The redistributive effect of social transfer programs and taxes: a decomposition across countries

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Chen Wang, Koen Caminada and Kees Goudswaard

Leiden University, Netherlands

Abstract The aim of this article is to offer detailed information of the redistributive impact of social transfer programmes and taxes in 28 Member countries of the Organisation for Economic Co-operation and Development, employing data that have been computed from the Luxembourg Income Study's micro-level database. We find that welfare states on average reduce inequality by 35 per cent. Social benefits have a much stronger redistributive impact than taxes. As far as social programmes are concerned, public pensions account for the largest reduction in income inequality, although the pattern is diverse across countries. To a lesser extent, social assistance, disability and family benefits also contribute to smaller income disparities.

Keywords income redistribution, benefit, taxation, welfare state, OECD

Addresses for correspondence: Chen Wang, Economics Department, Leiden University, P.O. Box 9520, 2300RA Leiden, Netherlands; Email: wangc1@law.leidenuniv.nl. Koen Caminada, Economics Department, Leiden University, P.O. Box 9520, 2300RA Leiden, Netherlands; Email: c.l.j.caminada@law.leidenuniv.nl. Kees Goudswaard, Economics Department, Leiden University, P.O. Box 9520, 2300RA Leiden, Netherlands; Email: k.p.goudswaard@law.leidenuniv.nl.

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Introduction

The growing interest in national and cross-national differences in earnings and income inequality has produced a wide range of studies (see Gottschalk and Smeeding, 1997; Brandolini and Smeeding, 2007; OECD, 2008 and 2011; Lambert, Nesbakken and Thoresen, 2010; and Immervoll and Richardson, 2011). An important development has been the launching of the Luxembourg Income Study (LIS) in which micro data sets from various countries have been "harmonized".[1] Consequently it is possible to study income inequality across countries (see Atkinson, Rainwater and Smeeding, 1995). However, the improvement in methods of measurement and in empirical knowledge is in contrast with the lack of insight into causes of changes in inequality over time.[2] This should perhaps not come as a surprise as the distribution of income in a country is the outcome of numerous decisions made over time by households, firms, organizations and the public sector. One could think of an almost infinite number of micro-level causes for differences and changes in income inequality (Gottschalk and Smeeding, 2000; Förster, 2000). The increasing income inequality observed for most — but not all — Western economies over the last decades has coincided with many structural changes in the economic system. For many countries the main forces behind growing disposable income inequality are the growth of inequality of earned market income, demographic changes, changes in household size and composition, and other endogenous factors. Atkinson (2000, p. 17) concludes that we should not expect the same development in all countries, because the distribution of income is subject to a wide variety of forces (which may differ over countries). The evolution of income inequality is not simply the product of common economic forces: it also represents the impact of institutions and national policies.

In this article, we focus on the effect of social transfers and taxes in redistributing income. Our expectation is that social transfers are mainly directed to lower-income groups, while income taxes are mainly paid by the rich, and therefore both will have an impact on income (re)distribution. We use the traditional budget incidence approach — despite some methodological problems, which we will address — to study the combined effects of taxes and transfers on income (re)distribution. The distribution of primary or wage and salary income is compared with the distribution of income after tax and after social transfers. We present empirical results by analysing absolute levels of income inequality across countries for the most recent data-year available (around 2004) for 28 Member countries of the Organisation for Economic Co-operation and Development (OECD).

1. See survey information LIS <http://www.lisdatacenter.org>.
2. OECD (2008) summarizes trends and driving factors in income distribution and poverty on the basis of a harmonized questionnaire of OECD Member countries (i.e. distribution indicators derived from national micro-economic data).

Empirical studies on the redistributive effect of welfare states suffer from a lack of data. Recently this has been changed by the work of Mahler and Jesuit (2006) and Jesuit and Mahler (2010) using LIS data. The Luxembourg Income Study offers micro data on public and private sources of income that are comparable, detailed and accurate. Using the LIS data set, it is possible to estimate direct redistribution for most developed countries.

We elaborate on and update the work of Jesuit and Mahler. But in addition, we undertake a more detailed study which allows us to decompose income redistribution through the welfare state into the redistributive impact of specific social transfers and taxes. We develop a budget incidence simulation model to investigate to what extent several social transfers and taxes reduce income inequality in 28 OECD countries around 2004.

The article is organized as follows. In the second section we briefly summarize literature on the redistributive effect of taxes and transfers. Our research method is presented in the third section. The fourth section provides a descriptive analysis of inequality and redistribution across 28 countries. The empirical results of our detailed decomposition of the redistributive effect of social transfers and taxes across countries are presented in the fifth section. Finally, we draw some conclusions.

Income inequality and the redistributive effects of taxes and transfers across countries

A number of studies analyse income distribution across countries, indicating that the role of social policy (taxes and transfers) is important in the magnitude of redistributing income.[3] Korpi and Palme (1998) used data from LIS to study different types of welfare states. They illustrated that social transfers are important for reducing income inequality. They make a distinction between the redistributive effect of programme size and the extent to which they are targeted to low-income groups.[4] They indicate that it is less likely that targeting will reduce inequality. This paradox arises because targeted programmes will only have the support of a small and isolated political base. Comprehensive programmes, in contrast, will have much broader support. Jesuit and Mahler (2004) conclude that redistribution is more strongly related to the size of social programmes than to their target efficiency. Bradley et al. (2003) divide the welfare states into three categories (Social Democratic, Christian Democratic and Liberal Democratic) to study government

3. Among others, Brandolini and Smeeding (2007), Atkinson and Brandolini (2001), Smeeding (2000, 2002 and 2004), Gottschalk and Smeeding (1997 and 2000), Atkinson (2003), Ervik (1998), and O'Higgins, Schmaus and Stephenson (1990).
4. See also Caminada and Goudswaard (2010).

redistribution and distributive profiles of taxes and transfers. Their results indicate that welfare generosity does not have a significant effect on pre-tax and pre-transfer income inequality, but does have a positive impact on the total redistribution of incomes. Kenworthy and Pontusson (2005) examined the trend in market income inequality and redistribution in OECD countries in the 1980s and 1990s. They find a sizeable increase in market income inequality. But redistribution through the welfare state also increased in most countries, which (partly) compensated the rise in market inequality.

Most studies focus on overall redistribution. Others have examined in more detail the redistributive effect of several social programmes (Plotnick, 1984; Ferrarini and Nelson, 2003). Goudswaard and Caminada (2010) studied the effect of public and private social programmes. They conclude that a shift from public to private social programmes may affect the redistributive impact of the welfare state. In a recent study, Immervoll and Richardson (2011) show that tax-benefit systems are now less effective at reducing inequality compared with the mid-1990s for the majority of the 12 countries (and on average) for whom suitable long run data was available. After the mid-1990s, reduced redistribution has been the main driver of widening income gaps. Looking at different parts of the redistribution system, they conclude that social benefits have a much stronger redistributive impact than social contributions or taxes.

This article mainly elaborates on Jesuit and Mahler (2004) and Mahler and Jesuit (2006). They divide government redistribution into several components: the redistributive effects from unemployment benefits, from pensions, and from taxes and performed an empirical exercise for 13 countries with LIS data around the years 1999/2000. On average, taxes and transfers in these countries cause a drop in the Gini coefficient from 0.432 to 0.271; that is, a reduction by 37 per cent.[5] Social transfers account for around 75 per cent of total inequality reduction and taxes for around 25 per cent. Next, Jesuit and Mahler decompose social transfers into pensions, unemployment and other programmes. Pensions appear to cause 56 per cent of total redistribution through social transfers, while unemployment programmes account for 11 per cent and other programmes account for 40 per cent of inequality reduction. This study provided relatively new insights. However, the data used are not very recent, the number of countries is small and only two specific social programmes are included in the analysis. In this article, we will make further steps on these points.

5. The Gini coefficient of equivalized disposable household income is used often as a summary measure of income distribution. Equivalized household income is income adjusted to reflect differences in household needs through an equivalence scale (the square root elasticity). The Gini coefficient lies between 0 (no inequality) and 1 (maximum inequality).

Research method

Measuring the redistributive effects of taxes and social transfers

Usually, the impact of social policy on income inequality is calculated in line with the work of Musgrave, Case and Leonard (1974), i.e. statutory or budget incidence analysis. A standard analysis of the redistributive effect of taxes and income transfers is to compare pre-tax-transfer income inequality and post-tax-transfer income inequality (OECD, 2008, p. 98). Our measure of the redistributive impact of social security on inequality is straightforwardly based on formulas developed by Kakwani (1986) and Ringen (1991):

Redistribution by taxes and social transfers =
primary income inequality – disposable income inequality

This formula is used to estimate the reduction in inequality produced by taxes and social transfers, where primary income inequality is given by a summary statistic of pre-tax, pre-transfer incomes and disposable income inequality is given by the same summary statistic of disposable equivalent incomes. When calculating inequality indices for both primary and disposable income, individuals are ranked by their primary and disposable incomes respectively, so that the re-ranking effect is included in our results (see Plotnick, 1984; the same method is applied by Immervol and Richardson, 2011).

Table 1 presents the framework of accounting income inequality and redistribution through various income sources.

Table 1. *The income inequality and redistribution accounting framework*

Income components	*Income inequality and redistributive effect*
Gross wages and salaries + self-employment income + cash property income + occupational and private pensions + private transfers + other cash income **= Primary income**	**Income inequality before social transfers and taxes**
+ Social security cash benefits	– Redistributive effect of social transfers
= Gross income	**= Income inequality before taxes**
– Payroll (Mandatory payroll taxes) – Income taxes	– Redistributive effect of taxes
= Disposable income	**= Income inequality after social transfers and taxes**

Note: For France, Greece, Hungary, Italy, Mexico, and Spain, the value of gross market income in the data set is not available. Instead, we use net market income which is the sum of net wages and salaries, self-employment income and cash property income.

The budget incidence analysis is not without problems; see a critical survey of efforts to measure budget incidence by Smolensky, Hoyt and Danziger (1987). The pre-transfer inequality is compared to the post-transfer inequality keeping all other things equal — namely, assuming unchanged household and labour market structures, thus disregarding any possible behavioural changes that the situation of absence of social transfers would involve (Frick, Büchel and Krause, 2000; Palme, 1996). However, behavioural responses may obviously be important. It is likely that in the absence of social transfers more people will work (more) thereby earning higher incomes. Kim (2000b) showed that both the generosity and efficiency of the tax/transfer system may influence the level of pre-tax-transfer income inequality. Budget incidence calculations can therefore only be seen as an approximation of the redistributive effects because of the assumption that agents behave similarly in situations with and without social transfers and social security. This implies that estimates for redistribution through taxes and transfers should be regarded as upper bounds. Despite this problem, analyses on statutory and budget incidence dating from at least the 1940s onwards can be found in the literature on public finance.[6]

With respect to the inequality measure we use the Gini coefficient. The change in the Gini between pre- and post-government income reflects redistribution through taxes and transfers.

We sequentially decompose the Gini coefficient in order to calculate the partial redistributive impact of transfers and taxes; see Wang and Caminada (2011) for details. The results obtained for the specific transfers and taxes are corrected for the ordering effect.[7]

The sequential accounting decomposition approach has been advocated, among others, by Kakwani (1986) and is also followed by Jesuit and Mahler (2004) and Mahler and Jesuit (2006), Immervoll et al. (2005) and Whiteford (2008). Other techniques of the decomposition of the Gini coefficient by income source can be found in the literature as well — e.g. Lerman and Yitzhaki (1985), Stark, Taylor and Yitzhaki (1986), Kim (2000a). In the literature two techniques of decomposing inequality are distinguished; the *sequential accounting decomposition* and the *factor source decomposition* approach. When comparing both approaches, they lead to the same estimates of disposable income inequality, but to contradictory results

6. See for example Musgrave and Tun Thin (1948), Gillespie (1965), Kakwani (1977), Reynolds and Smolensky (1977), Mitchell (1991), OECD (2008), and Caminada and Goudswaard (2001 and 2002).
7. The ordering of programmes has influence on the results when using the sequential accounting decomposition method. The partial redistributive effect of a specific social transfer will be highest (smallest) when computed as the first (last) social programme. We corrected for this effect as follows. We consider every specific social transfer as the first programme to be added to primary income and every direct tax as the first tax to be subtracted from gross income. In that case, the sum of all partial redistributive effects amounts to (a little) over 100 per cent. So we rescaled the redistributive effects of each programme by applying an adjustment factor, which is defined as the overall redistribution (100 per cent) divided by the sum of all partial redistributive effects of all programmes (a little over 100 per cent).

with respect to the importance of benefits for redistributing income (see Fuest, Niehues and Peichl, 2010). Inequality analysis based on the *sequential accounting decomposition* approach (as applied in this article) suggests that benefits are the most important factor reducing inequality in the majority of countries. The *factor source decomposition* approach, initiated by Shorrocks (1982), however, suggests that benefits play a negligible role and sometimes even contribute slightly positively to inequality. In this instance, taxes and social contributions are seen by far the most important contributors to income inequality reduction. Fuest, Niehues and Peichl (2010) explain these partly contradictory results. The most important difference between the two approaches is that the accounting approach applies tax benefit instruments sequentially, whereas the decomposition approach accounts for them simultaneously. See also Kammer, Niehues and Peichl (forthcoming).

Although both approaches are used in the literature, studies analysing the impact of tax benefit instruments based on the standard sequential accounting approach generally find rather intuitively straight forward results, i.e. that benefits are the most important source of inequality reduction. We follow this sequential decomposition approach, which fits in a strand of recent empirical literature.

Choice of income unit and country data

The unit of analysis is an important issue in income distribution studies. It is evident that the ultimate source of concern is the welfare of the individual. However, an individual is often not the appropriate unit of analysis. For instance, children and spouses working at home do not have recorded income, but may nevertheless be enjoying a high standard of living as a result of income sharing with parents and spouses. Traditionally, studies have used the household income per capita (or per member) measure to adjust total incomes according to the number of persons in the household. In the last decades, equivalence scales have been widely used in the literature on income distribution (see Figini, 1998). An equivalence scale is a function that calculates adjusted income from income and a vector of household characteristics. Equivalence elasticity (E) is a measure for the economies of scale. E varies between 0 and 1. The larger E, the smaller are the economies of scale assumed by the equivalence scales.

Equivalence scale elasticity for the LIS database is set around 0.5. This implies that in order to have an equivalent income of a household of one person where income is 100, a household of two persons must have an income of 140 to have equivalent incomes. Alternatively a one-person household must have 70 per cent of the total income of a two-person household to have equivalent income. In our comparative analysis we use this LIS equivalence scale, where E is around 0.5. However, it has been shown that the choice of equivalence scales affects international comparisons of income inequality to a wide extent. Alternative

adjustment methods would definitely affect the ranking of countries, although the broad pattern remains the same (Atkinson, Rainwater and Smeeding, 1995, p. 52).[8] In line with LIS, Gini coefficients are based on incomes which are bottom coded at 1 per cent of disposable income and top coded at 10 times the median disposable income.

In the empirical literature, the selection of countries and data-years differ due to considerations of data quality. We apply a cross-national analysis using comparable income surveys for all OECD countries in the LIS database. LIS micro data seems to be the best available data for describing how income inequality and the redistributive effects of taxes and transfers vary across countries (Nolan and Marx, 2009). Here, we restrict ourselves to the latest data-year available (around 2004) to analyse redistribution of social transfers and taxes.

From nearly 300 variables in the data set, we chose those related to household income (all kinds of income sources), total number of persons in a household and household weight (which is used in order to correct for sample bias or non-sampling errors) to measure income inequality and the redistributive effect across countries. In line with LIS convention and the work of Mahler and Jesuit (2006), we have eliminated observations with zero or a missing value of disposable income from LIS data. Household weights are applied for the calculation of Gini coefficients.

Inequality and redistribution across countries

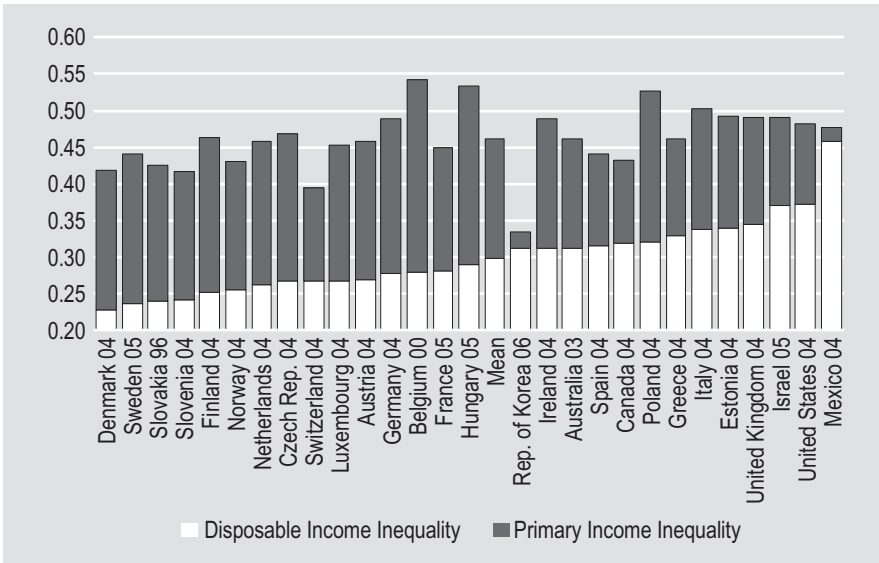
Inequality across countries

This section reviews the evidence on cross national comparisons of annual disposable income inequality for 28 nations around the mid-2000s. This section is mainly descriptive and relies on the empirical evidence from LIS for the levels of income inequality around the mid-2000s. Figure 1 shows the Gini coefficients. Countries are listed in order of their Gini of disposable income from smallest to largest. A wide range of inequality exists across the OECD countries. The lowest income inequality is found in Denmark and Sweden, while Mexico and the United States are the most unequal nations.

With respect to income inequality after social transfers and taxes, Denmark, Sweden, Slovakia and Slovenia have low values around 0.24, in line with the results in OECD (2008). These countries are followed by 11 countries (Finland, Norway, Netherlands, Czech Republic, Switzerland, Luxembourg, Austria, Germany,

8. We compared the Gini coefficients and total redistribution of 20 LIS-OECD common countries using LIS data with the square root equivalence scales, with the Gini coefficients of the OECD database using slightly different equivalence scales. The general pictures from both data sets are almost the same.

Figure 1. *Disposable and primary income inequality across LIS countries around 2004 (Gini coefficients)*



Source: Own calculations based on LIS (2011).

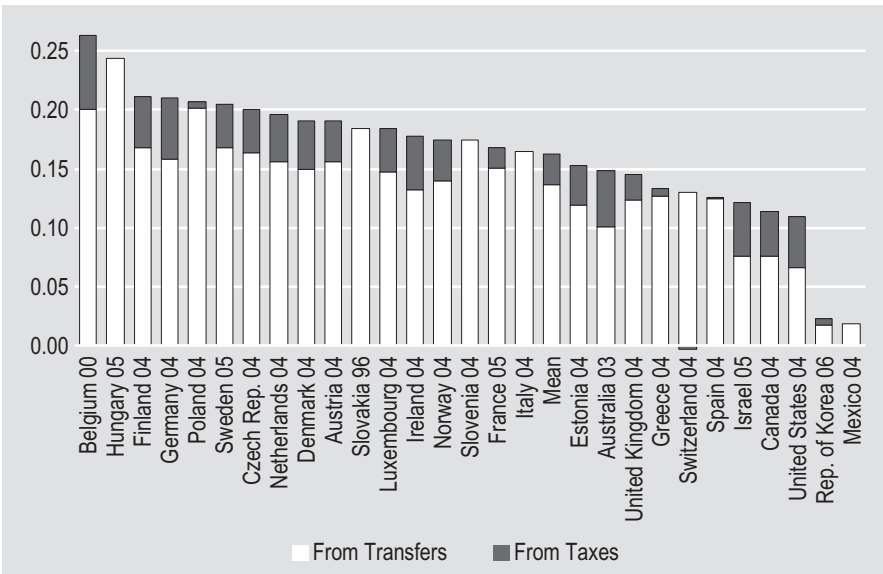
Belgium, France and Hungary) with Gini coefficients between 0.25 and 0.30. Above average inequality is found in 13 countries (Republic of Korea, Ireland, Australia, Spain, Canada, Poland, Greece, Italy, Estonia, the United Kingdom, Israel, the United States and Mexico).

The pattern of primary income inequality (before social transfers and taxes) is quite different from disposable income inequality. Belgium and Hungary have below-average levels of inequality of disposable income, but the highest level of primary income inequality, with values around 0.55. The Republic of Korea has a very low level of primary income inequality, but above-average inequality of disposable income. The redistributive effect of taxes and social transfers differ considerably across these countries. The highest level of redistribution is found in Belgium, Hungary and Finland, while redistribution is very small in the Republic of Korea and Mexico.

The redistributive effect of taxes and transfers

Several studies focus on the impact of income components on overall inequality (Shorrocks, 1983; Lerman and Yitzhaki, 1985; Jenkins, 1995; Breen, García-Peñalosa and Orgiazzi, 2008). These suggest that income taxes and social benefits are important sources of reducing household income inequality. Figure 2 shows the

Figure 2. *Redistributive effect of taxes and transfers across LIS countries around 2004 (reductions in Gini coefficients)*



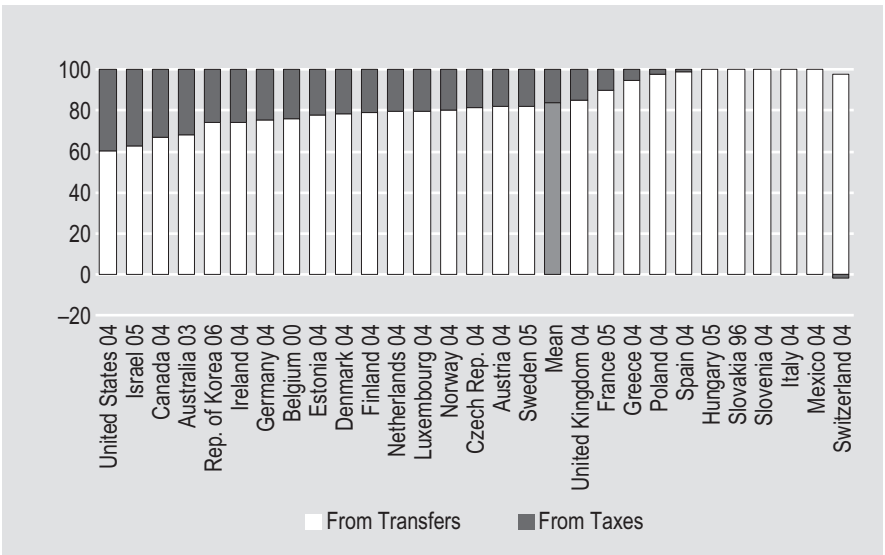
Note: For Hungary, Italy, Mexico, Slovakia and Slovenia, data for taxes are not available.
Source: Own calculations based on LIS (2011).

overall redistribution across countries (in terms of the Gini coefficient) and the disaggregated effects of social transfers and taxes. On average, transfers and taxes reduce the Gini coefficient from 0.462 to 0.299; that is, by around 35 per cent (See Figure 1).

Figure 3 shows the relative redistributive effects of transfers and taxes. It should be noted, however, that LIS income surveys contain income taxes and mandatory payroll taxes, but no indirect taxes. For some countries — Hungary, Italy, Mexico, Slovakia and Slovenia — data as regards taxes are not available in the data set. For the other 23 countries social transfers on average account for a share of 81 per cent in the total reduction of income inequality, while taxes account for 19 per cent. Taxes are important in equalizing incomes only in a few countries: the United States, Israel, Canada and Australia. In the other countries, taxes account for less than 30 per cent of total redistribution. Note that the partial effect of taxes is negative for Switzerland. The tax system in Switzerland is in fact regressive, which is caused by the offsetting effect of regressive payroll tax (Kenworthy, 2009) and tax competition (Feld, 2000). In this country it appears to be difficult to levy redistributive taxes from rich and mobile persons to the poor.

In general, our analysis confirms earlier studies: social benefits have a much stronger redistributive impact than taxes.

Figure 3. *Relative redistributive effect of taxes and transfers across countries around 2004 (percentage)*



Note: For Hungary, Italy, Mexico, Slovakia and Slovenia, data for taxes are not available.
Source: Own calculations based on LIS (2011).

Decomposition of the redistributive effect of social transfers and taxes

This section provides detailed results of the redistributive effect of welfare state regimes across a selection of 28 countries based on the most recent wave of LIS. LIS data allow us to decompose the trajectory of the Gini coefficient from primary to disposable income inequality in several parts: we will distinguish 11 different social benefits, income taxes and social contributions in our empirical investigation. We calculate the (partial) redistributive effects for the following programmes: sickness benefits, occupational injury and disease benefits, disability benefits, state old-age and survivors' benefits, child/family benefits, unemployment compensation benefits, maternity and other family leave benefits, military/veterans/war benefits, other social insurance benefits, social assistance cash benefits, near-cash benefits,[9] mandatory payroll taxes and income taxes.

9. Near-cash benefits refers to all forms of transfers that are in-kind payments (i.e. they are tied to a specific requirement, such as school attendance), but have a cash equivalent value equal or nearly equal to the market value, including near-cash housing benefits. See LIS Variable Definition List <http://www.lisdatacenter.org/pretechdoc.htm>.

The treatment of pensions needs special attention. Public pension plans are generally seen as part of the safety net, generating large anti-poverty effects. So, state old-age pension benefits will be included in our analysis on redistribution. But countries differ to a large extent in public versus private provision of their pensions (OECD, 2008, p. 120). Occupational and private pensions are not redistributive programmes per se, although they too have a significant effect on redistribution when pre-tax-transfer inequality and post-tax-transfer inequality are measured at one moment in time, particularly among the elderly.[10] The standard approach treats contributions to government pensions as a tax that finances the retirement pensions paid out in the same year, while contributions to private pensions are effectively treated as a form of private consumption. This may affect international comparisons of redistribution effects of social transfers and taxes. Overcoming this bias requires a choice: should pensions be earmarked as market income or as a transfer? We deal with this bias rather pragmatically by following the LIS Household Income Variables List: occupational and private pensions are earmarked and treated as market income.

To illustrate the idea of decomposing disposable income inequality, Table 2 presents the results of our accounting exercise for the mean of all 28 countries; additional information is given for the means of two sub-samples of countries (see below). Interestingly, public old-age and survivors' pensions account for 50 per cent of total redistribution. The disability scheme (7 per cent), social assistance (8 per cent) and child and family benefits (6 per cent) have some impact on income distribution. Other social benefits seem to have a rather limited redistributive effect; together they account for 14 per cent of total redistribution. Obviously, most of these other programmes have a smaller size, which may (partly) explain their smaller contribution to income redistribution. Income taxes account for another 15 per cent of total redistribution, but payroll taxes do not have any redistributive impact.

It should be noted that our results could be affected by including several countries with missing data elements in the trajectory from primary to disposable income. For example, for five countries data for taxes are not available (i.e. Hungary, Italy, Mexico, Slovakia and Slovenia). Excluding these countries indicates that the share of taxes in total redistribution will be slightly higher (19 per cent instead of 15 per cent), while the partial effect of transfers will be somewhat lower (81 per cent instead of 85 per cent). A similar exercise has been done for 20 countries only, excluding three further countries (France, Greece and Spain), where net market income is used rather than gross market income. The results hardly change when these countries are excluded, leaving our conclusion unaltered: public old-age and

10. See Van Vliet et al. (2011) for such an analysis. Preferably, however, the redistributive effects of occupational and private pensions should be analysed on a lifetime basis.

Table 2. *Decomposition of disposable income inequality for 28 countries around 2004*

	Mean 28 countries		Mean 23 countries		Mean 20 countries	
	Gini	%	Gini	%	Gini	%
(1) Gini primary income	0.462		0.460		0.461	
(2) Gini disposable income	0.299		0.295		0.293	
Overall redistribution (1) – (2)	0.163		0.164		0.168	
Partial effects		*share*		*share*		*share*
Transfers	*0.137*	*85*	*0.134*	*81*	*0.133*	*79*
Sickness benefits	0.002	1	0.003	2	0.003	2
Occupational injury and disease benefits[a]	0.001	0	0.001	0	0.001	1
Disability benefits[b]	0.011	7	0.012	8	0.013	8
Public old-age and survivors' benefits[c]	0.081	50	0.075	46	0.071	42
Child/family benefits[d]	0.010	6	0.011	6	0.011	7
Unemployment compensation benefits[e]	0.007	4	0.008	5	0.007	4
Maternity and other family leave benefits[f]	0.003	2	0.002	1	0.002	1
Military/veterans/war benefits	0.001	0	0.001	0	0.001	0
Other social insurance benefits[g]	0.006	4	0.006	4	0.007	4
Social assistance cash benefits[h]	0.013	8	0.012	7	0.013	8
Near-cash benefits[i]	0.003	2	0.004	2	0.004	2
Taxes	*0.026*	*15*	*0.030*	*19*	*0.034*	*21*
Mandatory payroll taxes[j]	*0.001*	0	0.001	0	0.001	0
Income taxes	*0.024*	15	0.030	18	0.034	20
Overall redistribution	*0.163*	*100*	*0.164*	*100*	*0.168*	*100*

[a] Short-term occupational injury and disease benefits, long-term occupational injury and disease benefits.
[b] Disability pensions, and disability allowances.
[c] Universal old-age pensions, employment-related old-age pensions, old-age pensions for public-sector employees, early retirement benefits, and survivors' pensions.
[d] Child allowances, advance maintenance, and orphans' allowances.
[e] Unemployment insurance benefits, (re)training allowances, and placement/resettlement benefits.
[f] Wage replacement, birth grants, childcare leave benefits, and maternity and other family leave benefits.
[g] Invalid career benefits, education benefits, and childcare cash benefits.
[h] General social assistance benefits, old-age and disability assistance benefits, unemployment assistance benefits, and parents assistance benefits.
[i] Near-cash food benefits, near-cash housing benefits, near-cash medical benefits, near-cash heating benefits, near-cash education benefits, and near-cash childcare benefits.
[j] Mandatory contributions for self-employment, and mandatory employee contributions.
Notes: Countries: Hungary, Italy, Mexico, Slovakia and Slovenia are excluded in mean-23 because data for taxes are not available; further, France, Greece and Spain are excluded in mean-20 because we had to use the net value of market income instead of gross market income. Using the sample of absolute value of 28 (23 and 20) countries, we applied the bootstrap technique for standard errors. The result shows that all means of the Gini coefficients and partial redistributive effects are significant except for the redistribution of mandatory payroll taxes because it varies remarkably across countries (from –0.011 to 0.008).
Source: Own calculations based on LIS (2011).

survivors' benefits play a major role in total redistribution. Moreover, note that payroll taxes do not have any redistributive impact, independent of the selection of countries (28, 23 or 20).

The accounting exercise presented in Table 2 covers all 28 countries. Table 3 presents the results for groups of countries. We clustered the countries according to Esping-Andersen's types of welfare states (Esping-Andersen and Myles, 2009).

In most countries two dominant income components account for above 50 to 60 per cent of total reduction in income inequality: the public old-age pensions and the survivors' programme, and income taxes. Of course, the dominant effect of old-age pensions makes sense, since the elderly have in general no income from work. Also, in most countries public pension benefits are flat-rate, which implicates a strong redistributive impact. However, cross-country differences are huge. For example, in Southern European countries the public old-age benefits account for over 80 per cent of total redistribution, while these figures are much lower for the English-speaking countries (20 to 34 per cent), for Nordic countries (31 to 48 per cent), for Continental European countries (47 to 58 per cent) with the exception of Switzerland (79 per cent), and for Central Eastern European countries (54 to 70 per cent) with the exception of Slovenia (79 per cent).

In the English-speaking countries, except the United Kingdom, income taxes play a major role (above 30 per cent) compared to other countries. The United States is a special case, because income tax contributes a relatively large part (38 per cent) to the reduction of income inequality between primary and disposable incomes. The earned income tax credit (EITC) is targeted towards the poor, which makes the United States' tax system rather progressive. Also the redistributive effect of social assistance in the English-speaking countries is relatively high in a comparative setting (9 to 28 per cent), with Australia as an exception.[11]

Child and family benefits are important in the English-speaking countries (6 to 13 per cent), in Continental European countries (4 to 12 per cent), and in Central Eastern European countries (5 to 12 per cent). In Nordic countries a variety of other social programmes contribute also to the reduction of inequality, especially the disability scheme (9 to 15 per cent). All other social benefit programmes appear to have rather limited redistributive effects in all countries, although unemployment compensation benefits do have some effect too.

The group of other LIS countries is rather mixed. A common element is that public old-age and survivors' pensions account for (much) less than 50 per cent of total redistribution.

11. This result for Australia may, at least in part, be driven by the classification of benefits in the LIS data set. Social assistance cash benefits appear to be recorded as unemployment insurance benefits. In general, the classification of benefits may affect our results to some extent.

Table 3. *Decomposition of income inequality and redistributive effect of social transfers and taxes around 2004*

Partial effects (shares)

	(a) Gini pri	(b) Gini dipi	Overall redistribution (a-b)	*Transfers (%)*	Sickness benefits (%)	Occupational injury and disease benefits	Disability benefits (%)	Public old-age and survivors benefits (%)	Child/family benefits (%)	Unemployment compensation benefits (%)	Maternity and other family leave benefits (%)	Military/ veterans/ war benefits	Other social insurance benefits (%)	Social assistance cash benefits (%)	Near-cash benefits	*Taxes (%)*	Mandatory payroll taxes (%)	Income taxes (%)
Panel A: LIS English-speaking countries																		
Australia	0.461	0.312	0.149	69	0	1	8	22	13	5	8	5	5	0	–	31	–	31
Canada	0.433	0.318	0.114	68	–	3	–	33	10	8	–	–	4	9	–	32	–2	33
Ireland	0.490	0.312	0.178	76	3	0	4	20	12	4	0	–	1	28	5	24	2	22
United Kingdom	0.490	0.345	0.145	86	0	0	12	27	6	0	0	0	2	24	15	14	3	11
United States	0.482	0.372	0.109	63	–	1	6	34	0	2	–	2	0	13	5	37	0	38
Panel B: LIS Continental European countries																		
Austria	0.459	0.269	0.190	82	1	–	7	57	11	5	–	–	1	1	1	18	0	18
Belgium	0.542	0.279	0.263	76	1	0	2	58	5	8	0	–	–	1	0	24	–	–
France	0.449	0.281	0.168	91	2	–	3	47	11	9	1	1	1	7	9	9	–	9
Germany	0.489	0.278	0.210	77	–	1	4	52	6	5	1	0	1	6	2	23	1	22
Luxembourg	0.452	0.268	0.184	81	0	–	8	53	12	4	–	–	0	2	1	19	–	19
Switzerland	0.395	0.268	0.128	102	1	2	0	79	4	8	–	0	1	8	0	–2	–8	6
Panel C: LIS Nordic countries																		
Denmark	0.419	0.228	0.191	79	3	–	12	33	4	8	2	0	4	9	5	21	0	21
Finland	0.464	0.252	0.212	81	1	1	9	41	5	6	3	1	2	7	3	19	2	17
Netherlands	0.459	0.263	0.196	80	1	–	9	48	3	5	–	–	2	10	3	20	–	20
Norway	0.430	0.256	0.174	82	13	0	15	31	7	4	5	–	3	3	1	18	1	16
Sweden	0.442	0.237	0.205	84	5	1	10	38	4	8	4	–	6	3	5	16	1	15

Table 3. *Continued*

Partial effects (shares)																		
	(a) Gini pri	(b) Gini dipi	Overall redistribution (a-b)	*Transfers (%)*	Sickness benefits (%)	Occupational injury and disease benefits	Disability benefits (%)	Public old-age and survivors benefits (%)	Child/family benefits (%)	Unemployment compensation benefits (%)	Maternity and other family leave benefits (%)	Military/ veterans/ war benefits	Other social insurance benefits (%)	Social assistance cash benefits (%)	Near-cash benefits	*Taxes (%)*	Mandatory payroll taxes (%)	Income taxes (%)
Panel D: LIS Southern European countries																		
Greece	0.462	0.329	0.133	95	1	–	5	82	3	3	–	–	0	2	0	5	–	5
Italy	0.503	0.338	0.165	100	–	1	4	83	3	2	–	0	0	6	–	–	–	–
Spain	0.441	0.315	0.126	99	2	–	7	80	0	8	–	–	1	0	0	1	–	1
Panel E: LIS Central Eastern European countries																		
Czech Republic	0.468	0.267	0.201	83	2	–	8	54	5	2	3	–	2	5	1	17	4	13
Estonia	0.493	0.340	0.153	79	0	–	9	56	9	1	2	–	0	1	–	21	1	20
Hungary	0.533	0.289	0.244	100	1	0	14	62	7	2	6	–	0	7	0	–	–	–
Poland	0.527	0.320	0.207	98	0	–	21	61	7	3	1	–	–	4	0	2	0	2
Slovakia	0.425	0.241	0.185	100	2	–	1	70	12	8	4	–	0	3	–	–	–	–
Slovenia	0.416	0.242	0.174	100	1	–	1	79	8	3	2	–	2	3	0	–	–	–
Panel F: Other LIS countries																		
Israel	0.491	0.370	0.121	66	–	0	12	21	10	3	–	1	2	16	–	34	2	32
Rep. of Korea	0.334	0.311	0.023	75	–	–	–	30	–	–	–	–	45	–	–	25	3	23
Mexico	0.476	0.458	0.018	100	–	–	–	41	–	–	–	–	19	40	–	–	–	–
mean LIS–OECD 28	0.462	0.299	0.163	85	1	0	7	50	6	4	2	0	4	8	2	15	0	15
mean LIS–OECD 23	0.460	0.295	0.164	81	2	0	8	46	6	5	1	0	4	7	2	19	0	18
mean LIS–OECD 20	0.461	0.293	0.168	79	2	1	8	42	7	4	1	0	4	8	2	21	0	20

Note: Hungary, Italy, Mexico, Slovakia and Slovenia are excluded in mean–23 because data for taxes are not available; further, France, Greece and Spain are excluded in mean–20 because we had to use the net value of market income instead of gross market income.
Source: Own calculations based on LIS (2011); in some countries a specific benefit scheme does not exist and/or data is not available in LIS (reported as '–').

Conclusion

In this article, we have investigated income distribution and redistributive effects attributed to social transfers and taxes across 28 OECD countries around 2004, based on the micro household income data from LIS. Since one of the functions of many national social protection systems is to reduce income inequality, this may provide relevant information for policy-makers. Different social policies bring different types of welfare systems, leading to various outcomes in income distribution. Among the countries listed in this article, Denmark and Sweden have the smallest income disparity, while Mexico and the United States have the largest. Generally speaking, European countries — especially Nordic and Continental welfare states — achieve lower levels of income inequality than other countries.

With respect to redistributive effects, our budget incidence analysis indicates that the pattern is diverse across countries. On average, taxes and social benefits cause a drop in the Gini coefficient from 0.462 to 0.299, that is a reduction by 35 per cent. The largest redistributive effects are found for Belgium, Hungary and Finland, while Mexico, the Republic of Korea and the United States show rather limited overall redistributive effects. On average, social transfers account for 85 per cent of total redistribution, while taxes account for 15 per cent. In the United States, a relatively large part of redistribution comes from taxes, while the tax system in Switzerland is regressive. But in all countries social benefits play a dominant role in reducing initial income disparities.

The main contribution of this article is that the redistributive impact of the welfare state is disentangled into specific programmes for the OECD countries for which the data are available. As far as social programmes are concerned, in most countries two dominant income components account for above 50 to 60 per cent of total reduction in income inequality: the public old-age and survivors' pensions programme, and income taxes. In Southern European countries, public old-age benefits account for over 80 per cent of total redistribution, while these figures are much lower for the English-speaking countries (20 to 34 per cent), for Nordic countries (31 to 48 per cent), for Continental European countries (47 to 58 per cent), and for Central Eastern European countries (54 to 70 per cent). In the English-speaking countries income taxes play a major role in redistribution (above 30 per cent), compared to other countries (with the exception of the United Kingdom). Also the redistributive effects of social assistance benefits in the English-speaking countries are relatively high in a comparative setting (9 to 28 per cent). In Nordic Countries a variety of other social programmes contribute also to the reduction of inequality, especially the disability scheme (9 to 15 per cent). All other social benefit programmes appear to have rather limited redistributive effects in all countries, although unemployment compensation benefits do have some effect too.

Our analysis is restricted to one moment in time. However, LIS data allow comparison of fiscal redistribution across the developed countries over the last three decades. To that end we have created a time-series across countries of detailed fiscal redistribution between the 1970s and the mid-2000s.[12] Future research can employ these data in addressing several important issues. Changes (in the generosity) of welfare states can be linked to changes in fiscal redistribution. Best-practices among countries can be identified and analysed in more detail. In exploring the causes and effects of welfare state redistribution in the developed world, the literature has increasingly moved towards more disaggregated measures of social policy. This data set allows an in-depth analysis on programmes' size and the extent to which they are targeted toward low-income groups.

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