels of education: the primary education, two types of secondary education and tertiary education.
The source for the analysis of the effect of the achieved level of education on the income situation of households is the results of the survey conducted by EU-SILC (European Union Statistics on Income and Living Conditions) in 2005–2009. The level of education of a household was determined based on the level of education of the household member with the highest income – the head of household. The analysis focused on the number of households in the Czech Republic (CR) with the specified achieved level of education and their income situation. The income situation is determined by middle values (mean and median), differentiation and development between 2005 and 2009, which was the period of economic development but also an economic crisis. Further, attention is devoted to households at risk of poverty, the depth of poverty, income disparities among groups based on the achieved level of education and the proportion of social transfers within the total incomes of each household group in dependence on the achieved level of education.

EU-SILC, income situation of households, level of education, knowledge society

The paper deals with income disparities among households of the Czech Republic. The disparities do not concern material wealth only (incomes and expenses of households) but also immaterial wealth (education, health, etc.). Disparities in consumption are closely related to disparities in abilities, education and access to education. According to Mareš (1999), there is a large amount of discussions whether education can be considered a way to equality or not and whether education in its current form does not even deepen the social or income disparities. The relationship between education and the mentioned disparities have been primarily studied by Bernstein, Bowles and Gintis, Illich (Mareš, 1999).

The representatives of these three basic theories form a foundation for the solution of the education – individual's benefit – society's productivity relation. Education affects the position of an individual in the society, determines his or her position at

the labour market (and thus their incomes). The economy of labour market (Brožová, 2006) provides many arguments that an individual's revenues from education usually come in the form of higher incomes. Besides the mentioned private benefits, we can prove that an individual's education plays an important role in the productivity of the entire society. Education has a positive impact on public health, the environment, the decrease in crime rates, access to parenthood, participation in the public life, etc. Education is thus one of the factors reflected in the economic growth and the economy's competitiveness. The existing empirical studies have monitored the achieved level of education in relation to the level of the GDP.

The results of the SILC project survey conducted for a period of 2005–2009 showed that the data on the income situation of households are a more suitable expression of their living standards. The income situation of households and its differentiation is affected by many factors, such as a location of the household within a specific region, the number of household members, their affiliation to a social group, the education they have achieved. An exploration into the influence of the achieved level of education on the income situation of households is the subject of this paper.

METHODS

The source data for the paper were obtained by means of a selective survey of the EU-SILC (European Union Statistics on Income and Living Conditions). The data are representative and thanks to a unified methodology a comparison among EU member states is possible. The survey is obligatory for all EU member states and it was carried out in the Czech Republic for the first time in 2005. Primary information was obtained by interviewing selected dwellings annually for four years. The table below shows an overview of the number of households taking part in the survey.

The dataset provides complex information, especially about incomes of households, the composition and type of households, their economic activity, social situation and also the level of education achieved. The annual disposable income of households in compliance with the EU definition was used to calculate an income per a household member. However, for the purpose of the following international comparison and for the comparison of households with various structures and sizes, the main variable has been chosen to be the monthly disposable income per an equivalized household member. The conversion was conducted in compliance with the EU definition, in which the head of household has a coefficient of 1, children aged 0–13 are assigned with a coefficient of 0.3 and the other household members are assigned with a coefficient of 0.5 (Longford *et al.*, 2010). The head of household is the person with the highest income.

Another significant variable for this paper was the highest level of education achieved by the head of household. To establish the statistical characteristics of a sign, the absolute and relative numbers are used as well as the mean or the median. Moreover, the set of households was divided into income deciles and a more detailed analysis of the first and the last decile was carried out. The paper also analyses the level of education achieved in households whose income is threatened (households at risk of poverty). The EU-SILC has established the poverty threshold as 60% of the median disposable income. The analyses also measure the poverty depth, i.e. what amount of financial means the households lack to be able to climb over the poverty threshold.

For this calculation to be made, it is necessary to know the poverty threshold (A) but also the mean income of households at risk of poverty, which is labelled by "a". Based on relation (A-a) the indicator of poverty depth is obtained, i.e. the income deficit of households. Also a relative indicator can be used – the Sen index which is expressed as (A-a)/A. It ranges between 0 and 1: the values close to zero indicate moderate poverty, the values close to one indicate significant poverty (Kabát, 2007).

RESULTS

The level and the structure of the income situation of households are affected by a number of factors. For the purpose of studying and analysing the influence of the education factor, i.e. how the achieved level of education is reflected in the household's income, it is most suitable first to present the basic characteristics of the income situation of households in the CR as a whole (Tab. II).

The analysis of the set of the income situation of households in dependence on the achieved level of education provided us with results presented in Tab. III.

In 2005 most heads of households in the CR were persons who had learned a trade through an apprenticeship or with a lower secondary education without a leaving certificate. The equivalized mean income per a household member did not reach the mean income of the Czech Republic. The income of the households where the head of household had achieved secondary education with a leaving certificate or higher (tertiary) education was above average. The households where the head of household had achieved higher (tertiary) education

I: *Frequency of households for income survey*

Year	2005	2006	2007	2008	2009
Number of households	4 351	7 483	9 675	11 294	9 911

Source: EU-SILC

II: *The income situation of households in the Czech Republic*

Characteristic	2005	2006	2007	2008	2009
Disposable income per person (FYZ) SILC in CZK	9,152	9,455	10,184	10,901	11,879
Disposable income per person (EKV) SILC in CZK	12,232	12,629	13,620	14,627	15,872
Median in CZK	10,500	10,958	11,815	12,798	13,856
Poverty threshold in CZK	6,300	6,575	7,089	7,679	8,314
Number of households at risk of poverty (%)	6.80	6.49	5.97	5.56	6.16
Gini coefficient	0.26	0.24	0.24	0.23	0.23

Source: Authors' own calculations, based on EU-SILC data

III: *Characteristics of the income situation of households by level of education*

The level of education achieved by the head of household	2005			2009		
	Number of households (%)	Mean income per an equiv. member (CZK)	Mean income per a member (CZK)	Number of households (%)	Mean income per an equiv. member (CZK)	Mean income per a member (CZK)
Primary or no education	12.71	8,794	7,440	12.40	11,421	9,751
Learned a trade through apprenticeship, lower secondary education, without a leaving certificate	45.07	11,096	8,264	45.16	14,521	10,662
Full secondary, vocational or post-secondary education	30.06	13,070	9,778	30.27	16,834	12,609
Higher (tertiary) education	12.16	17,961	13,509	12.17	23,029	16,746
Czech Republic	100	12,232	9,152	100	15,872	11,879

Source: Authors' own calculations, based on EU-SILC data

were the least numerous in the Czech Republic (12.16%) – their mean income per a member was by 46.68% higher than the mean income in the CR.

This situation was similar in the other analysed year, i.e. 2009. The mean incomes of all education groups had risen by 28–31% since 2005. The incomes of the households where the head of household had achieved at least full secondary education were again above average. The incomes of households where the head of household had achieved higher education were 45.09% higher than mean incomes in the CR. The numbers of households within the individual education groups and their development cannot be evaluated as the proportion of the groups of households in dependence on the achieved level of education in the set is based on the methodology of the survey and the principles of quota selection. We can conclude that the mean incomes of households in dependence on the achieved level of education did not undergo any significant changes during the five years.

The analysis of the income situation of the education groups of households at risk of poverty is based on the fact that in 2005 the poverty threshold was 6,300 CZK per an equivalized household member, and in 2009 it was 8,314 CZK. Only the households with income below this line were chosen out of the set of households in the CR in 2005 and 2009. The percentage of these households

IV: *Percentage of households at risk of poverty in dependence on their classification into education groups*

The level of education achieved by the head of household	Number of households at risk of poverty	
	2005 (%)	2009 (%)
Primary or no education	13.74	14.72
Learned a trade through apprenticeship, lower secondary education, without a leaving certificate	7.34	5.94
Full secondary, vocational or post-secondary education	5.14	4.60
Higher (tertiary) education	1.70	2.16
Czech Republic	6.8	6.16

Source: Authors' own calculations, based on EU-SILC data

in dependence on the achieved level of education is presented in Tab. IV.

The amount of households at risk of poverty in the Czech Republic reached 6.8% in 2005 and 6.16% in 2009. The analysis of the development over the five years shows that the most threatened group and the problem of the entire society was people with primary education or no education at all. The number of these households grew (1% increase during the five years), which proves that this group of households has become a problem the society does not deal with. This group has probably lost motivation and does not have a capacity to solve the income situation problem individually.

The households where the head of household had learned a trade through apprenticeship or had achieved lower secondary education as well as the households where the head of household had achieved full secondary or vocational education were two categories of households by education where the number of households at risk of poverty dropped during the five years. These are people with motivation who make the effort. An individual is able to solve the income situation problem although the success may not appear always and immediately. The same reasons, i.e. the ability of an individual, can be behind the appearing problems in the income situation of households where the head of household has achieved higher education. The question is whether the rising percentage of households in this group at risk of poverty is a coincidence or whether it is related to the quality of tertiary education. Tab. V below shows results of a detailed analysis of the set of households at risk of poverty.

The presented characteristics of the numbers of households at risk of poverty in education categories confirm the results of Tab. III. The information about the mean income per a member of household is worth more attention. The mean income of a member of a household at risk of poverty was 4,999 CZK in the CR in 2005. It is interesting that the two categories of households with the highest achieved level of education did not reach this mean value. In contrast, the households in the two categories with the lowest level of education reached

V: *Characteristics of the group of households at risk of poverty in dependence on education groups*

The level of education achieved by the head of household	2005			2009		
	Number of households (%)	Mean income (CZK)	Median income (CZK)	Number of household (%)	Mean income (CZK)	Median income (CZK)
Primary or no education	25.68	5,103	5,459	29.62	6,872	7,205
Learned a trade through apprenticeship, lower secondary education, without a leaving certificate	48.65	5,001	5,341	43.54	6,674	7,216
Full secondary, vocational or post-secondary education	22.64	4,943	5,439	22.59	6,691	7,359
Higher (tertiary) education	3.04	4,520	4,528	4.25	6,161	6,427
Czech Republic	100	4,999	5,354	100	6,715	7,209

Source: Authors' own calculations, based on EU-SILC data

VI: *Decile distribution*

Decile	2005			2009		
	Range of values	Cumulative amount of income (%)	Mean income (CZK)	Range of values	Cumulative amount of income (%)	Mean income (CZK)
10	750–6,846	4	5,507	0–9,169	5	7,498
20	6,851–7,968	11	7,430	9,173–10,499	11	9,847
30	7,968–8,846	18	8,397	10,500–11,682	18	11,104
40	8,850–9,644	25	9,246	11,682–12,746	26	12,203
50	9,644–10,500	35	10,081	12,748–13,855	34	13,295
60	10,500–11,642	44	11,067	13,856–15,231	43	14,525
70	11,646–13,222	54	12,378	15,232–17,100	53	16,153
80	13,222–15,321	66	14,208	17,101–19,516	65	18,232
90	15,331–18,789	80	16,820	19,518–23,905	78	21,406
100	18,861–253,348	100	27,149	23,909–329,283	100	34,438

Source: Authors' own calculations, based on EU-SILC data

a higher income than the mean of households at risk of poverty. This issue would have to be studied in more detail to reach some conclusions. We can hypothesize that the reason might be the time for which the households are at trouble, the adjustment of claims for social benefits, the willingness to ask for various social benefits, etc. This finding also documents the fact that it is more troublesome to ensure an income for a household with a higher level of education.

The income situation of Czech households is expressed in more detail by the decile distribution of the household sample and the following analysis of the two extreme deciles.

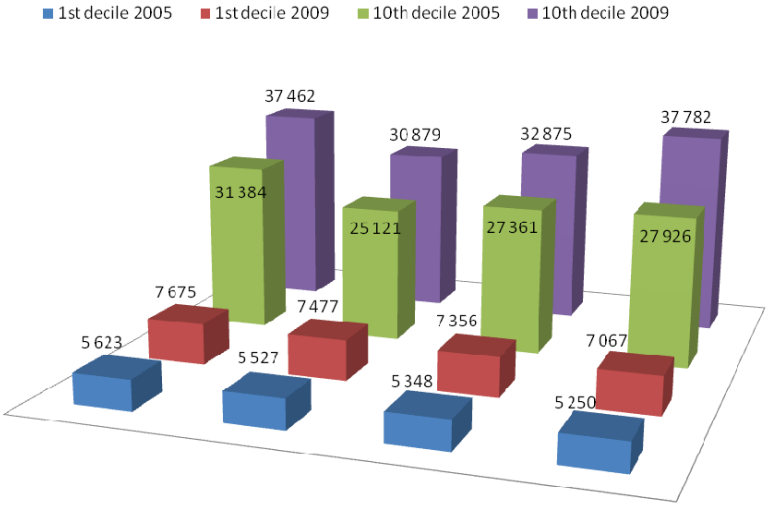
The centre of attention regarding education focuses on the extreme deciles. The percentage of households by education categories in 2005 and 2009 and their mean income per a household member are presented in Tab. VII.

The households classified into the 1st decile based on the achieved income are divided into categories in dependence on the level of education. In 2005 nearly 27% of households were those whose head had achieved primary or no education, 49% of households were those whose head had learned

VII: *Characteristics of the 1st and the 10th decile (authors' own calculations, SILC)*

The level of education achieved by the head of household	1st decile				10th decile			
	Number of households (%)		Mean income (CZK)		Number of households (%)		Mean income (CZK)	
	2005	2009	2005	2009	2005	2009	2005	2009
Primary or no education	26.90	31.48	5,623	7,675	1.61	1.31	31,384	37,462
Learned a trade through apprenticeship, lower secondary education, without a leaving certificate	49.43	43.79	5,527	7,477	22.07	21.19	25,121	30,879
Full secondary, vocational or post-secondary education	20.46	20.69	5,348	7,356	34.48	38.04	27,361	32,875
Higher (tertiary) education	3.22	4.04	5,250	7,067	41.84	39.46	27,926	37,782

Source: Authors' own calculations, based on EU-SILC data



	Primary or no education	Learned a trade through apprenticeship, lower secondary education, without a leaving certificate	Full secondary, vocational or post-secondary education	Higher (tertiary) education
1st decile 2005	5 623	5 527	5 348	5 250
1st decile 2009	7 675	7 477	7 356	7 067
10th decile 2005	31 384	25 121	27 361	27 926
10th decile 2009	37 462	30 879	32 875	37 782

1: *Mean income (in CZK) in the 1st decile and 10th decile*
Source: Elaborated by authors, based on EU-SILC data

a trade and 20% of households were those whose head had secondary education with a leaving certificate or post-secondary vocational education. Only 3% of households from the lowest income decile were those whose head had achieved higher education.

By 2009 the number of the households whose head had learned a trade or had lower secondary education had declined in the first decile. On the other hand, the number of households whose head had achieved primary or no education had grown. The mean incomes per an equivalized member of household were relatively even in both monitored years: in 2005 they fluctuated around 5,500 CZK and in 2009 they were higher with a higher variability, 7,000–7,500 CZK. We want to point out that the lowest mean incomes in the 1st decile were obtained by the households where the head had achieved tertiary education. This situation is similar to the one of households at risk of poverty.

The mean incomes of households in the 1st decile represent a fifth of the mean incomes of households in the 10th decile. Tab. VII presents the education structure of households in the last (10th) decile. The last income decile in 2005 ranged from 18,889 CZK to 253,348 CZK of the disposable monthly income per an equivalized person and in 2009 ranged from 23,922 CZK to 329,283 CZK. The households whose head had achieved higher education are of the largest proportion here. On the other hand, nearly two percent of households are those whose head is a person without education or with just primary education. In the 10th decile the mean incomes per a household member show higher differences among the individual education categories, both in 2005 and 2009. The highest absolute amount of achieved income is found in the two extreme education categories, i.e. the primary education category and the higher education category.

The dataset analysed for the income situation of households showed the number of households at risk of poverty. In a relative expression, there were 6.8% in 2005 and 6.16% of these in 2009. Taking into account the absolute number of households in the sample and the depth of poverty in 2005 and 2009, we can estimate the amount needed to overcome the threshold of the income poverty.

Within these households at risk of poverty 75% are made by two education categories: the primary education category and the lower secondary category.

The amount necessary to overcome the poverty threshold can be an alternative to the need of

VIII: *Depth of poverty*

year	a	A	A-a	Sen index (A-a)/A	Absolute number of households		The amount needed to overcome poverty (CZK)	
					in the selective sample	in the CR	in the selective sample	in the CR
2005	4,999	6,300	1,301	0.21	296	4,012,695	385,096	354,995,101
2009	6,715	8,314	1,599	0.19	611	4,116,363	976,989	405,455,169

Source: Authors' own calculations, based on EU-SILC data

IX: *The proportion of social transfers to the disposable income by education categories*

The level of education achieved by the head of household	2005			2009		
	The proportion of all social transfers to disposable income (%)	The share of retirement benefits to disposable income (%)	The share of social transfers excluding retirement benefits (%)	The proportion of all social transfers to disposable income (%)	The share of retirement benefits to disposable income (%)	The share of social transfers excluding retirement benefits (%)
Primary or no education	64.53	56.66	7.87	65.08	57.89	7.20
Learned a trade through apprenticeship, lower secondary education, without a leaving certificate	35.46	28.39	7.07	34.66	29.12	5.54
Full secondary, vocational or post-secondary education	26.68	21.12	5.56	26.94	22.29	4.65
Higher (tertiary) education	16.57	13.93	2.64	17.77	14.80	2.97
Czech Republic	31.51	25.67	5.85	31.34	26.44	4.91

Source: Authors' own calculations, based on EU-SILC data

education for these two categories with the lowest education.

The proportion of social transfers out of the total disposable incomes of households for individual categories of households in dependence on the achieved level of education is presented in Tab. IX.

It is obvious that the highest proportion of social transfers within the disposable income is found in households whose head achieved primary or no education. Social transfers in both monitored years made about 65% of their disposable income, i.e. a double of the mean of the Czech Republic. A similarly high percentage is found in the category of primary education concerning the share of retirement benefits within the disposable incomes of households. The development trend shows an increasing proportion of social transfers within the disposable incomes of households, especially as regards the retirement benefits, and slightly decreasing as regards the other social benefits.

CONCLUSION

The analysis of the income situation of households in the Czech Republic has indicated that this issue is complicated, especially as what regards the evaluation of the inhabitants' standards of living and the economic development of the society.

The survey conducted by EU-SILC in 2005–2009 allowed for an evaluation of the effects of education on the mean income situation of households, income disparities, the degree of risk of poverty for households and the provided social transfers.

The income situation of households expressed by a mean value per a household member was 12,232 CZK in the CR in 2005. This value was reached by the households where the head of household was a person who had achieved full secondary education with a leaving certificate or even some additional post-secondary education (group 3) and households with higher (tertiary) education (group 4). The group of households with primary or no education (group 1) and the group of households where the head of household had learned a trade through apprenticeship or had achieved lower secondary education without a leaving certificate (group 2) did not reach the mean income. The fact that the number of households who do not reach the mean income is 58% is highly dissatisfying.

The mean income per a household member increased during the monitored five years by 29.8% in group 1, 30.8% in group 2, 28.7% in group 3 and 28.2% in group 4, which means that the progress does not agree with the achieved level of education.

The analysis of households in dependence on their head of household's level of education and the threat of poverty they are facing clearly proves that the group at highest risk is the group of households with primary or no education. Considering their high frequency within the group (14%), which makes more than a double of the entire country (about 6.5%), and the negative trend, this is the group which needs help from the society (the system) in order to solve their income situation and the possible following social exclusion. The frequency of households groups 2 and 3 at risk of poverty dropped during the monitored period. The frequency of households at risk of poverty in these two groups is lower than the CR mean. Based on these facts, we can conclude that education of any level motivates individuals to solve their income situation and leads to responsibility for income or other e.g. social disparities.

The more detailed analysis of the first income decile, where income ranged within 750–6,846 CZK in 2005 and 0–9,169 in 2009, showed that the highest proportion is occupied by group 2 (learned a trade) – 49% and group 1 (primary education) – 27%. However, the mean income in these groups is the highest of all four groups with a positive trend of income development. The analysed 1st decile thus proves an indirect proportion between education and the mean income per a household member. Higher education brings lower incomes and the reasons for this need to be sought through an analysis of particular households.

The last 10th decile contains households with incomes from 18,861 CZK to 253,348 CZK per a household member in 2005 and from 23,909 CZK to 329,283 CZK in 2009. As expected, the households with tertiary education have the highest proportion; surprisingly, the proportion of the households with the lowest level of education is 12%.

Based on the results of the analyses we can conclude that the issue of income disparities and the issue of households at risk of poverty have clearly proved to be related to education, including the consequences reflected in the distribution of social transfers.

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