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## **The Comparison and Evaluation of Income Inequality for the EU-27 and Polish Regions**

### INTRODUCTION

It is accepted that inequality leads to the conclusion comparing people in some way. The most general inequality is defined as the lack of equality or disparity, and the scope of this category is very broad. You can talk about the material (economic), social, professional, educational, legal, political, cultural, religious, etc. inequality. The object of each type of inequality are 'specific good' in a broad sense.

Economic literature narrows the concept of inequality to the strictly economic inequality, setting narrowly defined proportions and economics disparities and economic (e.g. inequalities in the economic development of countries or regions, the conditions and quality of life, income, etc.). Economic inequalities are often determinants of social inequality and vice versa. Economic inequality refers to material goods, creating a diverse individual people access to them, where one pole of inaccessibility is complete and the second overall to availability. Sharpest character then take the inequality, when there are such poles [Rutkowski, 2008, p. 15–20].

For their part, integral part of the economic theories of economic prosperity is the stratification and differentiation and polarization of society. In general, the issue is controversial not only that the distribution of inequalities are inevitable and even to some extent necessary and fair, but dangerous deepening of inequalities. The main discrepancy arises, therefore, discussion of the relationship 'inequality – economic growth'.

Current literature on the subject is widely divergent on the matter. As a result, the study aimed to determine the direction of the impact of income inequality on economic growth to meet the extreme three interpretations. There was, therefore, a negative impact of rising inequality on economic growth, confirming the conclusions formed the positive impact of inequality on the GDP growth rate. On the other hand, other studies done for most of the global economy, not

confirmed any impact (positive and negative) on the growth of inequality. However, separating the studied countries rich and poor draws the conclusion that there is a positive effect of inequality among the poor countries, but negative in wealthy countries. Denninger and Squire's research, which included 90 countries, have shown that the frequency of negative and positive correlation between economic growth and social inequalities is almost exactly the same common [Sen, 1973, p.1–3].

In Poland over 20-year process of socio-economic transformation is based essentially on the neo-liberal economic thought, which placed emphasis on individual creativity rather than an integrated, coherent and balanced development of society. The effects of the modernization of the market economy is not entirely correct and clearly characterized by inconsistencies, economic and social inequalities in many dimensions: national, geographic and private individuals and social groups. The result of the marginalization of the economic and social cohesion is a change in the quality of social and economic conflicts and social background, leading to a polarization of society and poverty, which leads directly to social backwardness and social exclusion of certain strata and social groups.

#### QUANTITATIVE MEASUREMENT OF INEQUALITY – GINI'S FACTOR

The implication for empirical studies of utilitarian approach is not possible. The individual utility is empirically observable. Comparisons of prosperity for different societies or social groups have to be linked with a comparison of inequality of income distribution.

In order to provide income inequality Lorenz functions is used. The shape of the Lorenz function undoubtedly presents equality and inequality of income distribution. Diagonal on the graph (linear function Lorenzo) is called the egalitarian line, all other lines lying below this line mean no egalitarian distributions or distributions more or less inequal of income. In addition to the finding or no proof of inequality decomposition, Lorenz function allows to evaluate the degree of diversification of income. Derogation in figures for the difference between a function (line) describing the Lorenz distribution of income and the egalitarian line is measured in different ways, yielding different measures of income inequality.

The most commonly used measure of inequality is called Gini coefficient [Kakwani, 1980]. This ratio is the most popular and best known parametr for rating levels of economic inequality, in a sense, reflects the social welfare compared countries (or groups). Gini coefficient of concentration factor identified by Lorenz has a value in the range [0,1], which is properly balanced (equal to the value of egalitarian 0) and uneven (a value of 1) allocation of resources (in-

come). By definition this means that the average absolute difference in income couples were randomly selected units to the average dual-income [Panek, 2011, p.71–72]. In addition to this, measures are estimated to be some other measure of income inequality measures, i.e. identification of the fractions and depth of the risk of poverty or social exclusion or differentiation factors of quintals and other which are known in the literature [EU-SILC, 2010, 2012, p. 41–42].

### GINI RATIO FOR COUNTRIES EU-27 IN 2006–2010

For the evaluation of the phenomenon there are taken steps to quantify the degree of income inequality which is measured according to the methodology based on disposable income levels of the population. Measures of income inequality are calculated on the basis of annual data from household budget surveys conducted by Eurostat, the World Bank, the Central Statistical Office. Empirically determined inequality of income distribution can be interpreted in relation to the scale, extent and differentiating factors polarizing economic standard of living. It should be noted, however, that the methodology, selection of specific tests or studies provide slightly different but comparable value. Referring to the study taken by Eurostat for the years 2006–2010 for 27 EU countries the Gini coefficient values are summarized in the tab. 1.

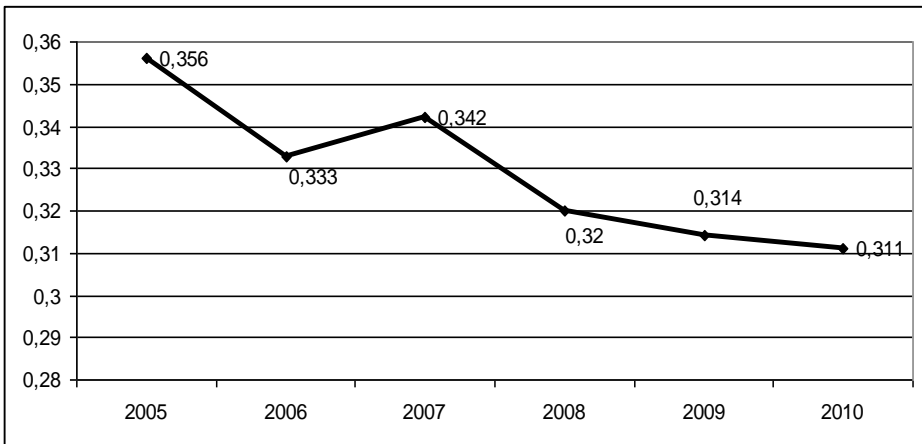
**Table 1. Ratio Gini between 2006–2010 in countries UE-27**

Country	2006	2007	2008	2009	2010
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
<b>UE-27</b>	<b>0,302</b>	<b>0,306</b>	<b>0,308</b>	<b>0,304</b>	<b>0,305</b>
Belgium	0,278	0,263	0,275	0,264	0,266
Bulgaria	0,312	0,353	0,359	0,334	0,332
Czech Republic	0,253	0,253	0,247	0,251	0,249
Denmark	0,237	0,252	0,251	0,269	0,269
Germany	0,268	0,304	0,302	0,291	0,293
Estonia	0,331	0,334	0,309	0,314	0,313
Ireland	0,319	0,313	0,299	0,288	0,332
Greece	0,343	0,343	0,334	0,331	0,329
Spain	0,312	0,313	0,313	0,323	0,339
France	0,273	0,266	0,298	0,299	0,298
Italy	0,321	0,323	0,310	0,315	0,312
Cyprus	0,288	0,298	0,283	0,291	0,291
Latvia	0,392	0,354	0,377	0,374	0,361
Lithuania	0,350	0,338	0,340	0,355	0,369
Luxembourg	0,278	0,274	0,277	0,292	0,279
Hungary	0,333	0,256	0,252	0,247	0,241
Malta	0,270	0,263	0,279	0,272	0,284
Netherlands	0,264	0,276	0,276	0,272	0,255

<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
Austria	0,253	0,262	0,262	0,257	0,261
<b>Poland</b>	<b>0,333</b>	<b>0,322</b>	<b>0,320</b>	<b>0,314</b>	<b>0,311</b>
Portugal	0,377	0,368	0,358	0,354	0,337
Romania	0,330	0,378	0,360	0,349	0,333
Slovenia	0,237	0,232	0,234	0,227	0,238
Slovakia	0,281	0,245	0,237	0,248	0,259
Finland	0,259	0,262	0,263	0,259	0,254
Sweden	0,240	0,234	0,240	0,248	0,241
Great Britain	0,325	0,326	0,339	0,324	0,330

Source: own elaboration based on <http://epp.eurostat.ec.europa.eu>

In the period 2006–2010 the average Gini index received 0.305 level for the 27 countries of the European Union. In Poland it was slightly higher than the EU average. There are countries with both lower (e.g. Sweden, Finland, the Netherlands, Austria, Czech Republic) and higher inequalities (United Kingdom, Spain, Lithuania, Latvia). Poland, therefore, belongs to the countries with rather higher level of income inequality index (in 2010, 15 countries had lower income inequality as Poland). In terms of temporal variation in household income for Polish households expressed by the Gini coefficient in 2003 household income is quite stable and remained at a similar level (see figure 1) [EU-SILC 2010, 2012, p. 144, p. 150].



**Figure 1. Ratio Gini for Poland between 2005–2010**

Source: own elaboration based on EU-SILC 2010, Informacje i Opracowania Statystyczne GUS, Warszawa, 2010, p. 146.

Knowledge about income inequality be developed further by analyzing other measures such as diversity quintal index. The values of this index for selected EU countries in 2010 are summarized in the table 2. On average in the EU over-

all disposable income of the top quintile (one-fifth of the population with the highest income) were five times higher than the disposable income of the bottom quintile (20% of the population with the lowest income).

**Table 2. Indicators diversity quintal in countries UE in 2010**

Specification	Indicators diversity quintal
<b>UE-27</b>	<b>5,0</b>
Belgium	3,7
Czech Republic	3,5
Finland	3,6
France	4,5
Greece	5,6
Spain	6,9
Deutschland	4,5
<b>Poland</b>	<b>5,0</b>
Sweden	3,5
Great Britain	5,4
Italy	5,2

Source: own elaboration based on EU-SILC 2010, GUS, Warszawa, 2012, p. 150.

According to the data, Poland is a country with a medium level as defined indicator of income inequality (5.0 in 2010). The smallest income inequality took place in Belgium, Finland, Slovenia, the Czech Republic and Hungary (the rate was more than 3), the largest – in Latvia, Romania, Lithuania, Spain and Greece (the level indicator with the range of 6–7). It is worth to note that these statistics indicate the overall intensity of inequality which does not mean that there are no internal inequalities (inside the country, region or social groups).

You can also accurately assess the degree of inequality for certain social categories (an analysis of comparative socio-economic groups) depending on the income of the differentiating factors. In Poland there is the most diversified income in the group of farmers ( $G = 0.53$ ), while the smallest income differences exist among households of pensioners (0.25–0.29). Consequently, there is higher Gini coefficient values for households in rural areas as in cities (see tab. 3).

**Table 3. Ratio Gini for Poland between 2003–2010**

Specification	2003	2004	2005	2006	2007	2008	2009	2010
<b>Poland in all</b>	<b>0,343</b>	<b>0,344</b>	<b>0,345</b>	<b>0,340</b>	<b>0,340</b>	<b>0,339</b>	<b>0,336</b>	<b>0,342</b>
– cities	0,330	0,331	0,333	0,329	0,325	0,315	0,312	0,323
– villages	0,325	0,330	0,336	0,331	0,341	0,343	0,338	0,339

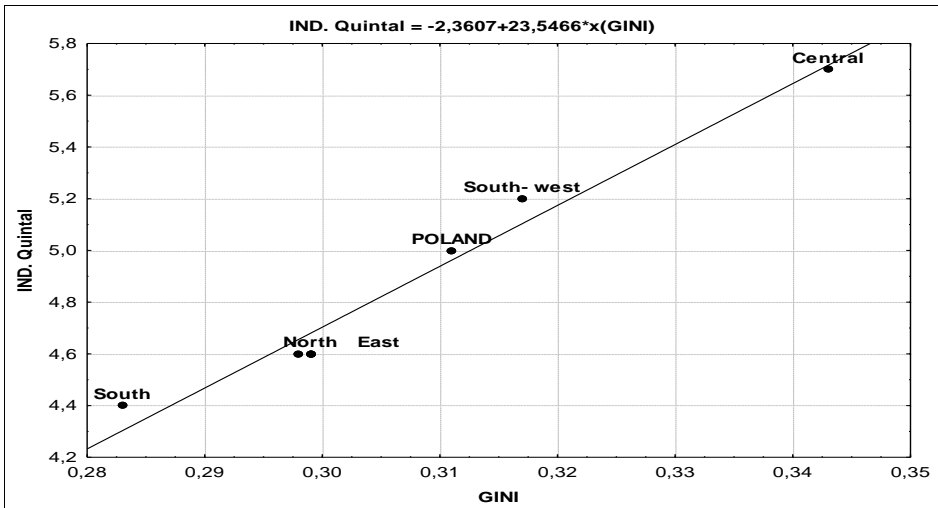
Source: own elaboration based on *Budżety gospodarstw domowych w 2010 roku*, GUS, Warszawa, 2011, p. 278.

Income inequality are also characteristic of the regions (NTS1 classification) as evidenced by the different values of the Gini coefficient and quintile ratio (tab. 4 and fig. 2). As is clear from empirical measures, the highest inequality of income distribution is associated with the central region (respectively 0.343 and 5.7) and the southwest (0.317 and 5.2). These findings relate to year 2010, although these trends, according to the statistical data, have not undergone significant changes in the last decade. Referring to the Central Statistical Office national budget survey values of the Gini coefficient in Poland were respectively: 0.3046 in 2000; 0.3243 in 2004; 0.3287 in 2005 and 0.3359 in 2006 [Aksman, 2009, p. 142].

**Table 4. Selected indicators inequality income by regions in Poland in 2010 (EU-SILC)**

Specification	Factor Gini	Indicators diversity quintal
<b>Poland</b>	<b>0.311</b>	<b>5.0</b>
Central	0.343	5.7
South	0.283	4.4
East	0.299	4.6
Northeast	0.298	4.6
Southwest	0.317	5.2
North	0.299	4.6

Source: own elaboration based on EU-SILC 2010, GUS, Warszawa, 2012, p. 144.



**Figure 2. Relationships between Gini coefficient and quintile ration in Polish regions in 2010**

Source: own elaboration.

In the figure 2 can be seen clearly that the most distant regions in ‘the field of inequality’ are south and central regions, while taking for analysis both factor Gini and diversity quintal. The southwest region places itself closest to the national average for the common “inequality income”. Afterwards follows east, northeast and west region.

Income inequalities are an important aspects of the contradiction that exists in society. They generate wealth on the one side and on the other poverty. If the scale and intensity is high inequalities have a destructive impact on the socio-economic development. They are the result of faults of social policy conducted in the past [Panek, 2011, p.11]. Evidences of this are the results for EU countries highly economically developed where measures of inequality are the lowest.

Current studies, which included 27 countries, have shown that the incidence of negative correlation between economic growth and social inequalities have been dominated in 2006–2010 (except for Polish regions where the impact of economic inequality is not unequivocal).

These results are important not only for quantitative dimension of economic theory. It is a very clear signal to the bodies of economic and social policies, at both national and regional levels. Presented above statistical measures of inequality are called in the literature as a positive (descriptive) measure, because it does not explicitly describe the concept of social welfare, but as noted by A. Sen every measure of inequality, however, is always linked to the social welfare function [Sen, 1973]. This type of analysis allows for a realistic assessment of the level of ‘equality-inequality’ in the economic prosperity and material living standards of the population.

Thus, the main challenge is to identify the cognitive mechanisms of reconciliation in the contemporary reality of economic and social criteria with the criteria of economic efficiency equitable economic and social inequalities. Detailed knowledge and exemplification of the sources is necessary, therefore, need a thorough diagnosis of the key problems of socio-economic development through advanced study of empirical evidence in order to derive lessons for the future of economic and social system in the field of material development, quality of life and well-being of the population in the EU countries.

## CONCLUSION

The need for counting measure of income inequality is inevitable and necessary. These measures provide with an indicator for the state, as it looks for policies that protect the interests of the poorest part of society. It means that there is a need for quantifying the inequality of income, its degree, scale and level.

Income inequalities of Polish population is more and more similar to the results of the EU average. This means, therefore, that the Polish population in terms of income inequality is loaded moderately profitable. The average value of the Gini coefficient is about 0.31. The most egalitarian countries in the European Union are Denmark, Sweden, Slovakia, Finland and the Czech Republic.

In the literature, there are many solutions and economic theories, but there is no satisfactory and clear ideology used throughout the world. There is no single, most perfect measure and the choice depends mainly on the purpose of the study. The functioning of the theory and empirical multiplicity of measures of inequality is certainly multifaceted and complex issue.

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## Summary

The paper presents the theoretical elements of the economic debate on the relationship between inequality and prosperity and economic growth. Quantitatively, the derogation from the egalitarian distribution of income shows the Gini coefficient. The work concerns the comparison and evaluation of income inequality based on the Gini index and other measures (indicators diversity quintal) for the EU-27 in 2006–2010. Moreover, income inequality is shown in the long term for the Poland and Europe countries and making the assessment of inequalities for certain social groups and Polish regions.



**Porównanie i ocena nierówności dochodowych dla krajów UE-27  
oraz regionów polskich**

*Streszczenie*

W pracy przedstawiono teoretyczne elementy ekonomicznej debaty o relacjach między nierównościami a dobrobytem i wzrostem gospodarczym. Odstępstwo od egalitarnego (jednakowego) podziału dochodu pokazuje ilościowo współczynnik Giniego. W części empirycznej praca dotyczy porównania i oceny nierówności dochodów w oparciu o wskaźnik Giniego oraz wskaźnik zróżnicowania kwintalowego S80/S20 dla krajów UE-27 w latach 2006–2010. Skalę nierówności dochodowych pokazano w dłuższej perspektywie w skali międzynarodowej, a także przedstawiono ocenę nierówności w odniesieniu do niektórych grup społecznych, a zwłaszcza regionów polskich.