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THE GINI COEFFICIENT IN POLAND IN THE DIVISION ACCORDING TO CHOSEN FEATURES IN 2007 – 2013 WITH REFERENCE TO THE SLOVAK REPUBLIC¹

***Abstract:** The main aim of this article was to analyse the disposable net income inequalities that are measured using the Gini coefficient index. The Gini coefficient is internal diversified. For the purpose of this research, four following features of households were chosen: socio-economic groups, classes of the town, the numbers of people in the household, and regions in which analysed households are located. The analysis compares Poland and Slovakia in the years 2007–2013.*

***Keywords:** disposable income, income inequality, Gini coefficient, household, socio-economic groups.*

JEL : D 63, I 30

Introduction

As transforming economies Poland and the Slovak Republic experienced an increase of inequalities since the beginning of the 1990s. This situation had an impact on household behaviour in many aspects.

In the literature, inequality is defined as the unequal distribution of household or individual income across the various participants in the economy. It means that income is being distributed in an uneven manner [10, p. 22].

The purpose of this work is to analyse the Gini coefficient diversifying level in Poland according to chosen features (regions, class of locality, the number of people in the household and socio-economic groups) in the years 2007 – 2013 and comparing them to the Slovak Republic adequate data.

It is assumed that the Gini coefficient is internal diversified. This diversification depends on the number of people inhabiting the household, location including class of locality, and socio-economic groups. For the purpose of this research, four following features of households were chosen: socio-economic groups, classes of the town, the numbers of people in the household and regions in which analysed households are located.

¹ The article is part of statutory research for the year 2014 at the University of Finance and Management in Białystok, Poland, Department of Economics Sciences

The Gini coefficient as a measure of inequality

The Gini coefficient is a measure showing income inequalities. The Gini coefficient is defined as the relationship of cumulative shares of the population arranged according to the level of equalised disposable income, to the cumulative share of the equalised total disposable income received by them. The Gini coefficient takes into account income of whole population. It can theoretically gain values from 0 to 1 or in percentage expression, values from 0 to 100. If in society absolute equality of incomes existed, the Gini coefficient would have value 0. On the other hand, if all incomes in society belonged to one person, then the Gini coefficient would have value 100. The higher value of the Gini coefficient the higher inequality of income distribution in society. In EU-SILC this indicator is calculated for equalised annual disposable income of households and its members.

The latest trends in the 2000s showed a widening gap between the rich and the poor not only in some of the high inequality countries as e.g. the United States, but also in traditionally low-inequality countries, such as Sweden, Denmark, Germany and other Nordic countries, where inequality grew more than anywhere else in the 2000s. [10] The reasons of such situation could be changes in earnings inequality, globalisation process, technological progress advances in information and communication technology (ICT), policy choices, regulations, and institutions. It is worthwhile underlining, that the role of globalisation in growing inequality is mixed. Many authors find trade integration to have increased inequality. [5] Others state that rising imports from developing countries are actually associated with declining income inequality in advanced countries. [10] Leading trade economists as Krugman and Slaughter on the example of the United States consider that globalisation may have had a more significant impact on the income distribution in this country through trade and other channels, such as foreign direct investment (FDI) and offshore activities. [11, 4]

Next to globalisation technological progress advances in information and communication technology (ICT) is often pointed. Some reports suggests that “technological progress had a greater impact than globalisation on inequality within countries” [5, pp. 31 – 65] or “technical change is a more powerful driver of increased wage dispersion than closer trade integration”. [11] Also policy choices, regulations and institutions can influence inequality through changes in social transfers, deregulation in product, wage-setting mechanisms.

Income Situation in Poland

Analysing the income situation in Poland in 2013, one should state that the average annual net disposable income for 1 person in the household amount to 25,007 PLN. This value was higher about the 2.8 % from the analogous income in 2012. A group of households with self-employed workers was characterized by the highest income. Average yearly per equivalent unit net disposable income in this type of households

is 31,833 PLN. The group of households with the lowest net disposable income are households of pensioners, for which average yearly per equivalent unit net disposable income is 15,644 PLN.

Table 1

**Average Yearly per Equivalent Unit Net Disposable Income in Household
by Socio-economic Group (in PLN)***

Year carry out survey	Total	Households of				
		Employees	Farmers	self-employed	Retirees	Pensioners
2010	22142	24432	14904	26142	18710	13598
2011	23221	25218	15616	28901	19790	14059
2012	24321	26607	16670	28904	20906	14358
2013	25007	27221	17062	31833	21631	15644

* According to EUROSTAT methodology, income data come from year preceding the survey.

Source: Incomes and Living Conditions of the population in Poland (report from the EU-SILC survey of 2013), Central Statistical Office, Warsaw 2014, p. 143.

Analysing the level of the yearly per equivalent unit net disposable income in the household according to the class of the locality in Poland, one should state that households from cities are characterized by a higher income level than the countryside households. In case of cities, a relation between the size of the city and the income level of his residents is visible. Generally, the highest level of yearly per equivalent unit net disposable income is typical for bigger cities.

In particular, it is visible in case of cities with the higher population than 500 thousand residents, in the case of which the level of yearly net disposable income reached 24,103 PLN. One should underline, that average net disposable incomes for 1 person in the city bigger than 500 thousand residents are over twice higher than in case of persons settling in households laid on the countryside. Indicator of disposable incomes for 1 person according to the class of locality in 2013 in case of cities with the population for 500 thousand persons and more was 147.4 % whereas in case of rural areas it was 79 % of the amount of the average disposable net income per equivalent unit in Poland.

Table 2

Average Yearly per Capita net Disposable Income in Household by class of Locality (in PLN)*

Year carry out survey	Total	Urban areas						Rural areas
		total	town by size in thousand					
			500 and more	500-200	200-100	100-20	20 and less	
2010	14442	16626	22220	16600	16828	15346	13753	11063
2011	15110	17334	22417	17986	17107	16007	14853	11705
2012	15875	18279	23914	19398	17507	17075	15203	12284
2013	16349	18698	24103	19579	19247	17425	15555	12908

* According to EUROSTAT methodology, income data come from year preceding the survey.

Source: Incomes and Living Conditions of the population in Poland (report from the EU-SILC survey of 2013), Central Statistical Office, Warsaw 2014, p. 144.

The amount of average yearly net disposable incomes for one person in households depends on the number of people inhabiting the household. Households with one person have the highest incomes. This income in 2013 amounted to 22,432 PLN. The least beneficial situation is taking place in case of shared households. In households with the number of six people and more, average net disposable incomes are 10,172 PLN per capita. Indicator of the net disposable income for one person according to the number of people inhabiting the household in 2013 amounted appropriately to the 137.2 % for one-person household and only a 62.2 % for households inhabited by six persons and more.

Table 3

Average Yearly per Capita Net Disposable Income in Household by Number of Persons (in PLN)*

Year carry out survey	Total	Households with specified number of persons					
		1	2	3	4	5	6 and more
2010	14442	20436	18553	16487	13064	11067	8957
2011	15110	20632	19649	17084	13612	11713	9762
2012	15875	21867	20814	17557	14349	11999	10246
2013	16349	22432	21865	17955	15049	12001	10172

* According to EUROSTAT methodology, income data come from year preceding the survey.

Source: Incomes and Living Conditions of the population in Poland (report from the EU-SILC survey of 2013), Central Statistical Office, Warsaw 2014, p. 146.

The lowest diversity of average yearly per equivalent unit net disposable incomes is in the household according to regions (NUTS 1). For Poland, clearly two regions diverge from the average – central region with the highest average yearly per equivalent unit net disposable income with the amount of 18,050 PLN for 2013 and eastern region with the analogous income amount of 14 296 PLN. The range of the row about 4,000 PLN is determines 25 % of the average yearly per equivalent unit net disposable incomes in the household in Poland. For comparison, in 2013 the indicator of the net disposable income for one person in the central region amounted to the 110.4 %, whereas in the eastern region it was only the 87.4 %.

Table 4

Average Yearly per Capita Net Disposable Income in Household by Regions (NUTS 1) (in PLN)*

Year carry out survey	Total	Regions (NUTS 1)					
		Central	South	East	North-western	South-western	North
2010	14442	16608	14671	12024	13669	15554	14093
2011	15110	16944	15484	12908	14357	16216	14757
2012	15875	17658	16072	13716	15442	17277	15253
2013	16349	18050	16792	14296	15993	17295	15621

* According to EUROSTAT methodology, income data come from year preceding the survey.

Source: Incomes and Living Conditions of the population in Poland (report from the EU-SILC survey of 2013), Central Statistical Office, Warsaw 2014, p. 148.

The Gini Coefficient in Poland in the Years 2007-2013 with Reference to the Slovak Republic

Most countries in the European Union have a the Gini coefficient between 25 and 35. The biggest declines occurred in the new EU member states. In 2007, this value was 0.318. Then within five years, it dropped to 0.303, which constituted little less than the indicator for the “old” European Union countries.

Table 5

**Gini coefficient of equalised disposable income (source: SILC)
for the years 2007 – 2013**

	2007	2008	2009	2010	2011	2012	2013
EU (27 countries)	30.6	30.8	30.4	30.5	30.8	30.6	30.5
EU (15 countries)	30.2	30.7	30.4	30.5	30.9	30.7	30.8
New member states (12 countries)	31.8	31.3	30.7	30.3	30.5	30.3	30.3

Source: own research on the basis of Eurostat <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&plugin=1&language=en&pcode=tessi190>

In 2010, the smallest income diversity was in Slovenia (0.238), Sweden (0.241), and Hungary (0.241), while the biggest was in Lithuania (0.369), Latvia (0.361), and Spain (0.339). Analysis showed that Norway and Slovenia had the lowest levels of inequality (as measured by the Gini coefficient) in Europe in 2012, and that Spain and Latvia had the highest levels. [1]

These data confirm that the value of the Gini coefficient was the highest for the group of countries that entered the European Community in 2004 and later. In Latvia this indicator was almost 0.40 in 2006. A little bit lower indicators, (nevertheless higher than the European Union average for this period, which was 0.295), were typical in Hungary, Poland, Romania, and Bulgaria. Slovakia, the Czech Republic, and Slovenia had a much lower Gini coefficient than the EU average. The indicator for Slovenia is still the lowest in the Community, and fluctuates around 0.23.

Table 6

Gini coefficient in EU countries for the years 2007-2013

	2007	2008	2009	2010	2011	2012	2013
Belgium	26.3	27.5	26.4	26.6	26.3	26.6	25.9
Bulgaria	35.3	35.9	33.4	33.2	35	33.6	35.4
Czech Republic	25.3	24.7	25.1	24.9	25.2	24.9	24.6
Denmark	25.2	25.1	26.9	26.9	27.8	28.1	27.5
Germany	30.4	30.2	29.1	29.3	29.0	28.3	29.7
Estonia	33.4	30.9	31.4	31.3	31.9	32.5	32.9
Ireland	31.3	29.9	28.8	33.2	29.8	29.9	30.0
Greece	34.3	33.4	33.1	32.9	33.6	34.3	34.4
Spain	31.3	31.3	32.3	33.9	34.0	35	33.7
France	26.6	29.8 ^b	29.9	29.8	30.8	30.5	30.1
Italy	32.2	31.0	31.5	31.2	31.9	31.9	32.5
Cyprus	29.8	28.3	29.1	29.1	29.2	31	32.4
Latvia	35.4	37.7	37.4	36.1	35.2	35.7	35.2
Lithuania	33.8	34.0	35.5	36.9	32.9	32	34.6
Luxembourg	27.4	27.7	29.2	27.9	27.2	28	30.4
Hungary	25.6	25.2	24.7	24.1	26.9	26.9	28
Malta	26.3	27.9	27.2	28.4	27.4	27.1	27.9
Holland	27.6	27.6	27.2	25.5	25.8	25.4	25.1
Austria	26.2	26.2	25.7	26.1	26.3	27.6	27
Poland	32.2	32.0	31.4	31.1	31.1	30.9	30.7
Portugal	36.8	35.8	35.4	33.7	34.2	34.5	34.2
Romania	37.8	36.0	34.9	33.3	33.2	33.2	34
Slovenia	23.2	23.4	22.7	23.8	23.8	23.7	24.4
Slovakia	24.5	23.7	24.8	25.9	25.7	25.3	24.2
Finland	26.2	26.3	25.9	25.4	25.8	25.6	25.4
Sweden	23.4	24.0	24.8	24.1	24.4	24.8	24.9
Great Britain	32.6	33.9	32.4	33.0	33	32.8	30.2

Source: own research on the basis of Eurostat. <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&plugin=1&language=en&pcode=tessi190>

Amongst the European Union countries, Poland, in terms of the Gini coefficient, is placed between such countries as Germany, France, Italy, and Estonia. The decreasing tendency seems positive; however, despite everything, the Gini coefficient in Poland is higher than the average for countries of the European Union.

The Gini coefficient in Poland in 2013 amounted to 30.7 and approached the EU average (30.5). In case of Slovakia, the Gini coefficient in the corresponding period was much lower than the EU average and took out 24.2.

Table 7

Inequality of income distribution: Gini coefficient by regions in Poland and Slovakia EU-SILC 2013

Country	Total	Region with the highest Gini coefficient	value	Region with the lowest Gini coefficient	value
Poland	30.7	Central	33.4	South	28.7
Slovakia	24.2	Region of Bratislava	25.3	Region of Košice	21.4

Source: own research on the base of Róbert Vlačuha, Yvona Kováčová, *EU SILC 2013 Poverty indicators and social exclusion*, Štatistický úrad Slovenskej republiky, Bratislava 2014, p. 19; *Incomes and Living Conditions of the population in Poland (report from the EU-SILC survey of 2013)*, Central Statistical Office, Warsaw 2014, p. 176;

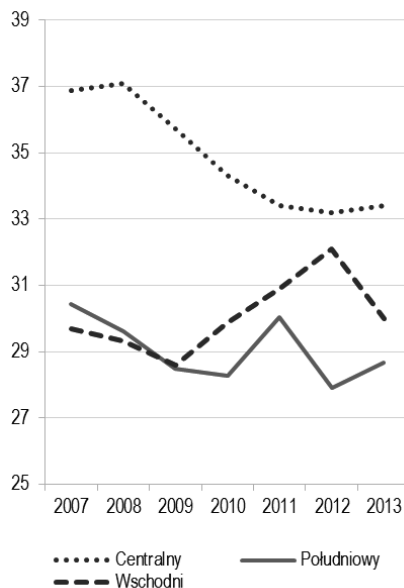
The Gini coefficient is not so huge in Slovakia. The highest value of the Gini coefficient occurred in the region of Bratislava (25.3). Regions of Banská Bystrica (25.1), Nitria (25.0), Prešov (24.5) and Žilina (24.3) have been above the average value expressed for the whole Slovakia, yet. The lowest values occurred in regions of Košice, Trnava and Trenčín (21.4, 21.6 and 21.7). [9, p. 19] As for the variation of inequalities within regions, Bratislava has traditionally had the highest disparities in income distribution. These disparities did not change in recent years. [8], p. 37]

In Poland, measures of income distribution show the highest inequality in 2013 in the wealthiest region (Centralny) and the lowest in Południowy region. The Gini coefficient in Centralny region amounted to 33.4 and in Południowy region to 28.7. [8, p. 176]

The income diversity according to regions points at income larger differences in the Centralny region, so in fact the most wealthy region. A consistent fall in the income diversity is a positive trend in the Centralny region, so the most wealthy region. In 2007–2013 income inequalities in the Centralny region, reduced from the level of 37 to the level of 33.4. In remaining regions the scale of changes wasn't noticeable.

Graph 1

The Gini coefficient for selected regions in Poland in years 2007–2013



Source: Incomes and Living Conditions of the population in Poland (report from the EU-SILC survey of 2013), Central Statistical Office, Warsaw 2014, p. 176.

The similar situation is also taking place in Slovakia. The highest income diversity considering the year 2013 took place in two Slovak regions: Bratislavsky and Banskobystricky ones. In both cases, the Gini coefficient exceeded 25.1. The lowest level of the income diversity measured with the Gini coefficient in 2013 on Slovakia range the regions Trnavsky, Trenciansky and Kosicky regions. The Gini coefficient in these three cases was lower than 24. [9, p. 19]

In case of the locality and class of the town, the income diversity measured with the Gini coefficient is the higher the bigger population lives in the city. In the years 2007 – 2013 it was the highest in case of cities with the population above 500,000. In 2013 in case of this class of the town, the Gini coefficient amounted to 32.6. In case of persons inhabiting rural areas the Gini coefficient in the corresponding period amounted to 29.1. The lowest income diversity is characteristic for cities with the population numbers below 20,000 of residents. The following graph is describing detailed changes the Gini coefficient depending for selected class of locality in 2007 – 2013 years in Poland.

Graph 2

The Gini coefficient for selected class of locality in Poland in the years 2007–2013



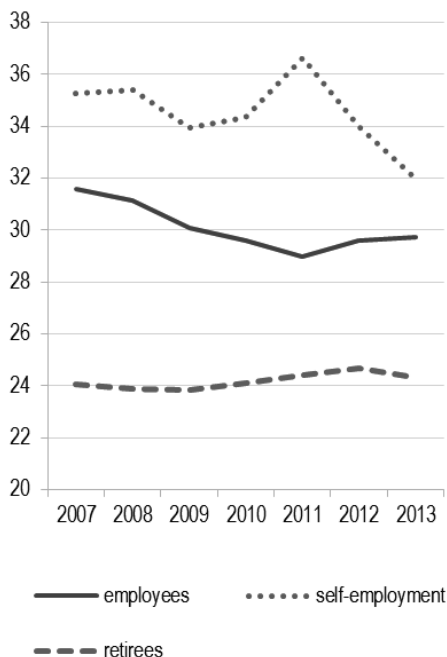
Source: Incomes and Living Conditions of the population in Poland (report from the EU-SILC survey of 2013), Central Statistical Office, Warsaw 2014, p. 159.

Analysing the level of the income diversity according to the socio-economic groups, one should state that the highest diversity was the group with the highest disposable income, that is the group of people self-employed. The average annual disposable income for households with self-employed persons' in 2013 amounted to 31 833 PLN (127.3 % in relation to the average for the total population), while the Gini coefficient for this group reached 32.0.

The lowest average annual disposable income was noted in the case of households of pensioners. It amounted only 15 644 PLN what comprise to 62.6 % towards the average for the total population. Persons from households of employees reached the annual disposable income in the amount of 27 221 PLN (108.9 % average for the country), from households pensioners 21,631 PLN (86.5 % of the average), while from farmers households 17,062 PLN (i.e. 68.5%). The most equal incomes distribution appeared in the socio-economic groups of retirees (Gini coefficient 24.3) and pensioners (Gini coefficient 25.3). [8, p. 164]

Graph 3

The Gini coefficient for selected socio-economic groups in Poland in the years 2007–2013



Source: Incomes and Living Conditions of the population in Poland (report from the EU-SILC survey of 2013), Central Statistical Office, Warsaw 2014, p. 179.

Table 8

Comparison of equivalent income inequality measures by class of locality, regions and socio-economic groups in 2013 in Poland

Gini Coefficient	Class of locality					
	rural areas	urban areas (in thousand)				
		total	below 20	20-100	100-500	500 and above
	29.1	30.0	27.6	27.9	29.6	32.6
	Region					
	Centralny	Południowy	Południowo-Zachodni	Północno-Zachodni	Północny	Wschodni
	33.3	28.7	29.4	29.7	30.3	30.0
	Socio-economic group					
	employees	self-employed	retirees	pensioners	farmers	
	29.7	32.0	24.3	25.3	30.0	

Source: own research on the base of *Incomes and Living Conditions of the population in Poland (report from the EU-SILC survey of 2013)*, Central Statistical Office, Warsaw 2014.

Summary

To sum up one should state, that there are four conclusions:

1. Disposable income inequalities measured with the Gini coefficient were higher in Poland than in the European Union average in 2013. At the same time income inequalities in Slovakia was much lower than the EU average. It is showing deeper income diversification and greater social inequalities in Poland.
2. The highest income diversity in both compared countries is in the most reach regions. In case of Poland, it is Centralny region with the capital city of Poland – Warsaw, whereas in case of Slovakia the most reach region is the Region of Bratislava with the capital city of Slovakia – Bratislava. In both cases, the Gini coefficient is much higher than the average for the given country. Nevertheless, income diversities in the most rich region of Slovakia is much lower than in the most rich region of Poland.
3. Analysing the class of locality one should state that the fundamental difference in the uneven incomes distribution in 2013 occurred between major cities (with the total population of 500 000 and more) and with other classes of the town.
4. In the case of socio-economic groups the highest income diversity concerned the wealthiest group, i.e. the group of people self-employed. The lowest average annual net disposable income was in case of households of pensioners. Also typical for this group of people was the lowest fluctuation of the Gini coefficient in the period 2007 – 2013.

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