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INCOME SITUATION OF HOUSEHOLDS AS A SOCIAL STATUS INDICATOR

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Abstract

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The net financial income of households plays a crucial role in assessing their living standard. It determines of which social class they are members and, thus, their social status as well. In order to monitor their income situation, this paper uses survey data of the European Union Statistics on Income and Living Conditions (EU SILC). An abundance of identification data, such as economic activity, industrial classification or sector of economic activity, level of education, age, number of household members, place of residence, household type and others, makes it possible to identify factors that demonstrably influence the household income level. On this basis, it is possible not only to determine the commonly available social class definitions using income intervals, but also to identify specific causes affecting household income and, thus, link a particular household to a given social class. The goal of this article is to establish which factors influence the income level of households. The authors of this paper focused on four factors: social group membership, occupation classified according to the national economy sectors, the highest level of education attained by the household leader and their age. To analyse the influence of selected factors including their interaction and impact on the income situation of households, the authors applied the method of analysing variance between groups (ANOVA) using STATA statistical software. The Scheffe's method of contrasts was used to determine specific differences between factor levels.

social class, income, poverty, SILC, social status

Social class membership is determined by various factors. The most important one, which directly influences the social class membership of individuals and their households, is their income. People with the highest income form the upper class in the population; on the other hand, the poorest households form the lower class. However, little research has been conducted to determine why this is so.

The Czech Republic is a country with the lowest poverty rate in the EU. Poverty, to a great degree, correlates with income inequality. This then means that the middle class enjoys a fairly strong position here. Nevertheless, we do not know who exactly is a member of each of the social classes. For this reason, it is useful to establish which factors influence the income level and, thus, the social status as well. At the same time, research needs to be done to find out what changes took place in the income level of each of the population groups in the Czech Republic in the period of 2005–2011.

From the marketing viewpoint, a social class is to be understood as a secondary group that is one of the social factors influencing consumer behaviour. This concept refers to the classification of society members into classes of different status in a manner ensuring that members of each of the classes have relatively equal status, with members of other classes having a different status (Schiffman, Kanuk, 2004). Bártová *et al.* (2007, p. 107) point out that *different social classes represent different segments,* adding that the structure of these segments is described by Wamer's social stratification diagram, according to which the population is on the basic level divided in the low, middle, and upper classes.

In deviation from Schiffman and Kanuk (2004), Kotler and Amstrong (2010) view social class membership as one of the cultural factors.

Social classes can be segmented based on the ABCDE classification. As part of its "Market & Media & Lifestyle" standard survey, the Median agency uses the following primary variables to determine social class membership: household leader's occupation, their job title, and the highest education level attained. There are therefore 5 social classes typical for their specific attributes and standard of living (Bártová *et al.*, 2007).

Lake (2009) claims that the consumers' values and interests are reflected in their lifestyle, which is predominantly determined by the following factors: income, family status, culture, purchasing power, and social class.

Income inequality represents a serious issue that closely relates to social groups. Inequality is a ubiquitous phenomenon found in both developed and developing economies. However, it is more apparent in developing countries (Ying In: Roy, Haldar, 2010). Greig *et al.* (2007) stated that inequality has been on the rise due to globalisation. It is significant to note that growing income inequality reduces economy efficiency (Perkins *et al.*, 2006).

According to Perkins *et al.* (2006), inequality within one country can be measured by means of income inequality and/or household consumption inequality. Although consumption is a more stable indicator than income, it is harder to quantify and, for this reason, it is income that is more frequently used to measure inequality.

Income inequality significantly influences the polarisation effect of class identification (Andersen, Curtis, 2012, p. 129). These authors also add that class identity tends to be stronger in countries with high income inequality levels. Vavrejnová (2002) states that it is important not only to establish how income inequality deepens, but also to specify which population groups gain and which lose. According to Perkins *et al.* (2006), income inequality causes the middle class to diminish and the groups of the poor and the rich to grow. Thurov (In: Foster, Wolfson, 2009) points out that a sound middle class is vital for political democracy to work well.

The middle class can be defined in various ways. Once concept defines it as an interval of 75% to 150% of the median income from work (Foster, Wolfson, 2009). Cerami (2006) defines classes by deciles. The lowest income class includes people whose income ranges within the first three deciles, the middle class includes the fourth through the seventh deciles, and the upper class is formed by those whose income is in the eighth through the tenth deciles. Andersen, Curtis (2012) pointed out that regardless of their economic situation, people from richer countries tend to view themselves as being higher in the social hierarchy than people in poorer countries. Once the income level has risen, people tend to view themselves as members of a higher class. When determining social identity, Slomczynsky (In: Cerami, 2006) did not rely on income only. He claims that social status can also be measured by correlation between education, occupation, and income.

METHODS AND RESOURCES

Raw data has been taken from the European Union Statistics on Income and Living Conditions (EU SILC) survey. This survey is conducted by interviewing selected households. The group of households then renders information about the household income, household structure and type, economic activity, education, job position in the industry, age, etc. The given household data is related to the household leader (i.e., the person with the highest influence on the household's income situation). In order to achieve the purpose of this paper, the authors used data collected in 2005 (4,351 households) and 2011 (6,688 households). The year of 2005 was the first year when the EU SILC survey was conducted in the Czech Republic, and the year 2011 is the last one for which data is available.

The primary variable is the monthly disposable income per equivalent household member. Every household member was assigned a certain factor. The household leader 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).

The authors define social classes (based on Wamer's social stratification) by means of income deciles. The first three deciles represent the lower class, Deciles 4–7 the middle class, and Deciles 8–9 the upper class.

The poverty line has been determined using Eurostat's methodology at 60% of the median equivalised income.

Based on the statement of Slomczynsky (In: Cerami, 2006) that social status should be measured using a correlation between income, education, and occupation, the authors decided to select factors for subsequent analysis. These factors and their levels, which are expected to have an influence on household income as an indicator of the household's social status are economic activity (employed, self-employed, retired, unemployed, other), education (basic, lower secondary, secondary, tertiary), sector of economic activity (NACE classification aggregated into 12 groups) and age (up to 35, 36–50, 51–65, 66+).

In order to determine a demonstrable influence of the aforementioned factors, we used the following model equation of multifactor analysis of variance:

$$X_{ijkl} = \mu_i + \varepsilon_{ijkl} = \mu + \alpha_i + \beta_j + \gamma_k + \delta_l + \varepsilon_{ijkl}$$

$$i = 1, \ldots, r, j = 1, \ldots, s,$$

where:

X_{ijkl} ... dependent variable,

μ ..... mean values of dependent variable quantity X, $\alpha_i, \beta_j, \gamma_k, \delta_l$ are effects of Factors A, B, C, D at the a_i level, b_j, c_k, d_l.

ε_{ijkl} .... residual random effects.

The following variables were used in the analysis. The equivalised monthly household income was used as the dependent variable (as used in Stata). The following factors were used: economic activity (referred to as Activity in the group) – A, education of the household leader (Education) – B, sector of the activity performed by the household leader (Sector) – C, and the household leader's age (Age) – D.

The substantial significance of each of the factors is based on the following F-test formula:

$$F = \frac{MS_A}{MS_E}, \text{ prob} > \text{F}.$$

The Scheffe method of contracts was used to determine specific pairs of substantially significant differences between particular factor levels.

By testing the hypothesis of contrast significance we understanding verifying a hypothesis that contrast $\psi = 0$. We do that based on the t-test characteristics.

$$|t| = \frac{|\psi|}{s_\psi}.$$

We consider a contrast as significant if

$$t = \frac{|\psi|}{s_\psi} > s,$$

where

$$s = \sqrt{v_A \times F_\alpha(v_A, v_B)}$$

v_A ..... the groups' degrees of freedom,
v_B ..... residual degrees of freedom,
$F\alpha(v_A, v_B)$ ... critical value of Snedecor's F-distribution for the significance level of $\alpha = 0.05$, degrees of freedom of the numerator (v_A) and degrees of freedom of the denominator (v_B).

After coding the data, the actual analysis was performed in the STATA software.

RESULTS

Social classes segment the population into groups of relatively equal position, which share a certain system of values and have common or similar interests. Among other things, the key influence on social class membership comes from the income per 1 equivalised household member, the Y variable, which is the focus of this paper together with other factors influencing it. In order to determine the boundaries between the social classes, data was used on the income situation of households in the years under review, 2005 and 2011. The boundaries are specified in Tab. I, with their calculation derived from deciles of the sorted income values.

In 2005, the poverty line in the Czech Republic was at CZK 6,300, and in 2011 it was at CZK 8,813. This means that the lower class does not only include households threatened with low income but also households whose income is above the poverty line but does not yet reach the lower threshold of the middle class.

Household income is influenced by numerous factors, among which the authors of this paper consider the following to be the most important: the household leader's economic activity (Factor A), education level attained (Factor B), sector of activity (Factor C), and the household leader's age (Factor D). The substantial significance of the influence of all the above factors on household income in the years under review, at the confidence level of $\alpha = 0.01$, was established based on the results of the applied multi-factor analysis of variance, as shown in Tab. II.

It can be deduced from the above results that, in both years under review, the factors of economic activity and education proved to be highly substantially significant. In 2005, the factor of sector did not show substantial influence on income. In 2011, some significant influence of this factor did appear as the differences among sectors were greater. The age factor did not show any substantial significance of influence in any of the years under review; therefore, the age factor can be excluded from further analysis. On the other hand, the significance of factors, whose influence on household income proved to be substantial, justifies our further analysis of how their influence developed. Attention should be paid not only to analysing the effects of each of the factors but also to their demonstrably combined effects, as shown in Tab. II. Identical combined effects of factors in both years under review were established only in terms of the interaction of the education and the sector factors.

Economic Activity

In both years under review, economic activity showed highly substantially significant income differences between each of the levels of economic activity (Table III), with the only exceptions being the groups of the "Unemployed" and "Other". Using Scheffe's method of contrasts we established that there are non-substantial differences between the groups of the "Unemployed" and "Other", and in 2011 also between the "Unemployed" and "Retired", and between "Other" and "Retired", which indicates

I: *Income boundaries for social classes (the authors' own calculations)*

Year	Low class	Middle class	High class
2005	CZK 0–8 846	CZK 8 847–13 222	CZK 13 223 and more
2011	CZK 0–12 321	CZK 12,322–18 306	CZK 18 307 and more

II: *Results of multi-factor analysis of variance (the authors' own calculations)*

Source	Partial SS	Df	MS	F	Prob > F
			2005		
Model	6.97E+10	142	490 704 137	10.54	0
Activity	1.42E+09	4	356 076 279	7.65	0
Education	578 443 139	3	192 814 380	4.14	0.0061
Sector	693 851 644	11	63 077 422.2	1.36	0.1871
Age	15 954 441.1	3	5 318 147.02	0.11	0.9518
Activity#Education	1.38E+09	12	114 894 731	2.47	0.0033
Activity#Sector	1.77E+09	29	61 124 340.8	1.31	0.1214
Activity#Age	2.04E+09	11	185 607 689	3.99	0
Education#Sector	3.41E+09	30	113 692 412	2.44	0
Education#Age	709 282 993	9	78 809 221.4	1.69	0.0849
Sector#Age	1.74E+09	30	57 832 462.3	1.24	0.1702
Residual	1.96E+11	4 208	46 535 191.3		
Total	2.66E+11	4 350	61 034 499.4		
			2011		
Source	Partial SS	Df	MS	F	Prob > F
Model	2.21E+11	146	1.52E+09	24.9	0
Activity	1.14E+09	4	286 210 810	4.55	0.0011
Education	1.62E+09	4	404 614 905	6.43	0
Sector	3.04E+09	11	276 363 728	4.39	0
Age	34 510 064	3	11 503 354.7	0.18	0.9082
Activity#Education	1.62E+09	16	101 022 373	1.6	0.059
Activity#Sector	3.50E+09	11	318 593 156	5.6	0
Activity#Age	1.16E+09	11	105 612 521	1.68	0.0718
Education#Sector	5.58E+09	43	129 852 929	2.6	0.0001
Education#Age	609 249 987	12	50 770 832.3	0.81	0.6441
Sector#Age	4.24E+09	31	136 887 526	2.17	0.0002
Residual	5.49E+11	8 719	62 948 217.3		
Total	7.70E+11	8 865	86 888 596.3		

III: *Income situation by economic activity (the authors' own calculations)*

Level of econ. act.	2005	2011	Growth in %
	Income in CZK	Income in CZK	
Employed	13 843	19 483	40.7
Self-employed	17 621	21 093	19.7
Retired	9 520	13 438	41.1
Unemployed	5 957	9 256	55.3
Other	7 073	10 046	42.0

that the "Retired" income group got closer to the groups with the lowest income.

The income growth in each of the groups analysed in the years under review shows a great variability. It is worth mentioning that the highest income growth (+55.3%) was recorded in the "Unemployed" group, while the lowest income growth (+19.7%) was shown by the "Self-employed". This phenomenon on the part of the Self-employed can partially be explained by the fact that the income of this particular group is the one most exposed to the current economic cycle fluctuations. Other reasons may be found in the structure of this group and, more importantly, in the insufficiently defined legislative, organisational, and administrative conditions for their active enterprising. The highest income growth enjoyed by the "Unemployed" group leads us to assume that the group members are not motivated enough to leave the group and, therefore, become long-term unemployed. According to Eurostat's database (2012), long-term unemployment in the Czech

IV: *Income situation by education (the authors' own calculations)*

Education	2005	2011	Growth in %
Primary	8 794	11 861	34.88
Lower secondary	11 096	15 011	35.28
Secondary	13 070	17 823	36.37
Tertiary	17 961	22 025	22.63

V: *Income situation by NE sector (the authors' own calculations)*

Sector *	Income in CZK in 2005	Income in CZK in 2011	Growth in %
Agriculture	12 484	17 960	43.8
Heavy industry, mining	13 212	19 543	47.9
Manufacturing	13 110	18 396	40.3
Construction	13 587	18 746	37.8
Wholesale, retail, transport	15 077	19 276	27.8
IT	19 271	26 888	39.5
Financial and ins. services	19 396	26 821	38.2
Real estate activities	20 628	25 884	25.4
Professional activities	18 329	22 126	20.7
Pub. adm., healthcare, edu.	14 976	21 761	45.5
Other activities	14 861	18 084	21.6
Activity not specified	9 330	13 254	42

Republic in 2011 was at 40.6%, which is slightly better than the average in Europe (42.9%).

Based on these facts, there are reasons to doubt that the benefits granted to the unemployed are expended purposefully and provided to those really in need. This issue becomes even more apparent based on our analysis of the 2011 data, where the differences between the "Unemployed" and the "Retired" groups almost diminished (became substantially insignificant). The "Retired" found their income declining to the level of the "Unemployed", yet not due to their fault but as a result of the prevailing social policy

Highest Level of Education Attained

Education is a factor that is expected to positively influence the income level the higher the level of education is attained. For the sake of simplicity and clear explanatory power, 4 levels of education were selected: primary, lower secondary, secondary, and tertiary. Highly substantially significant differences were established between all factor levels in terms of the income generated; the absolute values and growth differences in the years under review are shown in Tab. IV.

Contrary to our expectations, the lowest income growth was recorded with the group of people with university education, while the highest growth with those who have attained secondary education. This fact should lead to deeper analyses of the quality of university education, structure and number of graduates in the various fields of study, and also those with the same major, job performed and job title, but also of the adequacy of the wage system defined and the situation in the labour market. Another possible explanation is a lack of vocational school graduates and specialists with secondary education.

Sector of Activity

The household leader's economic activity in a particular national economy (NE) sector reflects their education, capabilities, interests, and opportunities, and it is remunerated both financially and with social esteem and recognition. A harmony between the job performed and the job title in a well-working NE sector stimulates the employee to work harder and show better performance at work. The income is primarily influenced by the sector position in the labour market. The income gained in particular sectors is shown in Tab. V.

The sector factor showed a substantially significant influence on income only in 2011. There are great differences among the sector average income values, and their substantial significance has been verified using Scheffe's method of contrasts. In 2005, attractive sectors in terms of the income level included real estate activities, IT, and financial and insurance services. In 2011, the income differences among sectors increased, and in terms of the absolute income levels, it proved to be most advantageous to work in IT and financial or insurance services; nevertheless, the greatest income growth was recorded in heavy industries and mining, public administration, healthcare and education, agriculture, and manufacturing. The lowest growth was recorded in wholesale and retail trade, transport, other sectors, and real estate

activities. The above list of average income gained in sectors influences sector attractiveness and the desire to be active in the given sector, to be motivated and prepare for working in the sector.

Household Leader's Age

Age cannot be regarded as a factor influencing social class membership. Nevertheless, in our research we examined this factor's influence on household income. The group of households was divided according to the factor levels: d1 initial working age – up to 35 years, d2 period of very active work and productivity – up to 50 years of age, d3 working activity using gained experience – up to 65 years of age, and d4 post-productive age – 65+ years of age. The results of our analysis of variance showed a non-substantial influence of this factor on the income level. There is virtually no difference in income between the groups of economically active people, i.e. between those in the initial working age, middle age, and active age with plenty of experience. A certain difference was recorded with the group of people in the post-productive age, i.e. with the retired people, who experience a drop in income. Tab. VI shows the income per 1 equivalised household member in 2005 and 2011 for each of the age groups.

DISCUSSION

The concept of social classes and the identification of various factors that are determining for one's membership in a social class show that this area has been well described in theoretical terms and that no major opinion shifts occurred during social developments over decades. However, changes can be observed with factors that directly influence the income situation of households. We have examined the influence of the following factors on household income: economic activity, highest education attained, activity in a given NE sector, and the household leader's age. The primary variable, on which we examined the influence of the said factors on 10 039 households in 2005 and 2011, is the average monthly income per 1 equivalised household member. In 2005, the average income was CZK 12 232, but in 2011 it reached CZK 16 818, up by 37.5%, with the average inflation rate over 2005–2011 being 2.56%. In 2005, the poverty line was established at CZK 6 300, and in 2011 it was CZK 8 813, whereby in 2005 there were 6.8% of households threatened by poverty, and this ratio rose to 7.09% in 2011.

The fact that the lower class does not only include households facing a threat of no or little income, but also other groups of people, brings us to assert that it is necessary to subdivide each of the classes based on Wamer's stratification.

Of the factors mentioned above, we have established a highly substantial influence on household income only with the factors of economic activity and education. The activity sector showed some influence in 2011 only, and the higher the income, the greater the differences were among sectors over time. We found no influence of the age factor on household income.

Economic activity is a factor, the specific levels of which (employed, self-employed, retired, unemployed, other) significantly influence household income. The highest income levels were established with the self-employed and the employed, the lowest values with the unemployed and other. Over the period under review, the group of the unemployed recorded the highest income growth (+55%), whereas the lowest one (+19.7%) was established with the self-employed. According to Scheffe's method of contrasts, in 2005 we found substantial differences among the groups, i.e., differences in membership to particular groups (except for the unemployed and other). In 2011, however, the group of the retirees showed an insignificant difference compared to the unemployed and other, which means that the income levels of these three low-income groups or groups threatened by poverty were very similar. This finding is serious in respect of the income situation of the retired.

The causes of the above findings need to be looked for in unfavourable legislative, organisational, and administrative conditions for the self-employed. The consequences are documented not only by the lowest income growth recorded by this group in the period under review, but also by the number of businesses and sole traders that went bankrupt in the history of the Czech Republic: in 2012 there were 3,692 of them (statistics sourced from the Czech Credit Bureau (CCB) on the Internet). The fact that the unemployed showed the highest income growth stems from the prevailing social policy, which does not stimulate people to become economically active; on the contrary, it generates ever more long-term unemployed. The existing parameters of the same social and retirement policy cause the group of the retired to have income levels very similar to those of the unemployed and threatened by poverty.

VI: *Income situation by age (the authors' own calculations)*

Age group	Income per 1 household member in 2005	Income per 1 household member in 2011
up to 35	13 056	18 118
36–50	13 312	18 084
51–65	13 114	18 112
65+	9 460	13 523

The education factor is generally expected to be positively correlated with remuneration. This assumption proved to be correct in both years under review. However, the relative income growth established in 2011 compared to 2005 indicates that this general assumption may change over time since the highest income growth was established with people with secondary education, which includes not only those with specialised secondary education but also those with vocational education. This reveals a long unresolved issue in the Czech education system, which is now witnessed at all education levels, but most clearly at the highest level, i.e., with university graduates. The causes are to be found in the manner of managing and funding the education system. In respect of universities, these include funding measures, the growing number of students, growing number of universities, structure of the fields of study, studies getting less and less demanding, the number and quality of the academic staff, research effectiveness, methods of assessing research results, etc. These measures do not have immediate effects; rather, they show in the long run, which makes it more difficult to assess their effectiveness. All the aforementioned measures and developments, combined with the demographic developments and the economic situation of the population, will have very negative impacts on university graduates in the labour market.

Our detailed analysis of the activity factor confirmed a very substantial influence of this factor on household income in 2011. No substantial influence was established in 2005. The situation in 2011 shows that differences among NE sectors grow, or that specific sectors develop differently, in terms of both the qualification structure and the income of workers active in the given sector. At the same time, we should point out the highly substantial interaction effects, i.e. the multiplicative effect of the activity sector factor and education. This confirms the assumption that educated specialists are likely to become successful in a given sector. The multiplicative effect was recorded in both years under review only with these two factors.

The age factor was not found to have any substantial influence in either of the two years under review. This is consistent with the importance of age for social class membership, and it also rules out the authors' assumption that age would have an influence on income.

Since economic activity, highest education level attained and possibly activity sector substantially influence household income, we may conclude that social status is primarily determined by these three factors.

SUMMARY

The height of income of household was used as a fundamental variable for the analysis of EU SILC carried out between years 2005–2011. By use of multifactorial analysis of variation with interaction was being observed effect of four factors, of which the authors believed that had an influence on the amount of the income. These factors were: education, economic activity, national economy sector, in which the working activity took place and the age of the respondent (household leader).

The results of the analysis were that on the height of income have significant influence 3 from above researched factors with exception of age. Moreover, very important ascertainment was that was proved a relationship between observed facts and the height of income that is crucial for formulation of social status.

From further analysis of effect of individual factors on the height of income was found out, that from the observed period 2005– 2011 the effect on income decreases, economic activity that has a significant influence on the height of income in 2011 for the first time recorded inconclusive difference between groups of pensioners and unemployed people. The increasing differences in incomes are recorded among the branches of working activity and finally that the effect of age factors did not record provable influence and therefore within any of the researched age categories there are not provable differences in the incomes of households.

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