Changes in Income Inequality in the EU Countries in 2005 – 2011

Rasa Balvočiūtė, Šiauliai University

Abstract. The paper presents a research which aims to estimate the changes in income inequality in the EU countries in the years 2005 – 2011 and to assess Lithuania’s situation in the context of these changes. The following methods were used in the study: Lorenz curve, GINI coefficient, Theil entropy measure and Hoover (Robin Hood) index. The survey results revealed that in the EU countries in 2011 comparing with 2005 citizen income inequality distribution changed significantly. Income inequality disparity between the EU countries declined, i.e. in this respect, they have become increasingly homogeneous.

Keywords: economic inequality, income inequality, disposable income.

I. INTRODUCTION

In the modern society, growing economic inequality is often seen as an inevitable effect in the world of modernization and economic development. However, it is worth noting that between the 3rd and the 7th decades of the 20th century, economic inequality fell dramatically in most countries around the world. The cause of this was welfare state concept which was introduced in many countries. New trends confirmed that economic inequality can be (at least partially) controlled through the targeted social – economic policies. To this end, it is essential to analyze the causes and changes of income inequality, to look for means allowing reducing the extent of economic inequality in the country.

Research aim: to estimate the changes in income inequality in the European Union (EU) countries in the years 2005 – 2011 and to assess Lithuania’s situation in the context of these changes.

Research methods: to estimate income inequality, earnings differentiation assessment methods have been used – Lorenz curve, GINI coefficient, Theil entropy measure and Hoover (Robin Hood) index.

Research novelty: a selected study period allowed to assess Eastern European countries (including Lithuania), which have joined the EU in the year 2004, changes in income inequality over the seven years of membership, and to compare them with the analogous indicators of the old EU member states. Income inequality changes in the research are analyzed considering economic development of the EU countries; on the basis of this analysis, possible income inequality change insights are presented.

The research results showed that income inequality in the EU countries tends to decrease, but these changes are more rapid in the old EU countries. Quick economic growth during the years 2005 – 2008 in Lithuania and other Eastern European countries did not ensure the decline in income inequality, and the economic downturn increased it even more, making it necessary to apply fiscal measures to reduce income inequality. The experience of the old EU countries suggests that property and capital taxes should be changed in order to reduce inequality. These taxes allow rating part of the “shadow” economy, ensuring stable less budget income affected by economic cycles.

II. CITIZEN INCOME INEQUALITY AND THE PROBLEMS CAUSED

Economic inequality has many different dimensions. It covers all the differences in economic property and income distribution in the society. Economic inequality issues are related to the equality ideas, namely, outcome and opportunity equality. The idea of outcome equality is usually applied to describe the countries, where individuals have similar material welfare and living conditions. According to (14), income equality, in turn, is associated with an open and fair competition and equal opportunities.

Theoretical basics on citizen income distribution were developed by the classical school economists Say and Ricardo, who distinguished functional income distribution among the factors of production. A solid contribution to modern income distribution, redistribution and inequality theory was made by the following economists: Atkinson (1975 – 2011), Bourguignon (1982 – 2000), Gottschalk (1995 – 2005), Lambert (1993 – 2007), Smeeding (1997 – 2008) and others. As noted in (13), the first global inequality calculations were made at the beginning of the 80s in the 20th century.

People all over the world are interested in income distribution, because, partially, it affects economic efficiency. Income distribution in the society determines the level of income differentiation, mainly because income differentiation is the expression of income inequality distribution.

There are different income inequality and equality definitions described in literature. As stated in (2), J. L. Grand gives several possible definitions of equality. The simplest final income equality definition implies that individuals are equal, if their income – cash and nature – are equal. However, difficulties can arise in estimating nature income.

In the beginning there was the view that income inequality depends only on individual’s own personal qualities as stated in (1). It was believed that people are different, their life goals, aspirations, needs and opportunities are different. Depending on each person’s ability, knowledge, skills, priorities, goals and other factors, personal income received is different.

There are many opinions about the problems caused by income inequality presented in scientific literature. Some of them state that increase in income inequality is the reason of the
majority of social and economic problems, but others object and believe that decline in income inequality should be treated considering both approaches:

Social equity approach – decline in income inequality is commonly seen as a positive and desirable phenomenon due to public morality and justice provisions.

Economic effectiveness approach – income inequality reduces people’s initiative. Equalizing of income leads to disappearance of work stimulus as well as reduction of profit, interest and rent destroys the tendency to save and invest. Moreover, people become less active and unwilling to take any risks, they lose their enterprising and business skills.

The following scholars can be considered to be representatives of social equity approach: G. Bechtel, (2), M. Carey (4), J. Doran, D. Jordan (5), D. Rohač (11), R. Buivydas and G. Černiauskas (3), V. Lissauskaitė (9), who claim that inequality, which is caused by different income, is the main source of most social ills. (12) points out several positions what income inequality is and why it is studied:

One group examines income inequality, because it is a potential source of social and political conflict in the society;

Others study the issue because it is a deviation from the idea of social justice;

The third group keep up to the attitude that income inequality is related to latent mental and psychosocial phenomena: discontent, inner failure feelings or potential loss of self-esteem.

In (9) it is stated that high income inequality blocks the development of the society and the state, has a very significant impact on population’s health care, educational opportunities, housing conditions and crime rate. Due to large property differences political dissatisfaction arises, which can lead to serious social upheavals.

Scientists supporting economic effectiveness approach say that together with the reduction of income inequality, notwithstanding positive social support effects, certain undesirable effects occur. M. Jėčuviienė (2009) says that such phenomenon as “addiction psychology” appears: supported people’s confidence in themselves is decreasing as well as their employment initiative. The desire to get support becomes stronger, and among the benefit recipients and tax payers there is no encouragement to work more and more creatively. In addition, A. MacEwan in (10) claims that equality is a broadly targeted value, but such policy, which would cause absolute equality, is often contradicted on the grounds that it would breach individual’s economic freedom principles and undermine the overall economy. As stated in (13), income differentiation is not a perverse phenomenon, because activities of different kind and requiring different qualification are paid for differently. However, this difference should not exceed the norms and cause significant income disparities between social groups.

It is necessary to mention two main problems of income distribution:

The first problem relates to the fact that people are different; hence, their marginal utility is different too. It is therefore possible to say – many men, many different marginal utility options.

The second problem arises from the fact that total income amount is not independent of income distribution methods.

Five main reasons why society usually seeks for more equal income distribution are distinguished in (16):

1. Unequal distribution causes more social problems than the relatively equal one.
2. Unequal wealth and income distribution in the current generation generates uneven opportunities for future generations.
3. Income and wealth inequality causes real freedom inequality. When property is distributed unevenly, people, who can live using capital investment income, have greater freedom and autonomy than those who live only earning in the labor market.
4. Bigger wealth and income inequality destroys democracy by giving some people a lot more resources to influence political processes than to the others.
5. Income inequality breaks down the community, causes envy, grudge and weakens social solidarity, which is valuable for many good aspects of the society – personal safety, respect, etc.

We can imply that income inequality is closely related to population wealth differentiation. However, population wealth differentiation does not always coincide with the income distribution. It happens because unequal income is just one of the property differentiation reasons.

Population income differentiation increases, because:
- there is no reliable and apparent connection between disposable income inequality and its growth;
- too high social expenses stop the growth of income;
- active social measures support the growth of income;
- higher income inequality (without taxes and social transfers) forms better conditions to increase social expenses;
- poverty knowledge is important in order to prevent social unrest and to encourage investment in human capital.

III. DYNAMICS OF AVERAGE DISPOSABLE INCOME PER HOUSEHOLD MEMBER IN THE EU COUNTRIES

Average disposable income is presented in purchasing power standard (PPS) that is why different countries can be compared. In Lithuania, together with other Baltic countries – Latvia and Estonia, the growth rate of average disposable income per household member was one of the highest in the EU. In Lithuania it was 6.85%, which ranked in the 5th place – only Estonia, Poland, Bulgaria and Slovakia were ahead (Figure 1). Among the EU countries, Slovakia and Bulgaria distinguished the most. Their growth rates were 14.32% and 13.02%, respectively.

In Luxembourg, during the analysis period, in 2005 – 2011 this income annually decreased –0.46% and in Britain –0.13%. In Greece average growth rate was the lowest, 0.66%.

In the year 2011 Luxembourg household members had maximum average disposable income, even 30,048 PPS and were significantly ahead of other European Union countries. From 2005 to 2011, in Luxembourg this income annually on average decreased the most, comparing with other countries. But by the average disposable income rate per household member, Luxembourg is still ahead of Austria and Cyprus,
closely ranking countries by the income value. In these countries, the analyzed revenues were a little over 22,000 PPS.

In Lithuania, average disposable income per household member in 2011 was among the lowest in the EU and reached 7,096 PPS, i.e., more than four times less than the income per a Luxembourg household member. Poorer results were observed only in Latvia (6,956 PGS), Bulgaria (6,737 PGS) and Romania (4,101 PGS).

Comparing the changes in disposable income per household member in the EU, it can be said that the fastest growth is observed in the countries with the lowest disposable income. And conversely, the disposable income rates in the countries with the highest disposable income per household member have a tendency to shrink or grow at a diminishing pace. Norway and France can be noted as exceptions. Over the analysis period in these countries households had one of the highest disposable income rates, 22,378 and 21,570 PGS respectively, and, at the same time, the growth of this revenue was one of the fastest, 4.77% and 4.52% respectively.

Fig. 1. Average increase / decrease rate of disposable income per household member in the EU countries in 2005 – 2011.

Source: elaborated by the author, based on European Commission Statistical Office data (6).

IV. CITIZEN INCOME INEQUALITY DISTRIBUTION IN THE EU COUNTRIES UNDER THE THEIL ENTROPY MEASURE

Theil entropy measure (1967) is used to evaluate the evolution of income inequality between the European Union countries and within the EU countries in the year 2011 comparing with the year 2005. As noted in (6), the advantage of Theil entropy measure is that it allows identifying inequality proportions that exist between different countries and within the countries.

Making it easier to understand to what extent income distribution is uneven in the European Union and how Lithuania looks in this context, the map of Europe in Figure 2 visually presents Theil entropy measure distribution in the countries. The given scale distinguishes areas in 0.01 point range: from 0.04 to 0.08. The higher is the value (higher entropy), the more uneven distribution of income (darker color indicates a higher value) persists.

In the year 2005 Lithuania was in the second position among the states facing problems, i.e. the country with the almost maximum Theil entropy measure. Its value was 0.091. Only Portugal was in a worse position, Theil coefficient of which reached 0.104. Latvia, Poland and the United Kingdom were behind Lithuania by some points, their coefficients proportionately were 0.09, 0.087 and 0.083, respectively. In Lithuania Theil’s rate was two times higher than the average in the European Union. Meanwhile, the best result was observed in the Scandinavian and Central Europe countries: the Czech Republic, Finland, Denmark, Slovenia, and Sweden.

In the year 2011, comparing with the year 2005, the situation changed significantly. There were fewer countries with very high Theil entropy measure, but, at the same time, fewer countries with a low coefficient. We can state that disparity in income inequality between the EU countries declined. From 2005 to 2011 Lithuania was among the countries, which had the highest rate of decline (i.e. countries whose situation improved) – the absolute change was 0.017. The highest decline rate was in Portugal: from 0.104 to 0.083. In Germany, France and Denmark income inequality increased the most.

In 2011, Lithuania with regard to Theil entropy measure got closer to 2011 years’ European Union national average, which was only 15 percent higher. (European Union countries’ average was 0.064, Lithuania’s – 0.074). Latvia in the year 2005 had a slightly lower Theil measure than Lithuania (0.09), and together with Lithuania and Portugal took the first three places among the countries with the most unequal income. In 2011 Latvia and Portugal remained among three worst performing countries, while Lithuania considering income inequality already was in the 20th place of the 27 European Union countries.
V. LITHUANIA AND THE EUROPEAN UNION INCOME INEQUALITY USING THE LORENZ CURVE AND THE HOOVER INDEX

Figure 3 presents Lorenz curves in Lithuania in the years 2005 and 2011. They show what part of income was received by a certain layer of society, for example, in 2005 50% of household members got 26% of the total revenue. And in 2011 the same part of the household members received 27% of the total revenue. The Lorenz curve can also set one of the key measures of income inequality – Hoover (Robin Hood) index. This index is the maximum vertical distance between the equality line and the Lorenz curve. Figure 3 demonstrates the difference between the Hoover index in 2005 and in 2011. In 2005 the Hoover index was approximated so that the desirable income would distribute evenly, it was necessary that a household member, receiving more than average income, would give 25.9% of their household income to those whose income was lower than average. In 2011 uneven income decreased and the Hoover index was 23.4%, i.e. 2.5% less than in 2005. It means that income inequality in the period 2005–2011 among household members decreased.

Figure 4 shows the change in the Lorenz curve of the European Union and the Hoover index in the periods of 2005 and 2011. During the analyzed period, the Lorenz curve got closer to the diagonal, showing that income distribution became more even. This influenced the Hoover index decrease: from 2005 to 2011 it dropped by 0.04%, i.e. it decreased from 21.5% to 21.1%. Comparison of the Lorenz curves for Lithuania and the European Union showed overall downward trend. However, income inequality decline in Lithuania was still faster – it reached 2.5%.

Although the GINI coefficient started to be applied in 1912, so far it remains the most popular indicator of income inequality measurement. Figure 5 presents variation of this coefficient during the entire analyzed period (2005–2011) in the European Union and Lithuania. Comparing with the European Union average, GINI coefficient in Lithuania varied very irregularly. From 2005 to 2008 it declined – on average by 0.84% annually. Since the economic crisis in 2008 this ratio started to go up dramatically and in the year 2010 it reached the highest peak during the entire analyzed period – 36.06%. Since 2008 to 2010 it increased by 1.34%. The situation changed dramatically during the last years of the analyzed period (2011). GINI coefficient fell to the lowest point (32.38%) from the entrance
date to the European Union and in the analyzed period mostly approached the EU average (30%). This reduction rate was 3.68%. Lithuanian Department of Statistics explains this decline by the change of methodology, since it is obvious that such reduction is unlikely.

In contrast to Lithuania, the EU average GINI coefficient from 2005 to 2011 was very even and varied from 29.3% (2005) to 30% (2011).


Although GINI coefficient in Lithuania in the last years analyzed declined, both this and other income inequality indexes were among the highest in the EU.

According to the average GINI coefficient, all 27 EU countries can be divided into three groups (Table 1).

<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>GROUPING OF EUROPEAN UNION COUNTRIES BY THE GINI COEFFICIENT</th>
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</thead>
<tbody>
<tr>
<td>1st group</td>
<td>GINI</td>
</tr>
<tr>
<td>Latvia</td>
<td>36.4</td>
</tr>
<tr>
<td>Portugal</td>
<td>35.6</td>
</tr>
<tr>
<td>Lithuania</td>
<td>34.9</td>
</tr>
<tr>
<td>Romania</td>
<td>34.2</td>
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<tr>
<td>Greece</td>
<td>33.5</td>
</tr>
<tr>
<td>Great Britain</td>
<td>33.1</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>32.7</td>
</tr>
<tr>
<td>Poland</td>
<td>32.4</td>
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<tr>
<td>Estonia</td>
<td>32.3</td>
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</tbody>
</table>

In the 1st group, almost all countries are developing (except Great Britain) and the highest income inequality is characteristic of them. According to Kuznets hypotheses in (8), it can be said that in the developing countries income inequality increases as the economy grows. In these countries, as the market relations dig in, the focus is on the country and business development. Dominant economic policy could lead to increasing income differentiation, since many countries were governed by conservative political forces that traditionally support big business and pay less attention to social programs.

The 2nd group comprises countries with lower income inequality and old market relations traditions, where income inequality tends to decrease during the economic growth period. However, during the analysis period, these countries also had financial difficulties (in particular, some of the PIIGS countries), so they also paid less attention to income inequality.

Countries, placed in the 3rd group, are among the strongest in the EU (Scandinavian countries: Sweden, Finland, Denmark). Kuznets curve and his hypothesis would be a logical explanation why income inequality decreases during the period of economic growth in this particular group of countries. Citizen income inequality begins to decline when a country reaches a certain average income level and when industrialization processes, democratization and the growth of the state welfare allow reaping the benefits resulting from the rapid growth. Also most of the 3rd group countries, especially the Scandinavian countries, are traditionally socially-oriented states.

VI. CONCLUSIONS

In the EU countries in 2011 comparing with 2005 citizen income inequality distribution changed significantly. At the end of the period there were fewer countries with a very high income inequality, but at the same time, fewer countries with low income inequality. We can imply that income inequality disparity between the EU countries declined, i.e. in this respect, they have become increasingly homogeneous.

During the analysis period, income inequality in Lithuania changed very irregularly, in comparison with the EU average. Almost during the entire period (except 2006 and 2010) GINI coefficient increased in Lithuania, while in the EU it decreased and vice versa.

According to the received results, Lithuania can be included into the first group where countries income inequality increases during the economic growth. However, economic growth and income inequality dependence research results can be interpreted in two ways: by making the assumption that the division of countries into separate groups according to income inequality essentially corresponds to the countries’ development level. We can use Kuznets hypotheses about the fact that developing country income inequality increases until it reaches the point when this index starts to decline. Also, by analyzing the composition of the existing groups and identifying positive and negative income inequality changes during the economic growth period, social, historical and political development tendencies of the groups should be taken into account.

Inequality can be reduced by changing tax rates, specifically property and capital taxes. These taxes allow ensuring partial taxation of “shadow” activities, ensure stable budget income. Such fees are less affected by economic cycles and create a foundation to introduce a progressive tax system.

REFERENCES

Раса Валоевич, Евростат Савиенибас вальсту лиеджотаву индексу нелигумдис измаинас 2005. – 2011 гада


Існаванне група заса ізняўся неавав підзетавання индексу нелигумдис із маінання дзяляччаў Латвія, Літва, Польша, Румынія, Грэцыя, Балгарыя, Латвія, Росія і Беларусь. Неавав чынаўся підзетавання неавав підзетавання індукаці, што павінна навучтетавання вязкай інвестыцыйны індексу нелигумдис із маінання памінаццю, дзецьі фінансыччын дзейнасцю, дзецьі гусецтва неавав підзетавання памінаццю змаінання дзяляччаў.

II групавая ведо мальота заса ізняўся неавав підзетавання індексу нелигумдис із маінання дзяляччаў, ў якім ровершалося гэта кривая Лоренца інвестыцыйны индексу нелигумдис із маінання брало палітычнае фінансыччын дзейнасцю, што павінна навучтетавання памінаццю гусецтва неавав підзетавання памінаццю інвестыцыйны індексу нелигумдис із маінання памінаццю змаінання дзяляччаў.

III групавая ведо мальота заса ізняўся неавав підзетавання індексу нелигумдис із маінання памінаццю гусецтва неавав підзетавання памінаццю інвестыцыйны індексу нелигумдис із маінання памінаццю змаінання дзяляччаў. Існаванне групавая ведо мальота заса ізняўся неавав підзетавання індексу нелигумдис із маінання памінаццю гусецтва неавав підзетавання памінаццю інвестыцыйны індексу нелигумдис із маінання памінаццю змаінання дзяляччаў.

Раса Балцуюці. Изменения степени неравенства доходов населения стран Европейского Союза в 2005 — 2011 году

Целью представленного в статье исследования является определение изменений степени неравенства доходов населения стран Европейского Союза (ЕС) в 2005 – 2011 году и оценка ситуации в Литве в контексте данных изменений. Для оценки степени неравенства доходов применяются показатели оценки дифференциации доходов: кривая Лоренца, коэффициент Джини, индекс энтропии Тейла и индекс Гувера (Робин Гуда). Анализ изменений степени неравенства доходов в исследовании проводится с учетом экономического развития стран ЕС, на основании данного анализа представлены прогнозы возможного изменения степени неравенства доходов.

Исследование показало, что степень неравенства доходов населения стран ЕС имеет тенденцию уменьшаться, однако эти изменения происходят быстрее в данных странах - членах ЕС. По методу Джини 27 стран-членов ЕС можно разделить на три группы: В 1-й группе почти все страны являются развивающимися (за исключением Великобритании), и для них характерно самое большое неравенство доходов. Основываясь на гипотезах Кунчеза, можно утверждать, что степень неравенства доходов населения развивающих стран (Латвия, Литва, Португалия, Румыния, Греция, Болгария, Эстония, Польша) увеличивается с ростом экономики. При упрочении в этих странах рыночных отношений минимальное выражение уделяется обогащению страны, развитию бизнеса, а меньше внимание уделяется социальным программам.

2-ю группу составляют страны с меньшей степенью неравенства доходов и старыми традициями экономики, в которых степень неравенства доходов имеет тенденцию уменьшаться в период роста экономики. Однако в 2005 – 2011 гг. в этих странах также наблюдались финансовые трудности (особенно в странах группы РПС), поэтому здесь тоже уделялось меньше внимания развитию экономики.

Составляющие 3-ю группу страны являются одними из самых сильных в ЕС в экономическом отношении (Швеция, Финляндия, Дания). Кривая Кунчеза и его гипотеза логически объясняют, почему степень неравенства доходов населения этих стран уменьшается с ростом экономики. Степень неравенства начинает уменьшаться тогда, когда достигается определённый уровень среднего дохода населения, а процессы индустриализации, демократизации и рост благосостояния государства позволяют извлечь выгоду, которую приносит быстрый рост. Большинство входящих в 3-ю группу стран, особенно скандинавские страны, также традиционно являются социально ориентированными государствами.