

ROLE OF EDUCATION AND TRAINING ON INCOME IN DIFFERENT REGIONS OF LATVIA

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ABSTRACT

Latvia is often criticised by international institutions on rising gap for income differences in several social groups. This current research is devoted to analyse of role of education and training on income level. Research methods used: scientific publications and previous conducted research analysis, analysis of EU-SILC data on differences in income depending from education level, from regions and from territory (urban/rural), interviews of regional authorities on life-long training arrangements and applications in regions with lower income level. Data analysis methods: descriptive statistics (indicators of central tendency or location, indicators of variability), cross-tabulations of household income by regions, by education level, by territories, testing of statistical hypotheses on differences of arithmetic means by t-test, by analysis of variance (ANOVA) for significance of income differences by regions and by education level. Results of analysis has indicated that several innovative approaches could be applied to find best solutions for income difference decrease and increase of overall satisfaction with life.

Keywords: *Education and training, EU-SILC, Income differences, Regions, Welfare*

1. INTRODUCTION

Rising gap for income differences in Latvia in several social groups is often criticised by international institutions. Scientific findings of many academic researchers have indicated that important aspects for income level is government policy, education level of inhabitants, from economic activity of inhabitants and many other important factors. This current research is devoted to analyse of role of education and training on income level. Research methods used: scientific publications and previous conducted research analysis, analysis of EU-SILC data on differences in income depending from education level, from regions and from territory (urban/rural), interviews of regional authorities on life-long training arrangements and applications in regions with lower income level. Data analysis methods: descriptive statistics (indicators of central tendency or location, indicators of variability), cross-tabulations of household income by regions, by education level, by territories, testing of statistical hypotheses on differences of arithmetic means by t-test, by analysis of variance (ANOVA) for significance of income differences by regions of households and by education level of households.

2. THEORETICAL FINDINGS

Education levels were found to be a predictor of income inequality in all the countries included in research of research group by Manna, Ciasullo, Cosimato, Palumbo, 2018 where is stressed that higher education level leads to higher income and vice versa. Manna, et al, 2018 have concluded in their reseach results that the effect of education attainments on individual earnings was irregular and Eastern European countries, revealed a strong relationship between education attainments and individual earnings but Scandinavian countries showed a weak link between education levels and income (Manna, et al, 2018). Education has the potential to affect income inequalities in Europe. Researchers (Manna, et al, 2018) have suggested that »Policy makers should develop tailored strategies to deal with the consequences of education levels on individual earnings. Both education services' quality and the interaction between education and moderating socio-demographic variables may influence income inequality in European countries«. Different countries have different experience and approaches, like (Deshwal, 2016) research was to focus on ascertaining whether and how groups based on demographic variables (age, gender, education level, and family income) differs for dimensions of customer experience quality in the Indian retail store context and for deeper analysis was used analysis of variance - ANOVA. Researchers Celikay and Sengur (2016) have analysed whether the interaction between education expenditure and GINI coefficient changes in the short- and long-term (Celikay, Sengur, 2016) – their research results show that education expenditure generates positive results particularly by lowering income inequality in the long-term as Celikay and Sengur (2016) was aiming to examine the relationship between public sector education expenditure and the GINI coefficient as a measure of ~~justice~~ inequality in income distribution. This interaction can be more clearly observed in developing countries (Celikay, Sengur, 2016) as well as consumption patterns (Celik Ates, Ceylan, 2010), consumption preferences (Lu, Wu, Wang, Xu, 2016), on choice of food group (Quevedo-Silva, Lima-Filho, Fagundes, 2018; Tsakiridou, Boutsouki, Zotos, Mattas, 2008; Nazan, Baker, 2011), territories – urban or rural (Yıldırım, Ceylan, 2007; Sahin, Yıldırım, Deniz, 2014), by income level (Loke, 2015), by age group (Nga, Yong, Sellappan, 2010) and use of Internet (Eastman, Iyer, 2004). The findings of researchers from Brasil Besarria, Araujo, Silva, Sobral, Pereira, 2018 study results indicated that inequalities in income and educational level are the principal determinants of different growth rates among Brazilian states. It is found that additional years of schooling positively influence growth (Besarria, et al, 2018) and income inequality negatively affects this indicator. The research of Shihadeh, 2018 study has aimed to analyze the financial inclusion of individuals living in the Middle East, North African, Afghanistan and Pakistan (MENAP) - to examine the influence of individuals' characteristics on financial inclusion in the MENAP region, (Shihadeh, 2018) results showed the influence of individuals' characteristics on financial inclusion for Shindeh's research was used the World Bank Global Findex Database for 16 countries in the region. The results of Shihadeh research (Shihadeh, 2018) indicate that females and the poor are less likely to be included in financial systems, while education level enhances financial inclusion. As disadvantaged people consider access to credit is important to improving their lives, the Shihadeh study finds that the poor are more likely to borrow for medical issues than for other needs. While Islam is the majority religion in the MENAP region, it is not considered a barrier to having a formal bank account (Shihadeh, 2018). Shihadeh research has concluded that people in different income quintiles are more likely to use informal financial sources, while the educated are more likely to use formal ones (Shihadeh, 2018) – the results correspond with findings also in other countries and other researchers word-wide.

3. EMPIRICAL RESEARCH FINDINGS

Deeper analysis of EU-SILC anonymised data available for researchers by CSB of Latvia indicated the following results of empirical studies on disposal income for households in Latvia

– results are included in next tables in the text below. The results of calculations of income of households in Latvia indicate that arithmetic mean of income in 2017 was 7302 euro with rather big differences corresponding to range by 41551 euro with median 6200 euro – it means that half of households in 2017 had disposal income 6200 euro or less and half of households in 2017 had disposal income 6200 euro or more and one fourth of households had income 3955 euro or less and one fourth of households had income 9436 euro or more. – see table 1.

Table 1: Main statistical indicators of descriptive statistics on disposal income in households of Latvia in 2017 (authors calculations based on data of EU-SILC)

Statistical indicators		Values
N	Valid	13457
	Missing	0
Mean		7302.75
Standard Error of Mean		41.16
Median		6200
Standard Deviation		4774.66
Range		41551
Minimum		0
Maximum		41551
Percentiles	25	3955
	50	6200
	75	9436

Research results have indicated that there are very big differences in disposal income of households in Latvia indicated by indicators of variability –with very big values of standard deviation and range. Research results have indicated that there are differences in income of urban and rural households in Latvia – it corresponds to findings in many other countries by other researchers discussed in academic community. Main results are included in table 2 (used households having income more than zero).

Table 2: Main statistical indicators of descriptive statistics on disposal income in households of Latvia in rural and urban areas in 2017 (authors calculations based on data of EU-SILC)

Territory	Mean	N	Standard Deviation	Median	Range	Minimum	Maximum	Std. Error of Mean
Urban	11654.09	4142	10055.00	8663.18	98094,74	33.80	98128.54	156.25
Rural	10344.80	1835	9847.93	7190.09	114327,38	100.00	114427,38	229.89
Total	11252.12	5977	10009.99	8235.51	114393,58	33.80	114427,38	129.48

Usually it is an interest – are the results statistically different for inhabitants in rural and urban areas – hypothesis on testing significance of disposal income differences by t-test have indicated that the differences on disposal income of households in Latvia in urban and rural areas are statistically significant (sig.0.00) different – see table 3.

Table following on the next page

Table 3: Main statistical indicators of t-test on disposal income in households of Latvia in rural and urban areas in 2017 (authors calculations based on data of EU-SILC)

Indicators	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	4.333	0.037	4.672	5975	0.00	1309.29	280.22
Equal variances not assumed			4.710	3581	0.00	1309.29	277.97

Table 4: Main statistical indicators of descriptive statistics on disposal income in households in regions of Latvia in 2017 (authors calculations based on data of EU-SILC)

Regions	Mean	N	Standard Deviation	Median	Range	Minimum	Maximum	Std. Error of Mean
Rīga	13119.50	1907	11069.02	10039.28	97938.30	190.24	98128.54	253.47
Pierīga	13255.30	848	11669.87	10124.68	81084.71	100.00	81184.71	400.75
Vidzeme	9483.67	574	7754.99	7164.78	62880.52	33.80	62914.32	323.69
Kurzeme	10808.64	924	9339.50	8067.12	114227.38	200.00	114427.38	307.25
Zemgale	10365.60	852	9331.39	7350.84	79846.37	137.80	79984.17	319.69
Latgale	7720.49	872	6541.39	5814.07	82546.11	113.00	82659.11	221.52
Total	11252.12	5977	10009.99	8235.51	114393.58	33.80	114427.38	129.48

Data indicate that income is the biggest in Pierīga region and Rīga and much less in Latgale – eastern part of Latvia. Data indicate that the income differences are the biggest in Pierīga region and Rīga indicated by indicators of variability: standard deviations, standard errors of means. The biggest difference in income in 2017 was in Kurzeme Region. Analysis of variance – ANOVA indicate results on statistical significance on income in regions of Latvia – results are included in table 5.

Table 5: Main statistical indicators of ANOVA on disposal income in households of regions of Latvia in 2017 (authors calculations based on data of EU-SILC)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.358E10	5	4.715E9	48.944	0.00
Within Groups	5.752E11	5971	9.634E7		
Total	5.988E11	5976			

Results of analysis of variance ANOVA indicate that the disposal income in households of regions of Latvia in 2017 are statistically different by very high probability (sig.0.00).

Table following on the next page

Table 6: Main statistical indicators of descriptive statistics on disposal income in households by education level in Latvia in 2017 (authors calculations based on data of EU-SILC)

Education level	Mean	N	Std. Deviation	Std. Error of Mean	Range	Median
Not indicated	7881.59	408	5311.85	262.98	39661	6607
Pre school	4088.66	71	1867.79	221.67	9005	3490
Basic	4631.00	200	2707.29	191.43	24473	4074
First level secondary	5263.90	1896	3261.93	74.91	31457	4439
Secondary	6665.35	5085	4078.60	57.20	35758	5795
Post secondary	6553.56	820	4023.11	140.50	27525	5461
Higher	10060.09	2824	5873.86	110.53	41551	8978
Total	7261.98	11304	4821.27	45.35	41551	6102.5

Data indicate that income is the biggest with higher education and much less with pre school education and basic education in households in Latvia. Data indicate that the income differences are the biggest with higher education and income differences are smaller for households with pre school education level indicated by indicators of variability: standard deviations and range. Analysis of variance – ANOVA indicate results on statistical significance on income in households of Latvia by education level – results are included in table 7.

Table 7: Main statistical indicators of ANOVA on disposal income in households in Latvia by education level in 2017 (authors calculations based on data of EU-SILC)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.416E10	6	5.693E9	281.357	0.00
Within Groups	2.286E11	11297	2,023E7		
Total	2.627E11	11303			

Results of analysis of variance ANOVA indicate that the disposal income in households of Latvia by education level in 2017 are statistically significant different by very high probability (sig.0.00).

4. CONCLUSION

Research in many countries has indicated that income level is very different by education level, by territories – urban or rural area and by regions which are more or less developed with economic activities. Research results have indicated that there are very big differences in disposal income of households in Latvia: by territories – urban and rural areas, by education level and by regions in Latvia. According to the EU-SILC data the standard deviations of disposal income of households in Latvia by territories – urban and rural areas, and by regions in Latvia are 10009.99, but the standard deviations by education level are much less – 4821.27. This result indicates, that the main reason of inequality is the education level, which creates income differences inside the regions and inside urban and rural territories. The main attention should be paid to the life long learning (LLL) in local communities. In today's European context, it is important to emphasize inclusion and cohesion competence. Lifelong learning must be for all life, including changing qualifications. The system must be flexible so that lifelong learning is accessible to everyone, regardless of their place of residence or age. In order to promote employment for the poor, older people, should be encouraged to improve equal

access to formal, non-formal and lifelong learning in adult education and vocational training by reducing skills mismatches. Vocational training needs to be made more relevant to the labor market in order to ensure personal mobility and to promote the skills of low-skilled workers and jobseekers. Improving the knowledge, skills and competences of the workforce reduces social exclusion and improves the quality of life. Other problem is the groups with very low income, less than level of poverty, part of the lowest fourth of households. Must be created support by state, local communities and NGO, such as European Anti Poverty Network (EAPN), cultural organizations, associations for arts and crafts, to include these households in the local networks, public and private, and in LLL. Use of information technologies, including block chain technologies, allows effective communication and provides possibilities for LLL and business activities, but motivation of people and technical support, first of all by local communities, is crucial. Special attention should be paid to the creation of the system of local networks, including partly overlapping networks for education, entertainment, business, private communication and administrative communication with local and state authorities. Further development of the investigations and antipoverty activities should include also "shadow economics", which creates up to one third of GDP. This could change significantly the analysis, first of all of the low income groups, below the poverty level.

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