

INCOMES OF SLOVAK POPULATION AND THEIR REGIONAL DIFFERENCES

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Abstract

The aim of this paper is to describe and analyze the income distribution of households by type, using metadata from the survey on income and living conditions EU SILC in 2010 and to compare the differences in the distribution by regions. Description and analysis of income distribution was performed using the metadata¹ from European Survey on Income and Living Conditions (EU SILC) in the year 2010 and descriptive statistics were calculated from the equivalent disposable income data (which is disposable income divided by equivalent household size). To calculate descriptive statistics of a level and an income distribution, we used the statistical software SPSS.

The average income level of households by type by inter-regional comparisons is different. Not only between regions but also within regions are considerable differences, which are measured with using of Gini coefficient. Income level and equality/inequality of income distribution are one of the quality-life of households indicators. They are not only significant micro-economic and micro-social indicators. Household income - its level, methods of its distribution and redistribution and a resulting income distribution in population - are important determinants of macro-economic and macro-social development in the long run.

Keywords: equivalent (equalised) disposable household income, households by type, households with dependent children, households without dependent children

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Introduction

The aim of this paper is to describe and analyze the income distribution of households by type, using metadata from the Survey on Income and Living Conditions (EU SILC) from the year 2010, and compare the differences in the distribution in eight Slovak regions.

¹ Data on income distribution of households by type (Gini coefficients, percentiles or division of households into income groups) are officially published only for a Slovak households as a whole, not for households by regions. Our aim is to give attention to interregional differences of income levels and income distributions according to these types of households.

According to types of household we distinguish between: households without dependent children and with dependent children. Within households without dependent children we research a level and distribution of income of one-member households, two-member households in which both are aged below 65 years, two-member households in which at least one member is aged 65 and over and other households without dependent children (the latest type had not been loaded into our research because of its diversity). Within households with dependent children we distinguish between single-adult households with at least one dependent child, two-adult households with one dependent child, two-adult households with two dependent children, households of two adults with three or more dependent children and other households with dependent children .

Description and analysis of income distribution was performed using the metadata of European Survey on Income and Living Conditions EU SILC in the year 2010 and descriptive statistics are calculated from the equivalent disposable income, which is disposable household income after conversion to a equivalent household size. To calculate descriptive statistics of the level of income and of its position in income distribution, we used the statistical software SPSS.

The worldwide famous economists dealing with issues of income distribution are A. B. Atkinson and F. Bourguignon (2000, 1-58). An economist of World Bank B. Milanovic (2002, 155-178; 1999, 299-341) research income inequality and poverty worldwide (particularly in transition economies of Central and Eastern Europe), he deals with their measurement and decomposition, with their determinants and consequences. In the Slovakia we also have economists and researcher dealing with problematic of income inequality, income distribution and especially with their regional differences. At the Slovak Academy of Sciences I will name an economist and a researcher Pauhofová (2010, 22-30). Other Slovak experts on problematic are Rozborilová (1993, 415-427), Želinsky (2010, 37-50), Gerbery (2005, 143-176).

1. Incomes of different types of households with dependent children and without dependent children in Slovakia

At the beginning of the paper we introduce measures of income levels and income distribution of households by type for the Slovak households as a whole. In tables no. 1 and 2 are included the indicators of level and distribution of income for different types of households with dependent children and without dependent children. Indicators are calculated from the equivalent disposable income per household. In addition to the average equalised

disposable household income per year and per month, in tables no. 1 and 2 are introduced other characteristics of the distribution – a median of equivalent disposable income and a mode (most frequent value of equivalent disposable income). Using EU SILC data, we compare the average income level of households with dependent children by type. The lowest level of average income have households of two adults with three or more dependent children, the highest one have households of two adults with one dependent child. The income level of households by type we compared after converting of household income to an income per a member of the household. After converting to the "equivalent household member" two-adult households with three or more children were found in the worst position a households of two adults with one child were found at the best one, too. The order of other types of households with dependent children, however, differs.

Based on comparison of equivalent disposable income (see table no. 1), the second lowest average reached one-adult households, followed by households of two adults with two children and other households with dependent children. But after conversion of equivalent disposable household income to "equivalent member income" were households with three or more dependent children followed by other households with dependent children, than followed by households with two adults with two children and the second best position (behind households of two adults with one child) had one-parent households.

Tab. 1: Equalised disposable income of households with dependent children by type in 2010 (in Euro / year)

	one adult and at least one dependent child	two adults and one dependent child	two adults and two dependent children	two adults and three and more dependent children	other households with dependent children
Average conversion to monthly values	5 202	7 181	6 604	5 120	6 653
Median	4 796	6 529	6 187	4 896	6 387
Modus	5 392	3 868	6 520	5 315	5 431
Percentiles					
10	2 428	3 821	3 636	2 425	3 798
25	3 721	5 049	4 636	3 597	4 939
50	4 796	6 529	6 187	4 896	6 387
75	6 364	8 408	7 587	6 023	8 029
Gini coefficient	25	25	24	24	22

Source: data of the Slovak Statistical Office from Survey on Income and Conditions EU SILC 2010 processed by author

Another important descriptive statistics of household income distribution presented in the tables no. 1 and 2 are the quartiles and deciles. Quartiles (25, 50 and 75) divide the households listed in ascending order according to the annual equivalent disposable income into four groups with the same number of members. Percentiles (in our table first percentile) divide the households listed in ascending order according to the annual equivalent disposable

income into ten groups with the same number of members. From the table no 1 is obvious that the annual equivalent disposable income of the poorest ten one-adult households does not exceed 2 428 Euro (per month 202 Euro). Similarly, monthly equivalent disposable income of 10% poorest households of two adults with three or more dependent children does not exceed this amount.

The last one in the series of studied indicators is Gini coefficient, which is an aggregate measure of inequality of income distribution. This measure shows a minimum inequality of equivalent disposable incomes in other households with dependent children (see table no. 1). The greatest degree of inequality reached the equivalent disposable incomes in one-adult households and in households of two adults with one dependent child. Table no. 2 shows the same indicators of level and distribution of equivalent disposable income of different types of households without dependent children.

Tab. 2: Equalised disposable income of households without dependent children by type in 2010 (in Euro / year)

	one-member households	two-member households - both aged below 65 years	two-member households - at least one aged 65 and over
Average conversion to monthly values	5 297	7 884	5 855
Median	4 828	7 394	5 491
Modus	4 784	5 205	5 536
Percentiles			
10	3 269	4 271	4 484
25	3 995	5 545	4 942
50	4 828	7 394	5 491
75	6 034	9 629	6 260
Gini coefficient	21,7	23,3	14

Source: data of the Slovak Statistical Office from Survey on Income and Conditions EU SILC 2010 processed by author

By comparison of data in both tables we found absolutely highest level of household income by two-member households of two adults both below 65 years aged, followed by two-adult households with one dependent child, by other households with dependent children and by two-adult households with three or more dependent children. After converting the equivalent household income to the income per household member, the average equivalent income level (equivalent disposable income) for households without dependent children of all types lies above the level for all types of households with dependent children. Poorest ten percent of one-member households achieve equivalent disposable income not exceeding 272 Euro per month, while the poorest 10% households of two adults below 65 year achieve 356 Euro or less per month.

2. Incomes of households with dependent children and their regional differences

In the previous chapter we evaluated the level of equivalent disposable income by type of household in Slovakia as a whole. Individual regions of Slovakia and their districts, however, are characterized by a substantial income differentiation therefore we will focus on inter-regional differences of income measures of Slovak households. In the next part of this paper we will pay attention to inter-regional differences of income levels and income distribution differentiated by type of households.

Tab. 3: Equivalent disposable income of one-parent households with at least one dependent child by regions in 2010 (in Euro / year)

	Region Bratislava	Region Trnava	Region Trenčín	Region Nitra	Region Žilina	Region Banská Bystrica	Region Prešov	Region Košice	
Average	6 274	6 780	5 159	4 716	4 659	4 180	4 873	5 242	
conversion to monthly values	523	565	430	393	388	348	406	437	
Median	6 032	5 596	4 470	4 598	4 726	4 001	4 877	4 634	
Modus	3 688	9 220	2 070	733	1 857	964	1 351	2 532	
Percentiles	10	3 768	2 964	2 204	1 861	2 200	1 094	1 767	2 746
	25	4 672	4 271	3 410	3 025	3 141	2 912	3 348	4 058
	50	6 032	5 596	4 470	4 598	4 726	4 001	4 877	4 634
	75	7 683	8 939	5 883	6 152	5 551	5 431	5 937	5 872
Gini coefficient	17,2	28,1	27,2	22,8	21,5	27,3	23,2	21,8	

Source: data of the Slovak Statistical Office from Survey on Income and Conditions EU SILC 2010 processed by author

Note: We distinguish the smallest and largest values of parameters in the first two and in the last row of the table using shaded background.

According to Table no. 3 have one-parent households in the region Trnava a highest average equivalised disposable income, which in absolute amount exceeds by 2 600 EUR an average equivalent annual disposable income of one-parent households in the region Banská Bystrica. The second lowest average income level have one-parent families in region Zilina, followed by regions Nitra and Prešov. In the Table no. 3 we made comparison of median income values (one half of households of this type achieve equivalent disposable income not exceeding this median value). In the last row in Table no. 3 we calculated Gini coefficients. Distribution of equivalent disposable income achieved the greatest inequality, measured by Gini coefficients, in the region Trnava and smallest in the region Bratislava.

Tab. 4: Equalised disposable household income of two parents with one dependent child by regions in 2010 (in Euro / year)

	Region Bratislava	Region Trnava	Region Trenčín	Region Nitra	Region Žilina	Region Banská Bystrica	Region Prešov	Region Košice
Average conversion to monthly values	8 064 672	6 872 573	6 860 572	6 989 582	7 309 609	7 674 640	6 751 563	7 052 588
Median	7 995	6 544	5 943	6 842	7 040	5 782	5 954	6 665
Modus	2 501	1 728	3 868	2 147	5 642	1 897	2 142	-515
Percentiles								
10	5 121	3 930	3 868	3 972	4 849	2 429	2 662	3 509
25	5 653	5 502	4 653	5 366	5 745	3 836	4 451	4 890
50	7 995	6 544	5 943	6 842	7 040	5 782	5 954	6 665
75	9 522	8 218	8 382	8 186	8 314	7 785	8 351	8 625
Gini coefficient	20,4	20,1	23,9	20	16,8	41,8	25,3	24,2

Source: data of the Slovak Statistical Office from Survey on Income and Conditions EU SILC 2010 processed by author

Note: We distinguish the smallest and largest values of parameters in the first two and in the last row of the table using shaded background.

The highest level of income reported in the table no. 4 achieved households of two adults with one dependent child in the region, the lowest one in the region Prešov (followed with the second lowest in the region Trenčín, Trnava and Nitra). We use descriptive statistics of the position - the first decile and quartiles – to describe an income distribution among households of the same type of household in different regions. The largest intra-regional inequality of income distribution of this type of household, measured by the Gini coefficient, achieved two-adult household with one dependent child in the region Banská Bystrica, most equalised distribution was recorded in the region Žilina.

Tab. 5: Equalised disposable household income of two parents with two dependent children by regions in 2010 (in Euro / year)

	Region Bratislava	Region Trnava	Region Trenčín	Region Nitra	Region Žilina	Region Banská Bystrica	Region Prešov	Region Košice
Average conversion to monthly values	9 876 823	6 554 546	6 523 544	6 322 527	6 367 531	6 396 533	5 731 478	6 407 534
Median	7 969	6 404	5 622	6 112	6 049	5 533	5 542	6 311
Modus	2 421	1 980	1 916	190	1 761	3 955	6 559	1 989
Percentiles								
10	4 243	4 052	3 809	3 780	3 490	3 192	3 120	3 599
25	6 426	4 642	4 727	4 756	4 990	3 982	4 331	5 081
50	7 969	6 404	5 622	6 112	6 049	5 533	5 542	6 311
75	10 753	7 673	7 266	7 471	7 600	7 739	7 090	7 553
Gini coefficient	31,8	19,6	23	19,6	20,3	28,9	20,9	19,5

Source: data of the Slovak Statistical Office from Survey on Income and Conditions EU SILC 2010 processed by author

Note: We distinguish the smallest and largest values of parameters in the first two and in the last row of the table using shaded background.

The highest average income level of households of two adults with two dependent children measured by annual equivalent disposable income has the region Bratislava (see data in table no. 5) and it exceeds by 4 145 Euros the lowest average income level of the

households of this type in the region Prešov (the second lowest level achieves the region Nitra, followed by the regions Žilina and Banská Bystrica). The poorest 10 % of this type of households achieved a monthly equivalent disposable income not exceeding 353 Euro (in the region Bratislava) and 266 Euro in the region Prešov. The most differentiated household incomes have households of two adults with two dependent children in the region Bratislava, the least one in the region Kosice region. Actual values of the Gini coefficients for all regions brings table no. 5. Comparing the data in Tables. 5 and 4 we can conclude that the absolute amount of equivalent disposable income of two-parent households with two dependent children in all regions except the region Bratislava is even lower than in households of two adults with one dependent child.

Tab. 6: The equivalent disposable household income of two adults with three or more dependent children by regions in 2010 (in Euro / year)

	Region Bratislava	Region Trnava	Region Trenčín	Region Nitra	Region Žilina	Region Banská Bystrica	Region Prešov	Region Košice
Average conversion to monthly values	6 902 575	5 819 485	4 766 397	4 549 379	5 071 423	5 233 436	4 613 384	5 402 450
Median	6 528	5 377	4 820	4 715	5 046	4 011	4 695	4 945
Modus	2 226	2 996	1 319	1 373	1 847	1 534	582	1 828
Percentiles								
10	2 456	3 937	2 768	1 557	2 531	1 901	2 233	3 388
25	4 495	4 841	3 437	3 237	3 980	3 042	3 547	3 829
50	6 528	5 377	4 820	4 715	5 046	4 011	4 695	4 945
75	8 726	7 026	5 483	5 613	6 088	5 281	5 782	6 898
Gini coefficient	24,9	14,9	17,9	24,3	19,2	35,4	22,7	21,2

Source: data of the Slovak Statistical Office from Survey on Income and Conditions EU SILC 2010 processed by author

Note: We distinguish the smallest and largest values of parameters in the first two and in the last row of the table using shaded background.

Comparing the data in Tables. 6 and 5, we can conclude that the absolute amount of equivalent disposable household income of two-parents with three or more dependent children is lower than that of two-parent household with two dependent children (in all regions) in the regions Trnava, Trenčín, Nitra and Presov region is even lower than the absolute amount of equivalent disposable income of single-parent households.

Tab. 7: Equivalent disposable income of other households with dependent children by regions in 2010 (in Euro / year)

	Region Bratislava	Region Trnava	Region Trenčín	Region Nitra	Region Žilina	Region Banská Bystrica	Region Prešov	Region Košice	
Average conversion to monthly values	8 195	7 187	6 827	6 246	7 348	6 071	6 063	6 551	
	683	599	569	521	612	506	505	546	
Median	7 983	6 863	6 419	6 166	7 035	5 748	5 821	6 300	
Modus	2 932	6 438	5 157	617	1 451	891	5 268	4 520	
Percentiles	10	5 216	4 377	4 118	3 410	4 581	2 645	3 026	3 797
	25	5 929	5 414	5 157	4 624	5 640	4 239	4 599	4 791
	50	7 983	6 863	6 419	6 166	7 035	5 748	5 821	6 300
	75	10 274	8 559	8 030	7 379	8 849	7 651	7 680	7 985
Gini coefficient	18,1	18,5	20,2	22,6	18,8	24,6	21,9	21,6	

Source: data of the Slovak Statistical Office from Survey on Income and Conditions EU SILC 2010 processed by author

Note: We distinguish the smallest and largest values of parameters in the first two and in the last row of the table using shaded background.

Also in other households with dependent children (see table 7) we observe significant differences in average levels of disposable equivalent incomes, that achieve an absolute amount of 2 132 Euro. The greatest differences in incomes of other households with dependent children, measured by Gini coefficients, were recorded in the region Banská Bystrica, the smallest one in the region Bratislava. Other characteristics of income levels and income distribution shows table no. 7.

3. Incomes of households without dependent children and their regional differences

In the last three tables we bring data on income of households without dependent children, and within these households we distinguish between single-person households, households of two adults both aged 65 and households of two adult households with at least one person aged 65 years and more.

Tab. 8: Equivalent disposable income of single-person households by regions in 2010 (in Euro / year)

	Region Bratislava	Region Trnava	Region Trenčín	Region Nitra	Region Žilina	Region Banská Bystrica	Region Prešov	Region Košice	
Average conversion to monthly values	6 123	5 456	5 369	5 415	5 318	5 027	4 857	5 242	
	510	455	447	451	443	419	405	437	
Median	4 973	4 768	4 963	4 893	5 021	4 615	4 539	4 838	
Modus	1 121	899	4 603	4 125	583	4 830	2 749	4 508	
Percentiles	10	3 293	3 511	3 674	2 895	3 263	3 365	2 860	3 372
	25	4 200	4 082	4 181	3 919	4 003	3 986	3 705	4 024
	50	4 973	4 768	4 963	4 893	5 021	4 615	4 539	4 838
	75	6 392	6 247	6 033	6 455	6 185	5 557	5 620	5 852
Gini coefficient	26,6	20,8	18,8	23,9	21,1	21	20,8	20,3	

Source: data of the Slovak Statistical Office from Survey on Income and Conditions EU SILC 2010 processed by author

Note: We distinguish the smallest and largest values of parameters in the first two and in the last row of the table using shaded background.

Tab. 9: Equivalent disposable income of two- adult households without dependent children, both aged under 65, by regions in 2010 (in Euro / year)

	Region Bratislava	Region Trnava	Region Trenčín	Region Nitra	Region Žilina	Region Banská Bystrica	Region Prešov	Region Košice	
Average conversion to monthly values	10 721	7 580	7 560	7 661	8 436	7 663	6 867	7 546	
	893	632	630	638	703	639	572	629	
Median	10 283	6 888	7 223	6 870	7 908	7 397	6 764	7 267	
Modus	3 575	1 973	2 382	2 412	7 428	5 916	5 205	1 069	
Percentiles	10	5 424	4 318	4 388	4 050	4 926	4 774	3 618	3 122
	25	7 015	5 607	5 913	4 815	6 232	5 774	4 849	5 410
	50	10 283	6 888	7 223	6 870	7 908	7 397	6 764	7 267
	75	13 594	8 938	9 135	9 924	10 024	8 566	8 820	9 274
Gini coefficient	22,4	20,2	18,3	24,7	21,1	20,9	23,3	24,8	

Source: data of the Slovak Statistical Office from Survey on Income and Conditions EU SILC 2010 processed by author

Note: We distinguish the smallest and largest values of parameters in the first two and in the last row of the table using shaded background.

Tab. 10: Equalised disposable income of two-adult households without dependent children, with at least one aged 65 and over, by regions in 2010 (in Euro / year)

	Region Bratislava	Region Trnava	Region Trenčín	Region Nitra	Region Žilina	Region Banská Bystrica	Region Prešov	Region Košice	
Average conversion to monthly values	7 412	5 631	5 910	5 441	5 979	5 515	5 420	5 692	
	618	469	493	453	498	460	452	474	
Median	6 337	5 217	5 572	5 394	5 594	5 276	5 219	5 400	
Modus	2 328	5 506	5 711	2 433	3 659	423	4 816	5 661	
Percentiles	10	4 965	4 548	4 697	4 236	4 577	4 305	4 427	4 408
	25	5 619	4 876	5 055	4 749	4 987	4 928	4 816	4 982
	50	6 337	5 217	5 572	5 394	5 594	5 276	5 219	5 400
	75	8 414	6 076	6 423	6 037	6 521	5 941	5 940	6 012
Gini coefficient	19,8	12,3	11,3	12,6	13,7	13,5	10,8	11,2	

Source: data of the Slovak Statistical Office from Survey on Income and Conditions EU SILC 2010 processed by author

Note: We distinguish the smallest and largest values of parameters in the first two and in the last row of the table using shaded background.

Conclusion

The average income level of households by type measured with use of the metadata on individual-household incomes is different across Slovak regions. Inequality of income distribution we measure and describe using descriptive statistics of level and position (quartiles, deciles) and with using Gini coefficient. There exist significant differences in volumes of equivalent disposable incomes of households by type between Slovak regions and using descriptive statistics of position (deciles, quartiles). Not only between regions but also within regions there exist differences. The rate of intra-regional income-distribution inequality measured by Gini coefficients for all types of households is smaller and there was no find significant differences in between-regional comparison.

The level of income and the rate of income-distribution inequality is one of the indicators of life-quality of households. A measurement, analysis and comparison of household income is not only of high microeconomic and microsocial but also of high macroeconomic and macrosocial importance. Household incomes - their level, methods of distribution and redistribution and a resulting income distribution in the population - are important determinants of macroeconomic and macrosocial development in the long run.

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