

# To What Extent Do Social Benefits and Income Tax Alter Income Distribution in Poland?\*

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## **Abstract**

The paper aims at evaluating redistributive effect of personal income tax and social benefits in Poland, i.e. redistributive impact of net tax. In this study, the Lorenz Curve approach, including income distribution parameters is applied; the fiscal system redistributive effect is measured in relative terms and the Kakwani decomposition is used. The methodology is applied to the data of Polish households in the period 2008–2013 (in each year, the size of the empirical sample is about 37 000 units). The performed analysis showed that tax-benefit system reduced income inequality by 19.84% on average. The net tax redistributive impact was mainly the result of large redistributive influence of social benefits, whereas redistributive effect of income tax was much weaker. The re-ranking effect was the factor which lowered the overall net tax redistributive effect.

**Keywords:** tax-benefit system, income redistribution, the Gini coefficient, the Kakwani decomposition.

**JEL Codes:** C10; D31; H23, H24

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## 1. Introduction

The primary aim of the paper is to evaluate redistributive effect of social benefits and personal income tax in Poland in 2008–2013, and to identify the main factors which contribute to this effect. The study uses the theoretical approach of evaluating redistributive effect of given fiscal instrument which is based on Lorenz Curve framework, including the Gini coefficient as income inequality measure; the methodology was developed by Kakwani (1977a; 1977b), Atkinson (1980), Plotnick (1981), Aronson *et al.* (1994), and van de Ven *et al.* (2001). To assess empirically the overall distributional impact of the fiscal system, the micro data on Polish households covered by Household Budget Surveys conducted by the Central Statistical Office in 2008–2013 is used. In each year, the size of the empirical sample is about 37 000 units.

Concerning the most recent works which refer to redistributive impact of tax-benefit system in Europe, Paulus *et al.* (2009) implemented tax-benefit micro-simulation model for the enlarged EU, showing that member states vary in the fiscal system income equalizing effect: the Nordic and the continental countries are characterized by lower income inequality and a higher degree of redistribution, as compared to the Southern and the Anglo-Saxon countries. As regards Poland, the income redistribution through social benefits is large, whereas the impact of taxes is the smallest in the whole sample. Urban (2008) showed that, in Croatia in 2005, PIT, social security contributions, public pensions as well as other social benefits reduced income inequality by about 40%. Relying on EU-SILC database, Zaidi (2009) has shown that in 17 EU countries in 2006, PIT, social security contributions, taxes on wealth and social benefits including old-age pensions, lowered income inequality by 43.38% on average (this result can be seen after comparing the average Gini coefficient of pre-fiscal incomes and the average Gini coefficient of post-fiscal incomes). According to Fuest *et al.* (2009), in the enlarged EU in 2007, redistributive effect of tax-benefit systems was at 14.92% on average, but, contrary to the aforementioned studies, the effect was understood as percentage change in Generalized Entropy (income inequality index) (in this work, the authors distinguished between the standard approach to explore redistributive impact of different tax and benefit instruments and the factor source decomposition approach).

To review the previous research in the field of income redistribution in details see, for example, Figari and Verbist (2014), and Urban (2009) (Urban provided overview which classifies empirical studies according to income inequality indices, fiscal coverage, data sources and equivalence scales which were used). Summarizing the overview, studies that empirically investigate redistributive effect of tax-benefit systems in CEE countries are still rather rare.

This paper is a follow-up to a series of works on income redistribution in Poland by Aksman (2010a; 2010b), using the same methodology, but a more recent

time period is covered. In relation to past papers of Aksman, in this article, within empirical sample statistical processing, the modified OECD equivalent scale is used and this allows to compare the obtained results with recent international studies on income distribution.

The article is structured as follows. Section 2 describes income inequality and tax-benefit system in Poland in the past. Section 3 presents the methodology which was used. Section 4 discusses the empirical sample of the Polish households. Section 5 deals with empirical research results. Section 6 points to the most important conclusions.

## **2. Income inequality and tax-benefit system in Poland**

All empirical studies on income inequality in Poland reported growth of income disparities since the beginning of transformation till the middle of the past decade (Aghion, Commander 1999; Flemming, Micklewright 2000; Podkaminer 2003; Kot 2004). For example, according to Grosfeld and Senik (2008), the Gini coefficient of final income rose from 0.325 in 1992 to 0.371 in 2005. In general, the crucial reasons for the increase in income inequality were as follows: integration of the Polish economy with the world economy; liberalization of the capital market which allowed for the flow of foreign capital, and privatization which resulted in higher efficiency, but at the cost of higher salary disparities.

Considering income inequality level since 2005, however, the evidence is not very clear. Eurostat reports that over the period 2005–2013, income inequality has steadily declined: the Gini coefficient dropped from 0.356 to 0.307 (table 1). But these results are based on Survey on Income and Living Conditions (SILC), and implementation of this survey in Poland for the first time in 2005 led to methodological problems which probably resulted in overestimation of initial income disparities. Other studies imply that income inequalities stayed almost unchanged. As regards studies relying on Household Budget Surveys (HBSs) conducted by the Central Statistical Office, the Gini coefficient was 0.345 in 2005, and it was 0.338 in 2012 (Central Statistical Office 2013). Following Brzezinski (2013), the Gini coefficient in Poland was 0.313 in 2004, and it was 0.319 in 2010. According to studies based on Social Diagnosis Surveys (SDSs) conducted by Council for Social Monitoring, the Gini coefficient amounted to 0.3301 in 2005, and it amounted to 0.3393 in 2011 (Panek *et al.* 2011).

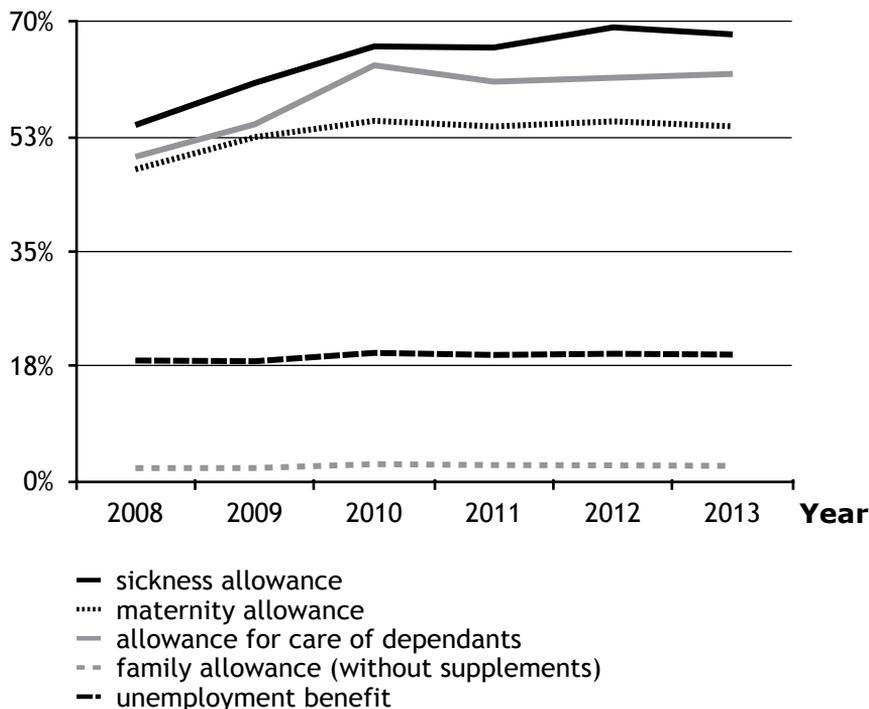
**Table 1. The Gini coefficient of equivalised disposable income in European Union, 2005–2013**

	2005	2006	2007	2008	2009	2010	2011	2012	2013
<b>Poland</b>	0.356	0.333	0.322	0.320	0.314	0.311	0.311	0.309	0.307
<b>EU</b>	0.306	0.303	0.306	0.309	0.305	0.305	0.308	0.304	0.305

Note: data for the period 2005–2009 refer to 27 countries; data for the period 2010–2013 refer to 28 countries  
Source: Eurostat (Income and Living Conditions, Income Distribution).

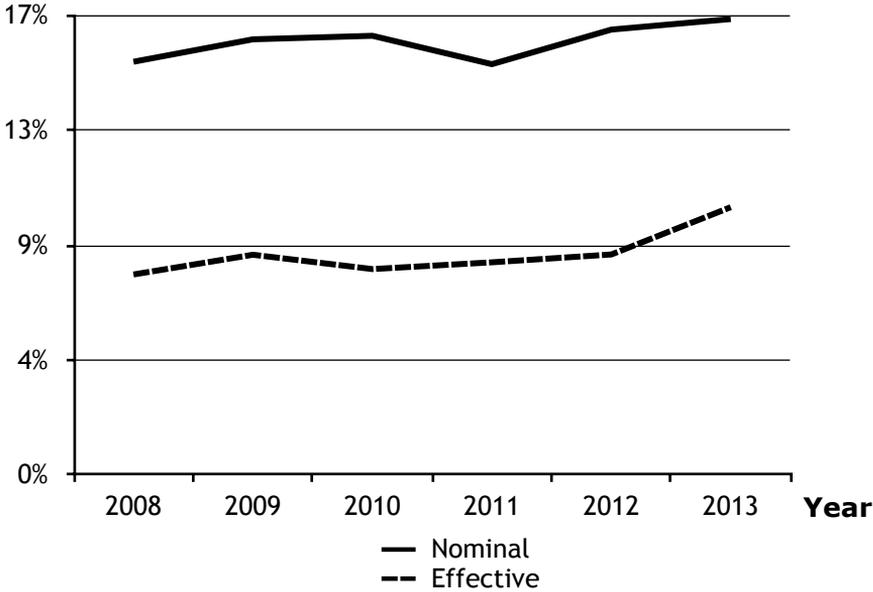
Referring to social benefit system in Poland after 2005, the rules of financing public transfers were not changed as frequently as during the first phase of transformation process. This applied mostly to benefits covered by insurance system, including sickness allowance, maternity allowance, care allowance and rehabilitation-related benefits. The amount of non-insurance-scheme-benefits, however, was nominally increased, for example, the increase in family-related benefits in 2006, 2009 and 2012 and social assistance in 2006 and 2012 (in the period 2008–2013, child-rising allowance rose by 65%, and welfare basic allowance rose by 27% in nominal terms, but it is necessary to remember that the initial amounts of these transfers were very low). Since, in the past, altogether considered benefits were highly dispersed (a large number of families was receiving benefits of low value), successive governments continued to depart from universal benefits in favor of selective benefits. Unemployment compensation program was a question not so much of changing the benefit amount but of restricting eligibility for unemployment-related benefits. Of course, fundamental modification was the pension reform legislation of 2013 that rises retirement age to 67 from 65 for men and 60 for women (starting in 2013, the retirement age is increased by three months each year).

The level of social benefits as a percentage of average gross salary in the economy in 2008–2013 is presented in Figure 1. It can be seen that public transfers related to gross salaries steadily increased between 2008 and 2010, and that this ratio was stagnating during the next three years.

**Figure 1. Social benefits in relation to average gross salary, 2008–2013**

Source: Statistical Yearbook of the Republic of Poland, 2008–2013, The Central Statistical Office, Warsaw, Poland.

Concerning the PIT in Poland, the tax is mostly levied on income from various types of employment relationships, income from non-agricultural economic activity, retirement pensions and disability pensions. Tax-free amount is very low – it is usually perceived as tax concession of token value. The tax exemptions cover, in total, about 100 types of income sources; they refer first of all to income from agricultural and forest activity, family-related benefits and social assistance. PIT is predominantly paid by general terms, that is to say, according to progressive tax scale. In the period 1998–2008, tax rates amounted to 19%, 30% and 40%; since 2009, only two tax rates have been in force: 18% and 32%. The divisions at which tax rates change in a progressive tax scale are set up with no account to actual income distribution in population, and that is why, in 2008, about 92% of all taxpayers fell into the lowest income bracket, and, in 2009–2013, about 97–98% of them got into the lowest income bracket. Contributions to National Health Insurance system can be deductible from PIT due, of course on a limited basis.

**Figure 2. Nominal and effective tax burden (%), 2008–2013**

Note: Nominal and effective tax burden is calculated with respect to gross income after deduction of social insurance contributions.

Source: Information on Personal Income Tax, 2008–2013. Department of Income Taxes, Ministry of Finance in Poland, Warsaw.

Figure 2 shows the nominal and effective PIT rates in 2008–2013. In the analyzed period, nominal tax rate was in the range from 15.19% to 16.86%, and effective tax rate reached the level from 7.41% to 9.90% (effective tax rate is equal to the ratio of tax due to gross income less social insurance contributions). Speaking about 2013 in details, effective tax rate amounted to 8.05% in the lowest income bracket, and it amounted to 17.72% in the highest income bracket.

### 3. Theoretical approach

Net tax is defined as a difference between income tax and social benefits:

$$NT = T - B \quad (1)$$

Redistributive effect of net tax can be expressed as the relative difference between the Gini coefficient of original income and the Gini coefficient of disposable income:

$$RE_{NT,X} = \frac{G_Z - G_X}{G_X} \quad (2)$$

where:  $G_Z$  is the disposable income Gini coefficient and  $G_X$  is the original income Gini coefficient.

Recalling that the Lorenz Curve of original income is a weighted average of concentration curve of disposable income, concentration curve of social benefits and concentration curve of income tax (see, for example, Creedy 1997; Kakwani 1977a; Lambert 2001):

$$L_X = (1 + b_X - t_X)L_{Z,X} - b_X L_{B,X} + t_X L_{T,X} \quad (3),$$

the following relationship holds:

$$G_X - C_{Z,X} = \frac{b_X(G_X - C_{B,X}) + t_X(C_{T,X} - G_X)}{(1 + b_X - t_X)} \quad (4)$$

where:  $b_X$  is the average benefit rate,  $t_X$  is the average tax rate,  $L_{Z,X}$  is the disposable income concentration curve,  $L_{B,X}$  is the benefit concentration curve,  $L_{T,X}$  is the tax concentration curve,  $C_{Z,X}$  is the disposable income concentration coefficient,  $C_{B,X}$  is the benefit concentration coefficient and  $C_{T,X}$  is the tax concentration coefficient (all variables are calculated with respect to original income).

Substituting equation (4) into formula (2), decomposition of the net tax redistributive effect  $RE_{NT,X}$  is obtained:

$$\begin{aligned} RE_{NT,X} &= \frac{1}{G_X} \left[ R_{NT,X} - \frac{b_X K_{B,X} + t_X K_{T,X}}{(1 + b_X - t_X)} \right] \\ &= \frac{(1 + b_X - t_X)R_{NT,X} - b_X K_{B,X} - t_X K_{T,X}}{G_X + C_{B,X}b_X - C_{T,X}t_X + b_X K_{B,X} + t_X K_{T,X}} \\ &= \frac{(1 + b_X - t_X)R_{NT,X} - b_X K_{B,X} - t_X K_{T,X}}{(1 + b_X - t_X)C_{Z,X} + b_X K_{B,X} + t_X K_{T,X}} \end{aligned} \quad (5)$$

where:  $R_{NT,X}$  is the re-ranking effect coefficient ( $R_{NT,X} = G_Z - C_{Z,X}$ ),  $K_{B,X}$  is the benefit progressivity coefficient ( $K_{B,X} = G_X - C_{B,X}$ ) and  $K_{T,X}$  is the tax progressivity coefficient ( $K_{T,X} = C_{T,X} - G_X$ ).

According to formula (5), the net tax redistributive effect depends on the average benefit rate, the benefit progressivity, the average tax rate, the tax progressivity, the re-ranking effect and the disposable income concentration.

If re-ranking effect arises,  $R_{NT,X}$  is positive, otherwise the coefficient is equal to zero. If social benefits are regressive (progressive) with respect to original income, leading to lower (higher) income disparities,  $K_{B,X}$  is positive (negative). If the benefits are proportional, having no impact on income inequality,  $K_{B,X}$  equals zero. A positive (negative) value of  $K_{T,X}$  occurs if income tax is progressive (regressive) with respect to original income, and thus if it results in decreasing (in-

creasing) income inequality.  $K_{T,X}$  equals zero if the tax is proportional with no influence on income disparities.

The re-ranking effect coefficient is due to Atkinson (1980) and Plotnick (1981), and the progressivity coefficients are due to Kakwani (1977b).

If  $R_{NT,X} = 0$ , differentiating  $RE_{NT,X}$  with respect to  $b_X$ ,  $K_{B,X}$ ,  $t_X$  and  $K_{T,X}$ , yields:

$$\begin{aligned} \frac{\partial RE_{NT,X}}{\partial b_X} &= \frac{(t_X - 1)K_{B,X} + t_X K_{T,X}}{(1 + b_X - t_X)^2 G_X} & \frac{\partial RE_{NT,X}}{\partial K_{B,X}} &= \frac{-b_X}{(1 + b_X - t_X)G_X} \\ \frac{\partial RE_{NT,X}}{\partial t_X} &= \frac{-[(1 + b_X)K_{T,X} + b_X K_{B,X}]}{(1 + b_X - t_X)^2 G_X} & \frac{\partial RE_{NT,X}}{\partial K_{T,X}} &= \frac{-t_X}{(1 + b_X - t_X)G_X} \end{aligned}$$

In the relevant literature, redistributive effect of net tax is usually measured as the absolute increase in the Gini coefficient:

$$\begin{aligned} RE_{NT,X}^A &= G_X - G_Z \\ &= \frac{b_X K_{B,X} + t_X K_{T,X}}{(1 + b_X - t_X)} - R_{NT,X} = V - H - R \end{aligned} \quad (6)$$

The formula (6) allows us to analyze the problem of horizontal inequity (unequal treatment of equals), because  $RE_{NT,X}^A$  can be decomposed into vertical effect, horizontal effect and re-ranking effect; it was firstly shown by Aronson *et al.* (1994). Anyhow, if the analysis aims at identifying relative change in income inequality due to net tax as such, for example in order to make intertemporal comparisons, cross-regional comparisons or cross-country comparisons, it is useful to use the relative measure, according to formula (5).<sup>1</sup>

<sup>1</sup> Kakwani (1977a) decomposed redistributive impact of personal income tax into average tax rate and tax progressivity, applying the procedure to empirical investigation of PIT in Australia, Canada, the United Kingdom and the United States. Atkinson (1980) and Plotnick (1981) pointed to necessity to extend the Kakwani decomposition for re-ranking effect, namely the effect which assumes that paying income tax can lead to a change in taxpayers position in the post-fiscal income distribution, as compared to their position in the pre-fiscal income distribution. Aronson *et al.* (1994), using the decomposition of the post-tax Gini coefficient across groups of pre-tax equals (groups of taxpayers with the same gross income), decomposed overall tax redistributive influence into vertical effect, horizontal effect and re-ranking effect. Van de Ven *et al.* (2001) improved the statistical method to specify the groups of pre-tax equals, and their findings were illustrated by measuring income equalizing effect of fiscal system in Australia. The above-described methodology is mostly used with respect to redistributive impact of personal income tax, and it is much less adopted as regards redistributive influence of both social benefits and the income tax.

A question of choosing appropriate reference income base as part of the measurement of net tax redistributive effect was analyzed by Lerman and Yitzhaki (1995), and the problem of identifying the contribution of individual tax-benefit instruments to the overall redistributive impact was addressed by Immervoll *et al.* (2005), and Kim and Lambert (2007).

#### 4. Empirical sample

HBSs in Poland in 2008–2013 provided source of data for the empirical study. Using this micro data base, it is possible to assess households income distribution and the extent to which social benefits and personal income tax influence this distribution. Nevertheless, it is also necessary to remember about main defect of this data source: in the case of many households, income levels are underestimated. In the examined years, the empirical sample ranged from 37 031 households to 37 427 households.

With respect to household sample, the following weights were assigned: number of persons in household, place of living (four different city sizes, according to the number of citizens and village) and main source of maintenance. Obviously, it was done in order to decrease a margin of an error while generalizing the HBSs' results to the whole population of Polish households.

In the next step, for every household in the empirical sample, both current original income and current disposable income were recognized. Consistently with the methodology which was described in the previous section, household's gross income was composed of original income and social benefits, and disposable income was equal to gross income minus income tax.

The original income was understood as the sum of earnings from all types of employment relationships, income from agricultural activity, private transfers, some kinds of insurance compensations as well as old-age pensions. Therefore, it was assumed that public old-age pensions are compulsory savings under social insurance system.

Social benefits covered all registered in-cash benefits, but with the exclusion of old-age pensions (as the latter were already included in the original income category): child allowance, maternity allowance, birth allowance, social assistance, housing allowance, benefits in case of sickness or injury, compensation for occupational accidents and diseases, education-related transfers (mostly scholarships and study grants), unemployment insurance benefits, unemployment assistance, training allowance, and placement benefits.

As concerns the personal income tax, it has to be noted that the tax registered under HBSs is partially underestimated, and for this reason arithmetic simulation was adopted, given individual and family characteristics. For simplicity, it was

assumed that PIT is paid by households members by general terms, i.e. according to progressive tax scale. In the case of most income sources, households disposable income was calculated taking into account both a general tax relief, tax-deductible costs, social insurance contributions and health insurance contributions. Moreover, to allow for possibility of different tax concessions for which taxpayers can be eligible, income tax was corrected by surcharges and overpayments cleared by revenue offices (surcharges and overpayments reported under HBSs were used to estimate the average correction and standard deviation in each gross income decile group).

To adjust household's income for differences in household size and demographic structure, equivalent income was identified, and the modified OECD equivalent scale was used:  $f = 1 + 0.5(n_A - 1) + 0.3n_C$ , where:  $n_A$  is the number of adults in the family (equal or over 14 years old) and  $n_C$  is the number of children. This equivalent scale is today widely used in various socio-economic studies on income distribution, so it allows for comparability of the obtained results (the choice of the equivalent scale factor affects the empirical results). Its basic weakness is, however, that it does not distinguish between the sex of household members and the age of children in a family. Besides, both original income and disposable income appointed to households in a given year underwent indexation by the Central Statistical Office consumer price index, and the reason for this was, of course, the necessity to eliminate the inflation factor.

Thus, the statistically processed household sample was characterized by a distribution of equivalent pre-fiscal income and post-fiscal income, as well as equivalent social benefits and income tax.

## 5. Empirical observations

**Table 2. The original income Gini coefficient, the disposable income Gini coefficient and the net tax redistributive effect, 2008–2013**

Year	$G_X$	$G_Z$	$RE_{NTX}$
2008	0.3867	0.3074	-0.2050
2009	0.3835	0.3055	-0.2034
2010	0.3889	0.3118	-0.1981
2011	0.3837	0.3084	-0.1964
2012	0.3925	0.3188	-0.1877
2013	0.3842	0.3075	-0.1995

Source: own calculations based on HBSs.

The original income Gini coefficient assumed the lowest value of 0.3835 and it assumed the highest value of 0.3925, therefore, it hardly fluctuated (as it was explained in section 4, this category of income comprised mainly income from

various types of employment relationships, specifically both earnings from hired work and self-employment earnings) (Table 2). With reference to the Gini coefficient of disposable income, it was computed at 0.3055 in 2009 (the lowest level) and it was computed at 0.3188 in 2012 (the highest level), hence, it stayed at almost constant level as well. Thus, in contradiction to the Eurostat statistics, but similarly to other studies based on HBSs or SDSs, the obtained results confirmed that after 2005 income disparities in Poland remained nearly unchanged. A key factor in explaining the pre-fiscal income inequality stagnation was the unfluctuating earnings disparities.

Comparing the above-quoted values of the Gini coefficients, it is easy to see that the disposable income inequality was noticeably lower than the original income inequality, and it was due to equalizing effect of both social benefits and income tax, because of the redistributive impact of net tax. To be specific, the net tax reduced household income disparities from 18.77% in 2012 to 20.50% in 2008.

**Table 3. The average benefit rate, the benefit concentration coefficient, the benefit progressivity coefficient, the average tax rate, the tax concentration coefficient and the tax progressivity coefficient, 2008–2013**

Year	$b_X$	$C_{B,X}$	$K_{B,X}$	$t_X$	$C_{T,X}$	$K_{T,X}$
2008	0.0849	-0.5539	0.9406	0.1316	0.4044	0.0177
2009	0.0823	-0.5714	0.9550	0.1315	0.4013	0.0178
2010	0.0797	-0.5802	0.9690	0.1330	0.3995	0.0106
2011	0.0790	-0.5819	0.9656	0.1328	0.3995	0.0157
2012	0.0783	-0.5669	0.9594	0.1359	0.4064	0.0140
2013	0.0803	-0.5838	0.9680	0.1354	0.4050	0.0209

Source: own calculations based on HBSs.

The average benefit was in the range from 0.0783 in 2012 to 0.0849 in 2008, hence, it was rather moderate (Table 3). If the social benefits category comprised old-age pensions, the average benefit rate would be undoubtedly higher, given that, in modern public finance systems, old-age pensions constitute the vast majority of all public expenditures (in this study, old-age pensions were classified as the component of the original income, because they were understood as the earlier worked out, put off income from work).

Benefit concentration coefficient was negative, indicating that allocation of the public transfers was unequal over the distribution of original income, in favor of the poorest households. Benefit progressivity coefficient, which was the difference between the original income Gini coefficient and the benefit concentration coefficient (see section 3), was computed at 0.9406 in 2008 (the lowest value) and at 0.9690 in 2010 (the highest value), thus, it was positive. Positive values of the benefit concentration coefficient were equivalent to the fact that social transfers

– as a whole – were de facto regressive with respect to original income, and, consequently, the benefits contributed to reduction in income disparities. The benefit regression was rather substantial, because considering this range of acceptable values of the regarded coefficient which informs that benefits are regressive, the coefficient stood at 69%–70% of its maximum level. Hence, as compared to the past decade, the government partially managed to reinforce the orientation of benefits towards the poorest households.<sup>2</sup>

Strictly speaking, benefits granted on the non-insurance rights basis had much stronger income equalizing effect than benefits granted on the insurance rights basis (most often, the former are the means-tested social transfers while the latter are related to the prior earnings received by the insured workers). Because the strongest redistributive impact was made by the means-tested social transfers, if existing income disparities are to be mitigated even more, preference in financing from the public sources should be given to such transfers.

Contrary to the above-quoted coefficients, while interpreting the average tax rate, the tax concentration coefficient and the tax progressivity coefficient it is necessary to remember that these variables are calculated with respect to original income, but, in practice, PIT is levied on the taxpayers gross income. Moreover, as it was already noted, numerical results which appear in this section refer to distribution of households with respect to income per equivalent unit, so it is impossible to compare them directly with official government statistics which instead refer to taxpayers as being natural persons. Nevertheless, it is still possible to make some remarks.

Primarily, gross income equals original income plus social benefits, and that is why the average tax rate with respect to original income is always higher than the average tax rate with respect to gross income. Thus, taking into account that, in the empirical sample, the former coefficient amounted from 0.1315 in 2009 to 0.1359 in 2012, the latter coefficient must have been lower. This conclusion corresponds with reality, as the PIT system in Poland is characterized by low effective tax rate: as it was stressed in section 2, the system is not universal because income from agricultural activity is not liable to income taxation, and broad spectrum of other tax reliefs is still offered to taxpayers.

For the second reason, the tax progressivity with respect to original income is derived from tax progressivity with respect to gross income. In the research sample, the tax progressivity coefficient with respect to original income reached positive values, confirming directly that the tax was progressive. This result was fully

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<sup>2</sup> For example, in 2002, the problem of social benefit weak targeting applied to about 50% of all public transfer expenditures (less than half of social transfer total amount reached the poorest families, serving to bring households consumption up to poverty line) (Paci *et al.* 2004).

anticipated, as, since the introduction of PIT in Poland in 1992, the tax scale has always assumed progressive tax rates. Additionally, low values of this coefficient proved that the PIT progression was weak, which was no surprise as well; speaking about this range of acceptable values of the coefficient, which implies that the tax is progressive, the coefficient was computed only at 10–12% of its maximum value. As it was also marked in section 2, the PIT progression is weak because the divisions at which tax rates change in a progressive tax scale are set up wrongly. It should be observed that the limitation of the number of tax bands to two tax bands, which was introduced in 2008, did not influence the tax progressivity coefficient. Besides, the tax progressivity with respect to original income is, by the rule, lower than the tax progressivity with respect to gross income, because households in the case of which social benefits constitute big part of total gross income are the poorer units (the units which pay lower income taxes).

**Table 4. The disposable income concentration coefficient and the re-ranking effect coefficient, 2008–2013**

Year	$C_{Z,X}$	$R_{NT,X}$
2008	0.2900	0.0174
2009	0.2886	0.0169
2010	0.2953	0.0166
2011	0.2922	0.0162
2012	0.3022	0.0166
2013	0.2910	0.0166

Source: own calculations based on HBSSs.

The difference between the disposable income Gini coefficient and the disposable income concentration coefficient, which is the re-ranking effect coefficient, was positive: it reached the values from 0.0162 in 2011 to 0.0174 in 2008 (Table 4). This numerical result should be interpreted in the following way: in the case of some households, receiving social benefits and paying income tax resulted in a change in their position in the disposable income distribution, as compared to their position in the original income distribution.

## 6. Conclusions

In the analyzed period, the original income Gini coefficient reached the level of 0.3866 on average, and the disposable income Gini coefficient stood at 0.3099 on average, and each coefficient showed neither tendency to increase nor tendency to decrease. The crucial reason for almost unvarying level of the pre-fiscal income disparities was that earnings inequalities were stable. Therefore, the growth of in-

come inequality, which was observed in Poland since the beginning of transformation till about the middle of the past decade, has already stopped.

Disparities of the post-fiscal income were visibly lower than disparities of the pre-fiscal income, which confirmed noticeable redistributive effect of social benefits and income tax: in the examined years, the fiscal system reduced income inequality by 19.84% on average. The net tax redistributive impact in the research sample was the result of large redistributive influence of social benefits, whereas redistributive effect of income tax was much weaker. Besides, income equalizing effect of the regarded fiscal instruments was reduced by the re-ranking effect.

Significant redistributive effect of social benefits derived mainly from remarkable regressivity of these transfers with respect to original income, namely from the fact that they were predominantly distributed among lower-income households (these families received great majority of all transfers). Thus, contrary to the pre-transitional period, the state managed, to some extent, to implement the reforms consisting in shifting public financing from universal social transfers to selective benefits.

The weak redistributive impact of PIT was a consequence of both low average tax rate and low tax progressivity. If effective tax progression is to be increased, it is necessary to apply new scheme of tax brackets and tax rates, and subsequent tax brackets have to be set up in relation to average gross salary in economy.

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