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LIS

Working Paper Series

No. 724

Income inequality and fiscal redistribution in 47 LIS-countries, 1967-2014

Koen Caminada, Jinxian Wang, Kees Goudswaard
and Chen Wang

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CROSS-NATIONAL
DATA CENTER
in Luxembourg

Income inequality and fiscal redistribution in 47 LIS-countries, 1967-2014

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Abstract

In most OECD countries the gap between rich and poor has widened over the past decades. This paper analyzes whether and to what extent taxes and social transfers have contributed to this trend. Has the redistributive power of different social programs changed over time? The paper contributes to the literature by disentangling several parts of fiscal redistribution in a comparative setting for the period 1967-2014.

We use micro-data from the Luxembourg Income Study (LIS) to examine household primary income inequality and disposable income inequality, redistribution from transfers and income taxes, and the underlying social programs that drive the changes. We offer detailed information of fiscal redistribution in 47 countries for the period 1967-2014, employing data that have been computed from LIS. LIS data are detailed enough to allow us to measure both overall redistribution, and the partial effects of redistribution by several taxes or transfers. We elaborate on the work of Jesuit and Mahler (2004) and Wang et al (2012 and 2014), and we refine, update and extend the Fiscal Redistribution approach. LIS data allow us to decompose the trajectory of the Gini coefficient from primary to disposable income inequality in several parts (i.e. 9 different benefits and income taxes and social contributions).

The update and extension of the *Leiden LIS Budget Incidence Fiscal Redistribution Dataset on Income Inequality (LLBIFR Dataset on Income Inequality 2017)* allows researchers and public policy analysts to compare fiscal redistribution across developed countries and middle income countries over the last five decades. Research may employ these data in addressing several important research issues. Among the most commonly addressed questions in the empirical literature on the welfare state concerns the sources of variance across countries and over time in the extent and nature of fiscal redistribution. Changes (in the generosity) of welfare states can be linked to changes in the fiscal redistribution. Best-practice among countries can be identified and analyzed 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, an enterprise in which the *LLBIFR on Income Inequality 2017*, with its detailed data on taxes and a large number of individual social benefits, offers a rich source of information, which may be used by scholars and policy analysts to study the effects of different social programs on economic well-being.

Key words: welfare states, social income transfers, inequality, Gini coefficient, LIS

JEL-codes: H53, H55, and I32

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1. Introduction

The overall tendency over the past two or three decades has been for an increase in income inequality in the large majority of rich nations. In OECD countries, the widening of the income gap between rich and poor has been mainly driven by greater inequality in primary income from the mid-1980s (OECD, 2008, 2011 and 2015). Several explanations of income inequality have been introduced by researchers in sociology, economics, and political science.¹ One of the main driving forces behind disposable income distribution is the reduction of inequality through the tax-transfer system.² The overall redistributive effect can be divided into redistribution by transfers and by taxes, or even into more details.³ In the mid-2000s, the average redistributive effect achieved by public cash transfers is twice as large as that achieved through household taxes, although for example the United States stands out for achieving a greater part of redistribution by taxes (OECD, 2008 and 2011; Whiteford, 2010, Wang & Caminada, 2011a; and Wang et al, 2012). As the tax and transfer system was only able to offset a part of the rise in primary income inequality over the last 25 years, disposable income (i.e. after taxes and social benefits) has also become more unequal in many countries.

This paper examines changes in the redistributive effects of taxation and income transfers to households in detail. Former, extensive literature on "welfare state retrenchment" that has emerged over the last decades seems to imply that welfare states have become less redistributive. Recent studies and data, to the contrary, show that most welfare states became more redistributive in the 1980s and 1990s (Kenworthy & Pontusson, 2005 and Wang et al, 2014)). Welfare states have not compensated completely for the rise in inequality of primary income among households, but most have done so to some degree. By and large, welfare states have worked the way they were designed to work. It is markets, not redistribution policies, that have become more inegalitarian. It should be noted here that because tax-benefit system are generally progressive, one could expect that higher primary income inequality automatically leads to more redistribution, even without policy actions (Immervoll & Richardson, 2011).

The growing interest in national and cross-national differences in earnings and income inequality has produced a wide range of studies. An important development has been the launching of the Luxembourg Income Study (LIS) in which microdata-sets from various countries have been "harmonized". Consequently it is possible to study income inequality across countries and years (see Atkinson et al, 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 equality over time.⁴ 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 & Smeeding, 2000). For many countries important forces behind growing disposable income inequality are the growth of inequality of earned primary income, demographic changes, changes in household size and composition, and other

1 Among others Kuznets (1955), Blinder & Esaki (1978), Blank & Blinder (1986), Harrison & Bluestone (1988), Blank & Card (1993), Nielsen & Alderson (1997), Gustafsson & Johansson (1999), Mocan (1999), Morris & Western (1999), Chevan & Stokes (2000), McCall (2001), Atkinson (2015), Piketty (2014).

2 Among others Danziger et al (1981), O'Higgins et al (1990), Gottschalk & Smeeding (1997, 1998 and 2000), Ervik (1998), Atkinson & Brandolini (2001), Smeeding (2000, 2004 and 2008), Caminada & Goudswaard (2001, 2002, 2005, 2009 and 2010), Caminada et al (2012a), Atkinson (2003), Brady (2004), Brandolini and Smeeding (2007a and 2007b), Heisz (2007), Belfield et al (2017).

3 Among others Plotnick (1984), Ferraini & Nelson (2003), Caminada & Goudswaard (2001), Kristjánsson (2011), Fuest et al (2010), Paul (2004), Chen et al (2011), Wang & Caminada (2011a), Wang et al (2012 and 2014).

4 OECD (2008, 2011 and 2015) 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).

endogenous factors. However, the evolution of income inequality is not simply the product of common economic forces: it also represents the impact of institutions and national policies (Atkinson, 2000).⁵

Our analysis of the level and the evolution of the income distribution and fiscal redistribution is based on LIS data on income in a standardized way across countries and time. In this paper, we focus on the effect of income taxes (including social contributions) and transfers 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 we will address—to study the combined effects of income taxes and transfers on the income (re)distribution. The distribution of primary income is compared with the distribution of income after taxes and after social transfers. The change in summary measures of inequality between pre- and post-government income represents direct government redistribution. For example, the mean of pre-government Gini indices of income inequality of the 47 countries in this study around 2011–2013 was 0.483. After adding government transfers and deducting income taxes and social insurance contributions the Gini fell to 0.347, representing a Gini reduction of 13.6 points or 28 percent. Social benefits account for 81 percent of this fiscal redistribution and mandatory payroll taxes and income taxes for 19 percent.

We present empirical results by analyzing absolute *levels* of income inequality across countries for the most recent data year available (around 2011–2013) and by analyzing *trends* (1967–2014). Many factors make it difficult to compare the redistributive effect of taxes and transfers across countries (differences in income concepts, the income units, (summary) measures, equivalence adjustments and other factors). Moreover, there are numerous possible ways to analyze the impact of taxes and transfers on the distribution of income; some of these approaches are listed in our references.⁶ It is generally agreed upon that there is no single 'correct' methodology. However, the budget incidence approach is - still - a standard methodology for studying the combined effects of all taxes and transfers on the magnitude of (re)distributing income.

The increasing income inequality observed for most—but not all—Western economies and Middle Income Countries over the last decades has coincided with many structural changes in the economic system.

Our contribution to the literature is threefold.

- ♥ First, we provide evidence on the redistributive effect of welfare state regimes by income taxes and transfers across countries. Empirical data on the redistribution of income across countries is rare. Researchers conducting cross-national studies of the welfare state have until very recently been forced to rely on such proxies as the share of social benefits in gross domestic product. Even fewer cross-national studies have examined the redistributive role of taxes and transfers. The lack of cross-national data for so central a variable as state

5 More on this: OECD (2015). The report is the third OECD flagship publication on trends, causes and remedies to growing inequalities. The 2008 report *Growing Unequal?* documented and analyzed the key features and patterns of trends in income inequality in OECD countries. The 2011 publication *Divided We Stand: Why Inequality Keeps Rising* analyzed the deep-rooted reasons for rising inequality in advanced and most emerging economies. The 2015 publication *It Together: Why Less Inequality Benefits All* highlights the key areas where inequalities originate and where new policy approaches are required. It questions how trends in inequality have affected economic growth; looks at the consequences of the recent period of crisis and fiscal consolidation on household incomes; analyses the impact of structural labor market changes; documents levels of wealth concentration; and discusses the role for redistribution policies in OECD.

6 Among others, see Atkinson et al (2001), Gustafson & Johanson (1997), Lambert et (2010), Moene and Wallerstein (2003), Swabish et al (2006).

redistribution has been changed recently by the work of Caminada et al (2012a), Jesuit and Mahler (2010), Mahler and Jesuit (2006), and Wang et al (2012 and 2014). We elaborate on and update the work of Wang & Caminada (2011b). We offer a user-friendly dataset, the *Leiden LIS Budget Incidence Fiscal Redistribution Dataset on Income Distribution (LLBIFR Dataset on Income Inequality 2017)*. A new database was asked for, because the LIS staff implemented a major LIS Database template revision linked to the release of the Wave VII (centered on 2007) microdata. Most components of this revised template have also been applied, retroactively, to all earlier waves of the microdata. The revised template increased both comparability over-time and cross-national. As a result, most figures of prior assembled datasets on fiscal redistribution are unfortunately not directly comparable with the figures produced for the current LLBIFR Dataset on Income Inequality 2017. Our dataset provides an update and extension of the Leiden LIS Budget Incidence Fiscal Redistribution Dataset (Wang & Caminada, 2011b) in three ways. First, the updated dataset covers a larger number of countries (47 versus 36) and a longer period (1967-2014 versus 1967-2006) using the most recent LIS data available. Second, to obtain a consistent time-series, all calculations of the database of Wang & Caminada (2011b) were redone using the new 2011 LIS Template, also extending the time-series with the most recent waves (2006 onwards). Finally, we offer a more user-friendly version of the database allowing users to easily select income inequality variables and fiscal redistribution variables for (a group of) countries and/or specific data years via pivot tables.

- ♥ Secondly, we confront results obtained by the OECD with the results of the LIS database on the redistributive effect of social transfers across countries. The Luxembourg Income Study (LIS) offers micro-data on public and private sources of income that are comparable, detailed and accurate. Specifically, the LIS offers data on a large number of individual sources of income from both the private and public sectors. Moreover, the LIS data permit researchers to adjust for taxes and social insurance contributions assessed on income recipients. Using the LIS data set, it is possible to estimate direct redistribution for a large number of developed countries and middle income countries. Our aim is to offer a dataset on fiscal redistribution that is more accurate, comparable, detailed and recent than those that have been used in past work.
- ♥ Finally, we refine our method. We undertake a more detailed study (compared to Wang et al, 2012), containing a simulation approach which allows us to decompose income inequality through income taxes and several social transfers. We employ a budget incidence simulation model to investigate to what extent several social transfers and income taxes reduce income inequality in 47 countries.

The paper is organized as follows. In Section 2 we summarize literature on the redistributive effect of taxes and transfers in LIS countries. Section 3 presents our research method. Section 4 provides a descriptive analysis of income inequality and redistribution across 47 countries around 2011-2013. Section 5 presents the empirical results of our detailed decomposition of the redistributive effect of social transfers and income taxes across countries. Section 6 provides an analyses of trends in the distribution of primary and disposable income in LIS countries for the period 1967-2014. Section 7 presents results for the decomposition of the redistributive effects of social transfers and taxes over time. Section 8 concludes the paper and provides a research agenda.

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

The relationship between income inequality and redistribution in a cross-country perspective is not crystal clear (see on this Lambert et al, 2010). A large number of articles discuss the relationship between income inequality and redistribution among countries. Despite recent empirical evidence suggesting that there is more redistribution when pre-tax income inequality is high, it is claimed by others that societies with low pre-tax income inequality redistribute more than less equal societies. The main reason for the confusion stems from differences in measurement strategies. Indeed, with three distributions involved (pre-tax-transfer income, post-tax-transfer income, and the tax/benefit-system), and with different inequality measures to sum up these distributions, not surprisingly the literature offers a plethora of research methods and empirical results. Below we shall briefly review the main ones, restricting us to Gini-based literature and applications, which are by far the most prevalent.

Several studies analyze income distribution across countries, indicating that the role of social policy (taxes and transfers) is important in the magnitude of income redistribution.⁷ Korpi & Palme (1998) used data from LIS to study different types of welfare states. They illustrated that both the level of transfers and the targeting to the poor are important for reducing income inequality. Bradley et al (2003) divide the welfare states into three categories (Social Democratic, Christian Democratic and Liberal Democratic) to study government 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. By using LIS data for the mid-2000s, Pressman (2009) finds a larger proportion of middle-class households in countries with rather progressive national tax systems and relatively generous government spending programs. With respect to the relationship between inequality and redistribution, the results are not always in line with each other. Kenworthy & Pontusson (2005) examined the trend in primary income inequality and redistribution in OECD countries in the 1980s and 1990s, indicating that redistribution increased in most countries. Welfare state policies compensated for the rise in primary income inequality across countries.

A recent study by the OECD (2016) concludes that redistribution through income taxes and cash transfers cushions income inequality on average by about 27 percent in OECD countries. This effect would be larger when non cash transfers such as education and health care would be taken into account. Two thirds of the redistributive impact can be attributed to cash transfers and one third to income taxes. However, the OECD also finds that redistribution has weakened or stagnated since 2010 in most OECD countries, although there are exceptions. Remarkably, in countries that were hit hard by the crisis, like Greece, Spain and Portugal, redistribution has increased, despite fiscal consolidation measures. Jesuit & Mahler (2017) compare the redistributive effects of old-age pensions and transfers to those of working age in 20 developed countries between the late 1960s and 2010. They find that there is substantial variation across countries in overall fiscal redistribution and transfers account for the majority of the redistribution.

With respect to income mobility, Morillas (2009) finds that primary income inequality is negatively associated with the level of the redistributive effect of taxes and transfers across countries. Goudswaard & Caminada (2010) and Caminada & Goudswaard (2005) studied the redistribution of public versus private social programs which have opposite distributional effects.

7 Among others, Brandolini & Smeeding (2007a and 2007b), Atkinson & Brandolini (2001), Smeeding (2000, 2004 and 2008), Gottschalk & Smeeding (1997, 1998 and 2000), Atkinson (2003), Ervik (1998), O'Higgins et al (1990), and Brady (2004).

The case for aggregate incidence studies was set down by Dalton (1936). The methodology has been implemented in many studies since research was initiated by Gillespie (1965). Of course, also critical literature on budget incidence analyses has emerged – but these criticisms leave the stylized conclusions intact; see a critical survey of efforts to measure budget incidence by Smolensky et al (1987). For example, the important issue of tax/transfer shifting is totally ignored in analyses on budget incidence in such a classical framework. However, models that include all behavioral links are beyond the scope of existing empirical work (Gottschalk & Smeeding, 1998:3). Therefore, researchers have restricted themselves largely to accounting exercises which decompose changes in overall inequality into a set of components (see on this Kristjánsson, 2011; Fuest et al, 2010; Paul, 2004). Despite the problem of tax shifting, analyses on statutory and budget incidence can be found for decades in literature on public finance.⁸

Most studies focus on overall redistribution; others have examined in more detail the impact of income components on overall inequality (Shorrocks, 1983; Lerman & Yitzhaki, 1985; Jenkins, 1995; Breen et al, 2008). These suggest that income taxes and social benefits are important sources of reducing household income inequality. Plotnick (1984) calculates the redistributive impact of cash transfers in the US in 1967 and in 1974. Caminada & Goudswaard (2001) performed a budget incidence analysis for the Netherlands to investigate the effect of transfers and taxes in 1981, 1991 and 1997. Ferraini & Nelson (2003) focus on the effects of taxation and social insurance in 10 countries around 1995, analyzing inter- and intra- country comparisons of income (re)distribution. Mahler & Jesuit (2006) divide government redistribution into several components: the redistributive effects from unemployment benefits, from pensions, and from taxes. They applied their empirical exercise for 13 countries with LIS-data around the years 1999/2000. Caminada et al (2012a) and Wang et al (2012 and 2014) updated and extended the analyses of Jesuit & Mahler (2004) and Mahler & Jesuit (2006) by taking into account many more benefits and taxes, and applied a budget incidence analysis to a wider range of 36 countries with LIS data up-to around 2004. They conclude that transfers account for 75 percent of redistribution, while direct taxes account for 25 percent. More than half of total redistribution owing to transfers is caused by pensions, although the redistributive character of pensions varies across countries. Unemployment benefits are the second important program in terms of redistribution, but their redistributive impact is only one fifth of the effect of pensions. Another finding of Mahler and Jesuit is that redistribution is more strongly related to the size of social benefits than to the extent to which benefits are targeted to lower income groups (targeting efficiency).

Studies that apply tax-benefit instruments sequentially suggest that the redistributive effect of transfers is much more important than taxes (e.g. Immervoll et al, 2005; Mahler & Jesuit, 2006; Wang et al, 2012, 2014; Jesuit & Mahler, 2017). Few other studies comparing the redistributive effects of benefits and taxes simultaneously point in the same direction (e.g. Immervoll and Richardson, 2011; Kenworthy, 2011; Journaud et al, 2012; Avram et al, 2014). However, when categorizing pensions as income other than transfers, Guillaud et al (2017) argue that tax redistribution dominates transfer redistribution in most countries.

A number of studies are using the EUROMOD microsimulation model to analyze the distributional impact of transfers and taxes. De Agostini et al (2014) analyze the tax-benefit policy reforms that have been implemented after the Great Recession. They find that the changes in direct taxes, pensions and cash benefits had broadly inequality reducing effects, except in Germany. However, after including the VAT, the policy package appears to have been more

⁸ See for example Dalton (1936), Musgrave & Tun Thin (1948), Gillespie (1965), Kakwani (1977a), Reynolds & Smolensky (1977a and 1977b), Kiefer (1984), Mitchell (1991), Silber (1994), OECD (2008, 2011 and 2015) and analyses based on the Luxembourg Income Study database (some of them are listed in our references).

regressive. Hills et al (2014) point out that most of the structural policy changes, especially those introduced in the 2007-2011 crisis onset period, have inequality-increasing effects. Avram et al (2014) analyze different types of policies in reducing income disparities. They conclude that pensions and direct taxes have the strongest impact on redistribution, despite low progressivity of these programs in some countries. Thus, the size of the programs matters more, than their targeting to lower income groups. As suggested by Figari & Paulus (2015), the overall redistributive effect of the tax-benefit systems heavily depends on the income concept concerned. They introduce an extended income concept, which also includes indirect taxes, imputed rent and in kind benefits. Applying this concept to three European countries (Belgium, Greece and the United Kingdom), they find that differences in redistribution across countries become smaller. Another conclusion is that the use of the disposable income concept can lead to an overestimation of the redistributive effects of transfers and taxes.

3. Research method

3.1 Measuring the redistributive effects of income taxes and social transfers

Usually, the impact of social policy on income inequality is calculated in line with the work of Musgrave et al (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: 98). Our measure of the redistributive impact of social security on inequality is straightforwardly based on formulas developed by Kakwani (1986) and Ringen (1991):

$$\text{Redistribution by taxes and social transfers} = \text{primary income inequality} - \text{disposable income inequality}$$

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; see section 3.2 for more details. Table 1 presents the framework of accounting income inequality and redistribution through various income sources; see *Documentation Guide LLBIFR Dataset on Income Inequality 2017* for details on the LIS Household Income Components List.

Table 1 The income inequality and redistribution accounting framework

Income components	Income inequality and redistributive effect
Labor income + capital income + private transfers = Primary income	Income inequality before social transfers and taxes
+ Social security transfers = Gross income	-/- Redistributive effect of social transfers = Income inequality before taxes
-/- Income taxes and social security contributions = Disposable income	-/- Redistributive effect of taxes = Income inequality after social transfers and taxes

For some countries and years, private transfers⁹ are not available, including Canada (1997, 1994, 1991, 1987, 1981, 1975, 1971), Czech Republic (1996, 1992), Italy (1986), Norway (2013, 2010, 2007), Poland (1986), Romania (1997, 1995), Slovakia (1992), Spain (1985, 1980), Sweden (1981, 1967). Taiwan (1995) has no information on private transfers or social security transfers. Austria (1995, 1987) only has information on disposable income. For cases without information on private transfers, we calculate all incomes without adding private transfers.

The measures of both pre- and post-social security income are far from ideal. At a conceptual level, no conceivable measure of pre-social security income could indicate what the income distribution would look like if social security did not exist. A comparison between the standard Gini index of post-tax-transfer income inequality and the hypothetical situation where social transfers are absent, other things being equal, shows that such transfers have an important redistributive effect that helps to reduce inequality and the number of people who are at risk of poverty.¹⁰ In the absence of all social transfers, the average poverty risk would be considerably higher than it is in reality. It should however be noted that the indicator of income inequality before social transfers must be interpreted with caution (Kim, 2000b; Nell, 2005). First, some transfers that can also have the effect of the disposable incomes of households and individuals are not taken into account, namely transfers in kind, tax credits and tax allowances. Second, the pre-transfer inequality is compared to the post-transfer inequality keeping all other things equal – namely, assuming unchanged household and labor market structures, thus disregarding any possible behavioral changes that the situation of absence of social transfers would involve. However, behavioral responses – with the strongest effects on reducing work effort – have been at the heart of the policy debates shaping the evolution of antipoverty policy.¹¹ 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 only be seen as an approximation of the redistributive effects because the assumption that agents behave similar in situations with and without social transfers and social security. One may imagine the labor supply decision in absence of social transfers and social security. It is likely that in the absence of

9 Private transfer are for example alimony and other family transfers and private education transfers.

10 Among others, see Behrendt (2002), Smeeding (2005), Förster (2000), Förster & Pearson (2002) and Förster & Mira d'Ercole (2005).

11 We refer to a seminal review by Danziger, Haveman & Plotnick (1981).

social transfers more people will work (more) thereby earning higher incomes and having consequences for income inequality. In essence, budget incidence analyses assume that labor supply decisions in a situation with social transfers and social security are equal to a situation without social transfers. So, this standard approach biases the redistributive effect of generous and/or targeted welfare systems. Our estimates for redistribution through taxes and transfers of each country should consequently be regarded as upper bounds.

3.2 Data: gross and net income datasets in LIS

The LIS Cross-National Data Center in Luxembourg provides the largest available income database of harmonized microdata collected from 47 countries in Europe, North America, Latin America, Africa, Asia, and Australasia spanning five decades. Harmonized into a common framework, LIS datasets contain household- and person-level data labor income, capital income, social security and private transfers, taxes and contributions, demography, employment, and expenditures.¹² The LIS database allows scholars to access the microdata, so that income inequality measures and fiscal redistribution (and the partial effect per social program) can be derived consistently from the underlying data at the individual and household level.

Country-comparative and trend analyses of income distribution based on LIS gross/net datasets should be done with caution. LIS provides gross income data in most countries and years while providing income data that are net of (income) taxes in others. Of the 293 LIS datasets available at the time of writing, 194 are classified as gross, 84 as net and 15 as ‘mixed’; see *Documentation Guide LLBIFR Dataset on Income Inequality 2017* for a specification.

Datasets on Egypt, Georgia, Hungary, Italy, Mexico, Paraguay, Russia, Serbia, Slovenia and Uruguay have always been net. Belgium, Greece, Ireland, Luxembourg, Slovakia and Spain are covered by both gross and net datasets, at different points in time. In the net dataset, Gini of gross income would be equal to Gini of disposable income. Mixed datasets are a special case in which total income can be gross of income taxes but net of contributions, or vice versa. Mixed datasets apply to Austria (1995, 1987), China (2002), Colombia (2013, 2010, 2007), Estonia (2000), France (2010, 2005, 2000, 1994, 1989, 1984, 1978), and Poland (1995).

12 The distinctive feature and value-added of LIS is the access it provides to a set of harmonized micro data files supplied by participating statistical agencies at the country level (Ravallion (2015: 529): Harmonization of income data increases quality and comparability across nations and across time; see Smeeding & Latner (2015) for a critical review of three other popular data sets which summarize inequality across countries and years (World Development Indicators (‘WDI’)/‘PovcalNet’ and ‘All the Ginis’). Following Ravallion (2015: 529): There are pros and cons of each source. While WIID is the largest (by far) it is probably the least methodologically consistent internally, while LIS is the smallest but most consistent. PovcalNet and the WDI are somewhere between the two.

Table 2 Datasets with gross and net income data in LIS

	Gross incomes		Mixed		Net incomes		Total	
	# obs	# datasets	# obs	# datasets	# obs	# datasets	# obs	# datasets
Historical wave	185,254	9					185,254	9
Wave I	148,766	10	10,468	1	23,921	1	183,155	12
Wave II	204,268	15	22,610	2	43,016	7	269,894	24
Wave III	218,537	16	8,603	1	73,851	9	300,991	26
Wave IV	475,730	20	62,522	3	95,616	17	633,868	40
Wave V	371,858	17	33,471	3	79,566	14	484,895	34
Wave VI	544,920	26	10,240	1	117,578	9	672,738	36
Wave VII	773,444	28	15,549	1	100,085	7	889,078	36
Wave VII	798,618	30	31,683	2	150,824	10	981,125	42
Wave IX	723,488	23	13,891	1	99,441	10	836,820	34
Total	4,444,883	194	209,037	15	783,898	84	5,437,818	293

Source: Database Wang & Caminada (2017) based on LIS, and own calculations

3.3 Sequential accounting decomposition of the Gini coefficient: partial effects of transfers and taxes

The Gini coefficient is expressed as follows (cf. Jenkins, 1999; updated 2010):

$$Gini = 1 + \left(\frac{1}{n}\right) - \left[\frac{2}{n^2} \mu\right] \sum_{i=1}^n (n - i + 1) y_i, i = 1, 2, \dots, n \quad (1)$$

In formula (1), n denotes number of individuals, μ denotes average income of individuals, and y_i presents income of individual i . The level of Gini coefficient is given by number of individuals, average income of individuals. Using expression (1), we are able to decompose the Gini coefficient of primary income into the Gini coefficient of disposable income and the redistributive effects of transfers and taxes. Income (inequality) can be measured with or without transfers and/or taxes.

$$y_i = y_i^{pri} + \alpha B_i - \beta T_i, i = 1, 2, \dots, n, \alpha, \beta \in \{0,1\} \quad (2)$$

y_i^{pri} , B_i and T_i denote primary income of individual i , total transfers of individual i and total taxes of individual i , respectively. Depending on α and β , individual income is determined by the sum of all cash incomes, such as wages and salaries, social security transfers, private transfers and so on, where we focus on social transfers and direct taxes. When $\alpha = 0$ and $\beta = 0$, the resulting inequality measure presents the Gini coefficient before transfers and taxes ($Gini_{pri}$); if $\alpha = 1$ and $\beta = 1$, the measure corresponds to the Gini coefficient after transfers and taxes ($Gini_{dhi}$). For $\alpha = 1$ and $\beta = 0$, Gini coefficient after transfers, but before taxes is measured ($Gini_{gross}$). If $\alpha = 0$ and $\beta = 1$ the measure shows the Gini coefficient after taxes but before transfers.

In a more general expression, individual income can be shown as formula (3), consisting of primary income, m kinds of transfers and p types of taxes. B_{ik} show the k^{th} transfer of individual i , and T_{il} presents the l^{th} tax of individual i . When $\alpha_k=1$, $\alpha_{-k}=0$ ($\alpha_j=0$ ($j \neq k$)) and $\beta_l=0$, individual income includes primary income plus the k^{th} transfer; when $\alpha_k=1$, $\beta_l=1$ and $\beta_{-l}=0$ ($\beta_q=0$ ($q \neq l$)), individual income contains primary income plus all the transfers and the l^{th} tax, we explain why we choose this order later.

$$y_i = y_i^{pri} + \sum_{k=1}^m \alpha_k B_{ik} - \sum_{l=1}^p \beta_l T_{il}, \quad (3)$$

$i = 1, 2, \dots, n, k = 1, 2, \dots, m, l = 1, 2, \dots, p, \alpha_k, \beta_l \in \{0,1\}$

This allows us to calculate inequality (Gini) without a certain kind of transfer or tax, and consequently the partial redistributive effect of that transfer or tax. Likewise the redistributive effects of all income components within the trajectory between primary income inequality and disposable income inequality (like old-age/disability/survivor transfers, sickness transfers, family/children transfers, education transfers, unemployment transfers, housing transfers, general/food/medical assistance transfers and other social security transfers) can be calculated using this formula.

We take a budget incidence approach to measure the redistributive effect of the welfare state, and we focus on the redistribution between individuals or households at one moment in time (not over the lifecycle). We apply the Reynolds-Smolensky (1977a and 1977b) measure of the redistributive impact of transfers and taxes to present the reduction in Gini coefficient from primary income (pri) to disposable income (dhi). The redistributive effect LG can be expressed as (c.f. Creedy & Ven, 2001):

$$LG = Gini_{pri} - Gini_{dhi} \quad (4)$$

LG and $Gini$ are the redistributive effect and the Gini coefficient of primary or disposable income. The total redistributive effect can be disentangled in several partial effects:

$$LG_B = Gini_{pri} - Gini_{pri+B} \quad (5)$$

$$LG_T = Gini_{pri+B} - Gini_{dhi} \quad (6)$$

LG_B and LG_T represent the partial redistributive effect of all benefit transfers B , and the partial redistributive effect of all taxes and social contributions T . $Gini_{pri+B}$ is equal to $Gini_{gross}$. Consequently, the decomposition in formula (5) and (6) will offer us a quantitative measure for the overall reduction in the Gini by transfers and taxes in a country.

In order to assess the effects of social benefits and taxes on the overall redistribution we apply a sequential accounting decomposition technique. It should be noted, however, that this procedure is somewhat arbitrary since the choice of benchmark income affects the outcome. Applying the redistribution from, say, taxes on gross income rather than primary income alters the outcome to some extent. Since taxes are levied on gross income (primary income plus benefits), the redistributive effects may be underestimated. Nevertheless the logic of this decomposition of Gini is that taxes are applied to gross income and benefits to primary income. This approach has been, among others, advocated by Kakwani (1986).

Our sequential accounting decomposition approach of income inequality follows studies by Jesuit & Mahler (2004) and Mahler & Jesuit (2006), with inequality indices accounted sequentially in order to determine the effective distributional impact of different income sources. Other techniques of the decomposition of the Gini coefficient by income source can be found in the literature as well; see e.g. Lerman & Yitzhaki (1985), Stark et al (1986), Kim (2000a), Creedy & Ven (2001). For example the well-known Lerman & Yitzhaki's (1985) method derives the marginal impact of various income sources on overall income inequality.¹³ Fuest et al (2010) explore the redistributive effects of different tax benefit instruments in the enlarged European Union (EU) based on two families of approaches. When comparing both approaches, they lead to the same estimates of disposable income inequality. However, both lead to somewhat contradictory results with respect to the importance of benefits for redistributing income. Inequality analysis based on the *sequential accounting decomposition* approach suggests that benefits are the most important factor reducing inequality in the majority of countries (e.g. Immervoll et al, 2005; Mahler & Jesuit, 2006; Whiteford, 2008). The *factor source decomposition* approach, suggested by Shorrocks (1982), however, suggests that benefits play a negligible role and sometimes even contribute slightly positively to inequality, whereas taxes are by far the most important contributors to income inequality reduction (e.g., Jenkins 1995; Jäntti 1997; Burniaux et al, 1998).

Although both approaches are used in the literature, studies analyzing 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 in European countries. In order to assess the effects of taxes and benefits on the overall redistribution we (therefore) apply the sequential accounting decomposition technique in line with the comparative work of Mahler & Jesuit (2006), and recent studies by Kristjánsson (2011) and Kammer et al (2012). This choice for an sequential accounting decomposition approach is somewhat arbitrary, but fits in a strand of empirical literature that systematically illustrate that social transfers significantly improve the economic conditions of families, especially in European countries, and that the distribution of disposable incomes in these societies become more equal with the existence of these types of provisions.

3.4 Decomposition: partial effects of different income sources

Disentangling the inequality by income source could be affected by the ordering effect. For example, the partial redistributive effect of a specific social transfer will be highest (smallest) when computed as the first (last) social program; see equation (3). The partial effects of these transfers in total redistribution could be computed in several orders. We correct for this as follows: we first consider every specific social transfer as the first program to be added to primary income and then the last program following all other transfer programs. Consequently, we can get two Ginis: $Gini_{pri+Bk}$ and $Gini_{gross-Bk}$. The redistributive effect of specific transfer programs can be presented by (7):

$$LG_{BK} = ((Gini_{pri} - Gini_{pri+Bk}) + (Gini_{gross-Bk} - Gini_{gross}))/2 \quad (7)$$

The redistributive effect of income taxes and social security contributions will be calculated by formula (6). Consequently, the decomposition in formula (7) and (6) will offer us a quantitative measure for the reduction in the Gini by specific social programs in a country. When we take the mean of the decomposition results across countries, the sum of all partial redistributive effects amount (a little) over 100 percent due to missing observations. We rescaled the redistributive

¹³ See for 'descogini' in STATA (Lopez-Feldman, 2006).

effects of each program by applying an adjustment factor, which is defined as the overall redistribution given by formula (4) (=100%) divided by sum of all partial redistributive effects of all programs (over 100%), in order to correct for an over-estimated effect.

3.5 Choice of income unit

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. E.g. 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/spouses. How to solve the problem of the key question of the unit of analysis?

Traditionally, studies have used household income per capita 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 (Figini, 1998). An equivalence scale is a function that calculates adjusted income from income and a vector of household characteristics. The general

form is given by the following expression: $W = \frac{D}{S^E}$, where W is adjusted income, D is income (disposable income), S is size (number of persons in households) and E is equivalence elasticity. E varies between 0 and 1. The larger E , the smaller are the economies of scale assumed by the equivalence scales. Equivalence scales range from $E=0$ (no adjustment or full economies of scale) to $E=1$ (zero economies of scale). Between these extremes, the range of values used in different studies is very large, strongly affecting measured inequality.

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 D is 100, a household of two persons must have an income of 140 to have equivalent incomes. Alternatively an one-person household must have 70 percent of the total income of a two-person household to have equivalent income. In our comparative analysis we use this equivalence scale of LIS, 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. Alternatively adjustment methods would definitely affect the ranking of countries, although the broad pattern remains the same (Atkinson et al, 1995:52).

As to missing data, we have included households which report zero primary income (i.e., all of their income is derived from the state) but have excluded households that report zero disposable income. We have employed standard LIS top- and bottom-coding conventions, top-coding income at 10 times the median of non-equivalized income and bottom-coding income at 1 percent of equivalized mean income. That is, income in the top of the distribution is cut off by ten times the median of the non-equivalized household income. Income at the bottom of the distribution is replaced by one percent of the average equivalized household income. The bottom coding is particularly relevant for households without primary income. Without bottom-coding, these households would not be included in the calculation of the Gini coefficient of primary income. On the other hand, these households would again be present in the calculation of the Gini coefficient on the basis of secondary income components as these households are entirely dependent on this. In other words, bottom-coding ensures that the calculations of the Gini coefficients are carried out over the same selection of households.

3.6 Focus on total population – including public pension schemes

This paper extends and deepens the analyses of both Immervoll & Richardson (2011), Wang & Caminada (2011a and 2011b) and Wang et al (2012 and 2014), using the tax-benefit models

across countries over time to show the combined redistributive effects of taxes and transfer systems. It attempts to gauge the effects of several taxes and benefits over a longer time period and for as many countries as data permit.

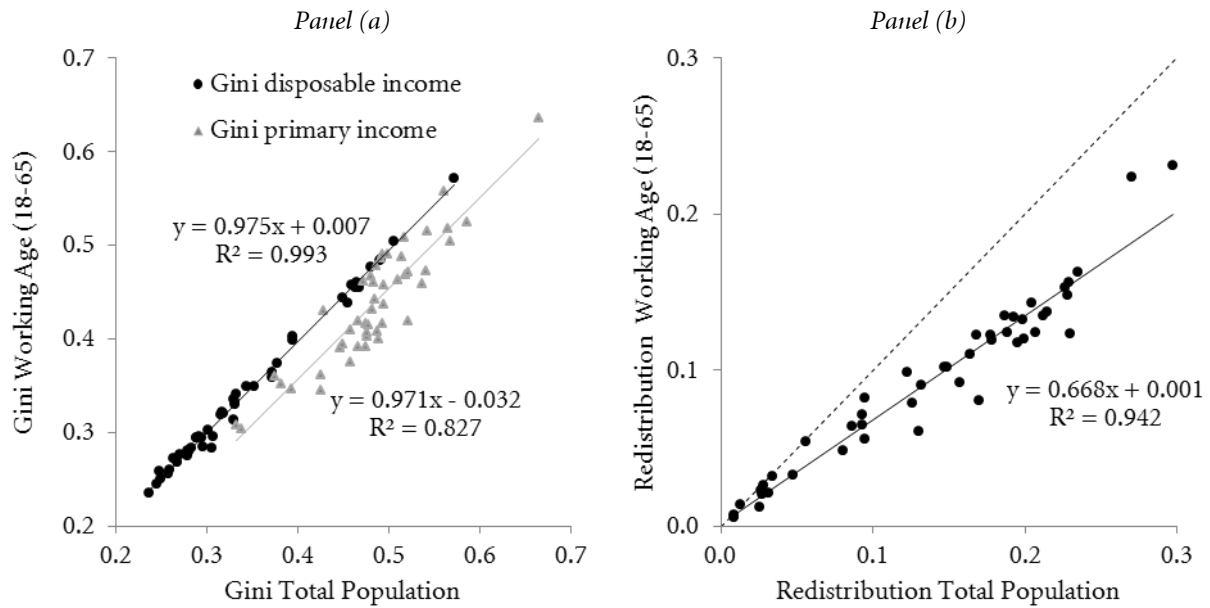
Unlike most existing studies, it explicitly focuses on the total population, and not to the non-elderly population (those aged 18-64).¹⁴ Indeed, restricting the analysis to the non-elderly would avoid some of the problems inherent to comparisons of incomes between people who are at different stages in their lives. For instance, an essential function of old-age pensions is to redistribute intertemporally over the life cycle; in that case a focus on the non-elderly helps in understanding the most important elements of interpersonal redistribution. However, we believe that in our analysis the largest government transfer program, public pensions, can not be excluded. Public pension plans are generally seen as part of the safety net, generating large antipoverty 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, 2008:120). Occupational and private pensions are not redistributive programs 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.¹⁵ 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 primary 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 social security transfers.

It should be noted that our results could be biased by the focus on the total population instead of non-elderly population (those aged 18-64). Income redistribution among the total population is higher compared to the redistribution within the working-age population. However, the correlation between inequality (and redistribution) of total population and inequality (and redistribution) of working-age population is rather high. Figure 1 (panel a) plots Gini coefficients of primary income and disposable incomes for both population groups; panel (b) plots figures for redistribution for both population groups. This suggests that focusing on the total population will not give a strong bias.

14 Tony Atkinson gave some helpful comments on the choice of different age groups. He supported our idea to take the total population into account (LIS Summer Workshop 2012). The definition of working age population is open to debate because of growing late retirement, so the range of working-age population is not easy to decide.

15 See Been et al (2017) for such an analysis. Preferably, however, the redistributive effects of occupational and private pensions should be analysed on a life time basis.

Figure 1 Linkage income inequality total population and working-age population (18-64) across 47 LIS countries around 2011-2013



Source: Database Wang & Caminada (2017) based on LIS, and own calculations

3.7 Countries and other measurement issues

In empirical literature, the selection of countries and data-years differ due to the consideration of data quality. 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 & Marx, 2009; Smeeding, 2008). We apply a cross-national analysis using comparable income surveys for all countries of LIS from 1963-2014, allowing researchers to make comparisons in a straightforward manner, and the information is still updating and expanding. This dataset contains all countries in LIS: Australia, Austria, Belgium, Brazil, Canada, China, Colombia, Czech Republic, Denmark, Dominican Republic, Egypt, Estonia, Finland, France, Germany, Georgia, Greece, Guatemala, Hungary, Iceland, India, Ireland, Israel, Italy, Japan, Luxembourg, Mexico, the Netherlands, Norway, Panama, Paraguay, Peru, Poland, Romania, Russia, Serbia, Slovak Republic, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, the United Kingdom, the United States, and Uruguay.¹⁶

From nearly 300 variables in the dataset, we choose those related to household income (all kinds of income sources), total number of persons in a household and household weight (in order to correct 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 & Jesuit (2006) and Wang & Caminada (2011a and 2011b), we have eliminated both observations with zero or a missing value of disposable income from LIS data. Household weights are applied for calculation of Gini coefficients. Levels of inequality can be shown in several ways, e.g., by Lorenz curves, specific points on the percentile distribution (P10 or P90), decile ratios (P90—P10), and Gini coefficients or many other summary statistics of inequality. All (summary) statistics of inequality

¹⁶ It should be noted that Taiwan is regarded by China as a district of China, while in this comparative study we simply refer to Taiwan (as coded by LIS).

can be used to rank income inequality in LIS countries, but they do not always tell the same story. In section 4.4 we will present a sensitivity analysis, using several indicators of income inequality to give a broader picture of the redistributive effects of transfers and taxes.

It should be noted that there have been controversial arguments regarding the issues in the measurement of income inequality. These arguments have their own merits and shortcomings, and there has been little professional consensus among researchers with regard to the theoretical superiority of a particular way of measuring inequality. The choice of indicator used will mainly depend on the purpose of the research. Moreover, the availability of reliable data restricts the possibilities for conducting empirical research, which is especially problematic in cross-national studies. The aim of this database is *not* to review definitional issues that arise in assessing the extent of, and change in, income inequality across countries. We simply refer to a vast literature on the sensitivity of measured results to the choice of income definitions, inequality indices, appropriate equivalence scales, and other elements that may affect results in comparative research.¹⁷

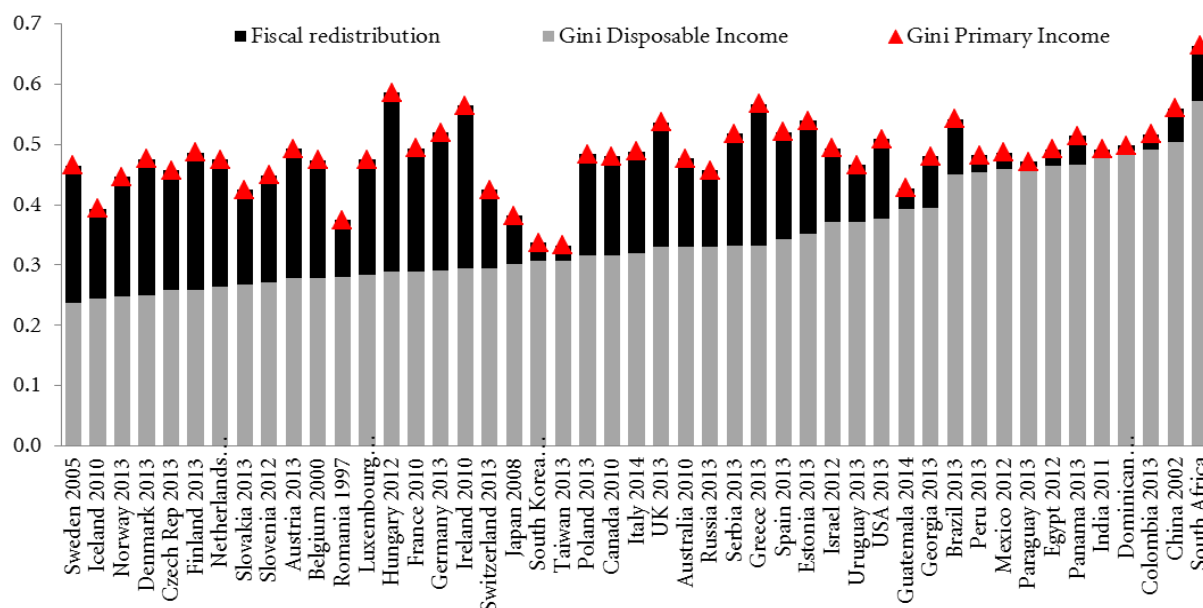
4. Inequality and fiscal redistribution across LIS countries around 2011-2013

4.1 Inequality across countries

This section reviews the evidence on cross national comparisons of annual disposable income inequality over 47 nations. This section is mainly descriptive and relies on the empirical evidence LIS for the levels of income inequality around 2011-2013. Figure 2 shows the Gini coefficient. Countries are listed in order of their Gini of disposable income from smallest to largest. The obvious advantage of the presentation of inequality by summary statistics like the Gini coefficient is its ability to summarize several nations in one picture.

¹⁷ Among others, see Atkinson (1970, 1979, 1987 and 2003), Champernowne (1974), Kakwani (1977b), Hagenaaars & De Vos (1987), Coulter (1989), Atkinson et al (1995), Behrendt (2000), Gottschalk & Smeeding (1997 and 2000), Marcus & Danziger (2000), Atkinson & Brandolini (2001 and 2006), Caminada & Goudswaard (2001), Förster & Pearson (2002), Smeeding (2005 and 2008), Förster & Mira d'Ercole (2005), OECD (2008, 2011 and 2015), Caminada et al (2012a), Wang et al (2012 and 2014) and (other) papers listed in our reference section using data from the Luxembourg Income Study. Recent comprehensive reviews on methodological assumptions underlying international levels and trends in inequality are found in Brandolini & Smeeding (2007a and 2009).

Figure 2 Disposable and primary income inequality across 47 LIS countries around 2011-2013



Notes:

- For Belgium, Egypt, Georgia, Hungary, India, Italy, Mexico, Russia, Paraguay, Serbia, Slovenia and Uruguay data for taxes are not available.
- Results for Hungary 2012 should be treated with caution. We miss over 20 percent of the observations when we move from disposable income to primary income.
- For Norway 2013, private transfers are not available; we calculate all incomes without adding private transfers.

Source: Database Wang & Caminada (2017) based on LIS, and own calculations

The lowest income inequality is found in Nordic countries, Czech Republic and the Netherlands, while India, Dominican Republic, Colombia, China and South Africa are the most unequal nations. Figure 2 indicates that a wide range of inequality exists across 47 LIS nations, with the nation with the highest inequality coefficient (South Africa) over twice as high as the nations with the lowest coefficient (Nordic Countries).

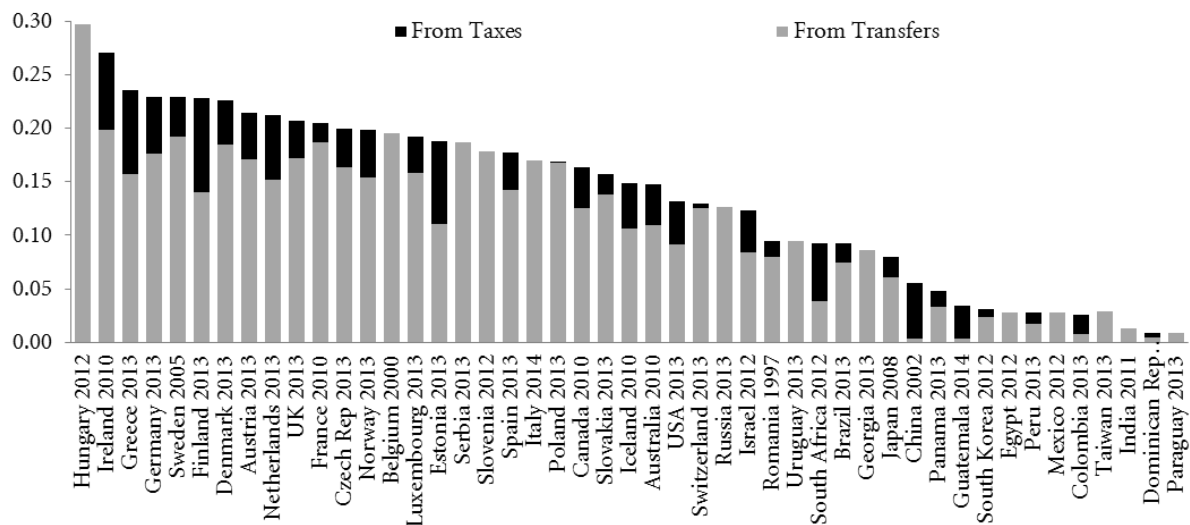
With respect to income inequality after social transfers and taxes, there are 18 countries with the Gini coefficient below average (0.30). Sweden, Iceland, Norway, Denmark, Czech Republic, Finland, the Netherlands, Slovakia and Slovenia have rather low values below 0.275, followed by other 21 countries (Austria, Belgium, Romania, Luxembourg, Hungary, France, Germany, Ireland, Switzerland, Japan, South Korea, Taiwan, Poland, Canada, Italy, the United Kingdom, Australia, Russia, Serbia, Greece and Spain) with Gini coefficients between 0.275 and 0.350. Above average inequality is found in 17 countries (Estonia, Israel, Uruguay, the United States, Guatemala, Georgia, Brazil, Peru, Mexico, Paraguay, Egypt, Panama, India, Dominican Republic, Colombia, China and South Africa).

The pattern of primary income inequality (before social transfers and taxes) is quite different from disposable income inequality. South Africa, Hungary, Greece, Ireland and China have the highest level of primary income inequality, with values above 0.55. Iceland, Japan, Romania, South Korea and Taiwan have rather low levels of primary income inequality, below 0.40. The redistributive effect of taxes and social transfers differs considerably across countries. The highest level of redistribution is found in Nordic Countries, Ireland, Greece, Germany, Austria, the Netherlands, the United Kingdom and France, while fiscal redistribution is rather small in Mexico, Colombia, Taiwan, India, Dominican Republic and Paraguay. This cross country difference in the redistributive effect will be analyzed in section 4.2.

4.2 The redistributive effect of taxes and transfers

Figure 3 shows the overall redistribution across countries and the disaggregated effects of social transfers and taxes based on formula (5) and (6). Countries are listed in order of their total redistribution from largest to smallest. On average, the share of social transfers play a major role of 81 percent in the total reduction of inequality, while taxes (income taxes and mandatory payroll taxes) account for 19 percent of total reduction of income inequality. For some countries, such as Belgium, Egypt, Georgia, Hungary, India, Italy, Mexico, Russia, Paraguay, Serbia, Slovenia and Uruguay, data of taxes are not available in the dataset.

Figure 3 Redistributive effect of taxes and transfers across 47 LIS countries around 2011-2013

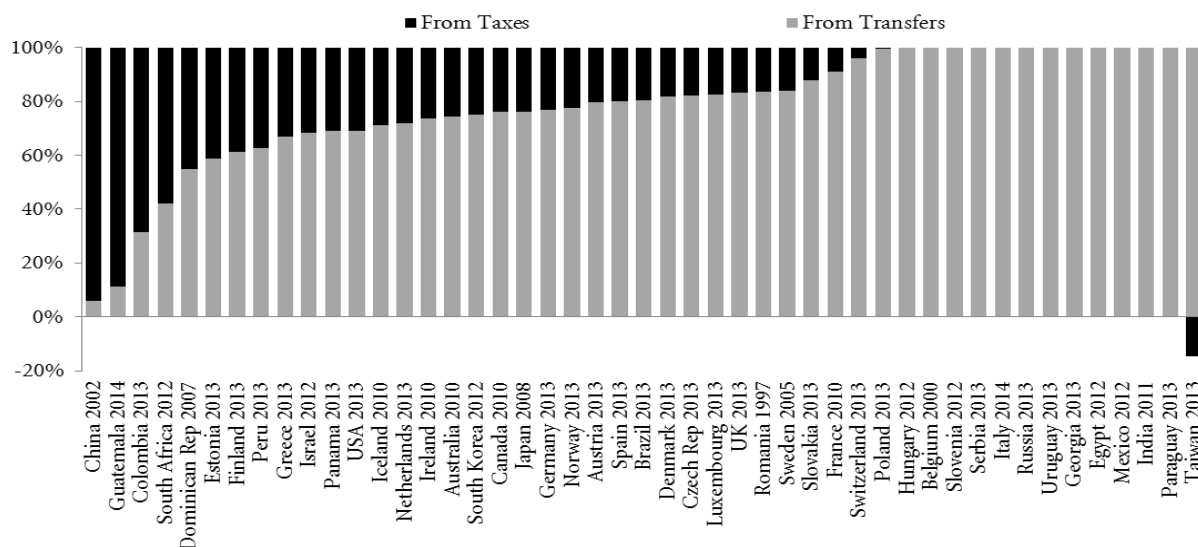


Notes: See below Figure 2

Source: Database Wang & Caminada (2017) based on LIS, and own calculations

Besides China, only in a few countries taxes are important in equalizing incomes: China, Guatemala, Colombia and South Africa. Generally speaking, redistribution of income in most countries relies to a large extent on social transfers. This relative effect of social transfers and taxes in total redistribution is presented in Figure 4 (countries are listed according to the reduction of income inequality by taxes).

Figure 4 Relative redistributive effect of taxes and transfers across countries around 2011–2013



Notes: See below Figure 2

Source: Database Wang & Caminada (2017) based on LIS, and own calculations

Note that the partial effect of taxes is negative for Taiwan and rather low for Switzerland. The rather low contribution of taxes in total fiscal redistribution for Switzerland is caused by tax competition (Kirchgässner and Pommerehne, 1996; Feld 1999). In this country it appears to be difficult to levy redistributive taxes from the rich and mobile persons to the poor. As a result the amount of taxes paid by rich people is relatively low.

4.3 Redistribution, budget size and targeting

Considering the redistributive effect of social benefits, scholars have distinguished between programs' size and the extent to which they are targeted toward low-income groups by means-testing. In a seminal paper by Korpi & Palme (1998: 663), they have posited a "paradox of redistribution" whereby "the more we target benefits to the poor . . . the less likely we are to reduce poverty and inequality." The paradox arises from the fact that highly targeted programs have the support of a small and isolated political base. As they put it, targeted programs offer "no rational base for a coalition between those above and below the poverty line. In effect, the poverty line splits the working class and tends to generate coalitions between better-off workers and the middle class against the lower sections of the working class" (Korpi & Palme, 1998: 663). Comprehensive programs, on the other hand, even when they are organized according to social insurance principles, tend to encourage coalitions between the working and middle classes that leave low-income groups less isolated.

With this background in mind, it is useful to explore empirically these two aspects of transfers with reference to the LIS database. Is redistribution associated with transfers' overall size or with their target efficiency? Is there, as is often suggested, a tradeoff between the two? Using LIS micro data it is possible to calculate a measure of the average value of social transfers as a percentage of households' pre-tax income (gross income): the larger the value, the greater the share of total income that derives from transfers. It is also possible to calculate a summary index of the degree to which transfers are targeted toward low-income groups. This is done by applying Kakwani's (1986) 'index of concentration' to transfers. This index takes on the value of -1.0 if the poorest person gets all transfer income, 0 if everybody gets an equal amount, and +1.0 if the richest

person gets all transfer income (cf. Korpi & Palme, 1998: 684). Figures for the size and target efficiency of social benefits are calculated for all countries are reported in Table 3 and Figure 5.

Table 3 Redistributive effect of social transfers and taxes around 2011-2013

LIS Dataset – gross or net		Gini Coefficient		Relative Fiscal Redistribution			Budget size transfers	Efficiency / targeting
		Primary Income	Disposable Income	Total	From Transfers	From Taxes		
Australia 2010	Gross	0.477	0.33	31%	23%	8%	0.129	-0.318
Austria 2013	Gross	0.493	0.279	44%	35%	9%	0.261	0.045
<i>Belgium 2000</i>	<i>Net</i>	<i>0.474</i>	<i>0.279</i>	<i>41%</i>	<i>41%</i>	<i>0%</i>	<i>0.245</i>	<i>-0.165</i>
Brazil 2013	Gross	0.542	0.45	17%	14%	3%	0.204	0.158
Canada 2010	Gross	0.481	0.317	34%	26%	8%	0.182	-0.066
China 2002	Mix	0.561	0.505	10%	1%	9%	0.127	0.324
Colombia 2013	Mix	0.517	0.491	5%	2%	3%	0.112	0.250
Czech Rep 2013	Gross	0.457	0.258	44%	36%	8%	0.205	-0.198
Denmark 2013	Gross	0.476	0.249	48%	39%	9%	0.236	-0.199
Dominican Rep 2007	Gross	0.498	0.49	2%	1%	1%	0.028	0.026
<i>Egypt 2012</i>	<i>Net</i>	<i>0.492</i>	<i>0.464</i>	<i>6%</i>	<i>6%</i>	<i>0%</i>	<i>0.097</i>	<i>-0.040</i>
Estonia 2013	Gross	0.54	0.352	35%	21%	14%	0.191	0.022
Finland 2013	Gross	0.487	0.259	47%	29%	18%	0.255	-0.033
France 2010	Mix	0.494	0.289	41%	38%	4%	0.291	0.082
<i>Georgia 2013</i>	<i>Net</i>	<i>0.481</i>	<i>0.394</i>	<i>18%</i>	<i>18%</i>	<i>0%</i>	<i>0.135</i>	<i>-0.036</i>
Germany 2013	Gross	0.52	0.291	44%	34%	10%	0.224	-0.118
Greece 2013	Gross	0.567	0.332	41%	28%	14%	0.296	0.172
Guatemala 2014	Gross	0.427	0.394	8%	1%	7%	0.028	-0.039
<i>Hungary 2012</i>	<i>Net</i>	<i>0.586</i>	<i>0.289</i>	<i>51%</i>	<i>51%</i>	<i>0%</i>	<i>0.326</i>	<i>0.011</i>
Iceland 2010	Gross	0.393	0.245	38%	27%	11%	0.164	-0.125
<i>India 2011</i>	<i>Net</i>	<i>0.492</i>	<i>0.479</i>	<i>3%</i>	<i>3%</i>	<i>0%</i>	<i>0.069</i>	<i>0.130</i>
Ireland 2010	Gross	0.564	0.294	48%	35%	13%	0.268	-0.087
Israel 2012	Gross	0.494	0.371	25%	17%	8%	0.148	0.010
<i>Italy 2014</i>	<i>Net</i>	<i>0.488</i>	<i>0.319</i>	<i>35%</i>	<i>35%</i>	<i>0%</i>	<i>0.300</i>	<i>-0.004</i>
Japan 2008	Gross	0.382	0.302	21%	16%	5%	0.149	-0.036
Luxembourg 2013	Gross	0.475	0.283	40%	33%	7%	0.260	0.106
<i>Mexico 2012</i>	<i>Net</i>	<i>0.486</i>	<i>0.459</i>	<i>6%</i>	<i>6%</i>	<i>0%</i>	<i>0.113</i>	<i>0.022</i>
Netherlands 2013	Gross	0.475	0.264	45%	32%	13%	0.222	-0.117
Norway 2013	Gross	0.446	0.248	44%	34%	10%	0.232	-0.064
Panama 2013	Gross	0.514	0.467	9%	6%	3%	0.116	0.111
<i>Paraguay 2013</i>	<i>Net</i>	<i>0.472</i>	<i>0.463</i>	<i>2%</i>	<i>2%</i>	<i>0%</i>	<i>0.039</i>	<i>0.007</i>
Peru 2013	Gross	0.483	0.455	6%	4%	2%	0.073	0.131
Poland 2013	Gross	0.484	0.316	35%	35%	0%	0.255	0.068
Romania 1997	Gross	0.375	0.28	25%	21%	4%	0.153	-0.021
<i>Russia 2013</i>	<i>Net</i>	<i>0.457</i>	<i>0.331</i>	<i>28%</i>	<i>28%</i>	<i>0%</i>	<i>0.222</i>	<i>0.055</i>
<i>Serbia 2013</i>	<i>Net</i>	<i>0.518</i>	<i>0.332</i>	<i>36%</i>	<i>36%</i>	<i>0%</i>	<i>0.336</i>	<i>0.183</i>
Slovakia 2013	Gross	0.425	0.268	37%	32%	4%	0.209	-0.108
<i>Slovenia 2012</i>	<i>Net</i>	<i>0.449</i>	<i>0.271</i>	<i>40%</i>	<i>40%</i>	<i>0%</i>	<i>0.282</i>	<i>0.002</i>
South Africa 2012	Gross	0.664	0.572	14%	6%	8%	0.106	0.193
South Korea 2012	Gross	0.337	0.306	9%	7%	2%	0.046	0.050
Spain 2013	Gross	0.52	0.343	34%	27%	7%	0.263	0.153
Sweden 2005	Gross	0.466	0.237	49%	41%	8%	0.281	-0.074
Switzerland 2013	Gross	0.425	0.295	31%	29%	1%	0.172	-0.144
Taiwan 2013	Gross	0.333	0.308	8%	9%	-1%	0.099	0.077
UK 2013	Gross	0.537	0.33	39%	32%	6%	0.217	-0.123
USA 2013	Gross	0.509	0.377	26%	18%	8%	0.202	0.076
<i>Uruguay 2013</i>	<i>Net</i>	<i>0.466</i>	<i>0.372</i>	<i>20%</i>	<i>20%</i>	<i>0%</i>	<i>0.138</i>	<i>-0.091</i>
Mean LIS		0.483	0.347	28%	23%	5%	0.185	0.006

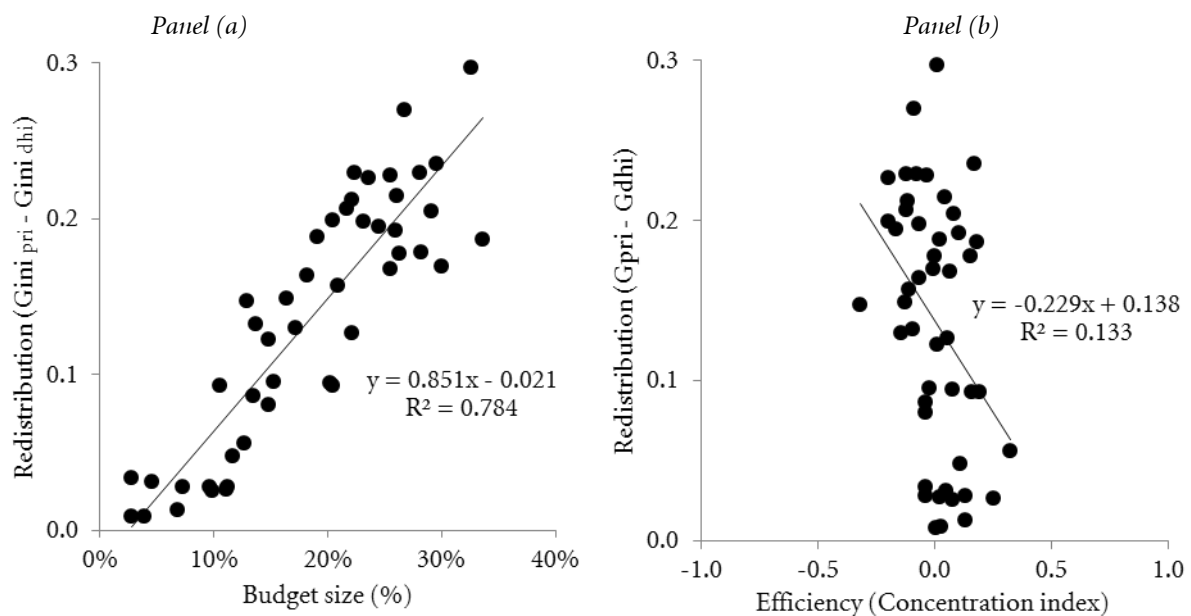
- Results for Hungary 2012 should be treated with caution. We miss over 20 percent of the observations when we move from disposable income to primary income.
- For Norway 2013, private transfers are not available; we calculate all incomes without adding private transfers.

Source: Database Wang & Caminada (2017) based on LIS, and own calculations

As is shown, there is indeed considerable variance among developed countries in the average size of social benefits relative to total household income, ranging from 2.9% to 33.6%. Some LIS countries (Serbia, Italy and France) achieve the highest budget size of transfers (above 29%), followed by twenty countries with values between 20% and 29%, while seven countries have the lowest level (less than 10%). The budget size of the United States is far below-average (14% versus 18.5%).

As for target efficiency, it is more diverse across countries. France and Greece have rather high budget size of transfers (29-30%) with transfer programs slightly regressive in terms of the Kakwani index. Spain, Luxembourg, France and Poland have low target efficiency, but high social expenditures (above 25%). Australia and Switzerland show high figures for transfer targeting although with a modest redistributive budget size (less than 18%). The United States is one of the countries with rather low social transfers, also with a quite low target efficiency. Interestingly, Australia, at the bottom of our list of budget size (13%), achieves the highest target efficiency among rich countries.

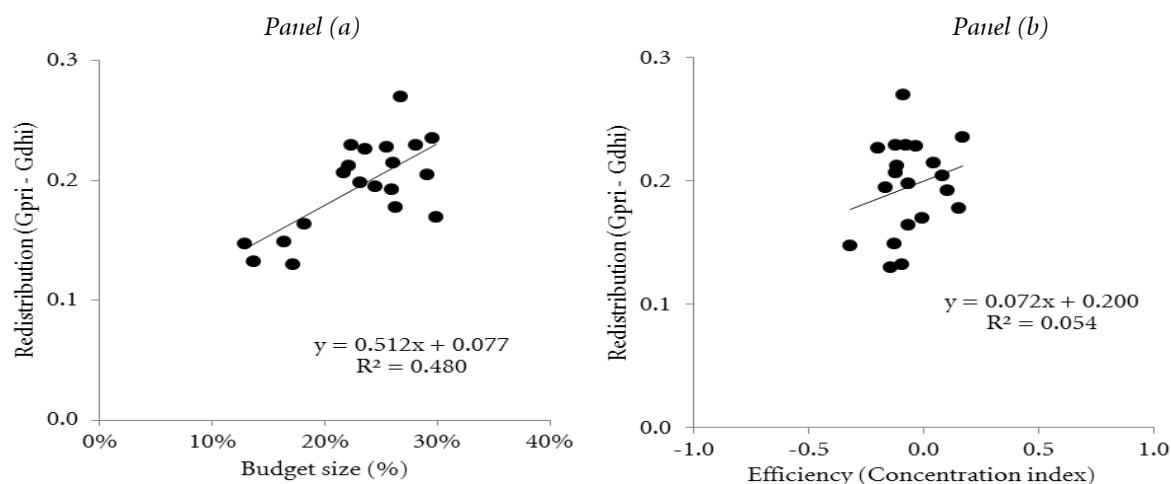
Figure 5 Redistribution, budget size and targeting across 47 LIS countries around 2011-2013



Source: Database Wang & Caminada (2017) based on LIS, and own calculations

The budget size of transfers plays a very important role on overall redistribution, which is confirmed by a simple regression analysis in Figure 5 Panel (a). The estimated coefficient of the budget size is positive and statistically significant. Target efficiency is negatively associated with redistribution, although the linkage is weak (see Panel (b)). This is in line with the claim of Korpi & Palme that greater use of transfer targeting yields less redistribution. However, it should be noted that our analysis is based on 47 LIS countries. When we restrict our analysis to the twenty wealthiest countries of LIS, the correlations with target efficiency disappears. Redistribution of incomes across countries does *not* correlate with the target efficiency. This little or no indication of a relationship between targeting and redistribution is in line with recent work of Kenworthy (2011: Chapter 6, page 2-4).

Figure 6 Redistribution, budget size and targeting across rich countries around 2011-2013



Selected LIS-countries: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Spain, Sweden, Switzerland, the United Kingdom, and the United States.

Source: Database Wang & Caminada (2017) based on LIS, and own calculations

4.4 Sensitivity analysis

Global income inequality measure

The literature shows that different indicators of income inequality are sensitive to different parts of the income distribution (among others, see Atkinson et al, 1995; Förster, 2000; Hauser & Becker, 1999; Lambert, 1993). In order to offer a broader picture of the redistributive effect of income transfers, we employed not only the Gini coefficient, but also other widely used indicators, namely Atkinson's index ($\alpha=1.0$ and $\alpha=0.5$), mean log deviation and Theil index. Indicators more sensitive to the middle part of the income distribution are the Gini coefficient, Atkinson's index ($\alpha=0.5$) and Theil index, while Atkinson's index ($\alpha=1.0$) and mean log deviation are relatively more sensitive to the changes in the lower tail of the income distribution. We performed a sensitivity analysis for four countries (Germany, the Netherlands, Sweden and the United States) from around 1985 to around 2005 (see Caminada et al, 2012a for details). We found that all indicators followed the same pattern in each country, as far as the total redistribution was concerned; the largest redistribution was given by mean log deviation, the lowest by the Atkinson's index ($\alpha=0.5$). For the partial redistributive effects at a given moment in time, we found some differences for the various indicators. The highest redistribution always came from state old-age and survivors benefits, but the share of direct taxes and social assistance benefits changed slightly depending on the indicators used. The trends of decomposed redistribution were again quite similar.

To sum up, in most cases the empirical result was hardly affected by using different global income inequality indicators. However, especially when the social program was targeted towards a certain group, for instance the lower tail of the income distribution, the results varied slightly, depending on the indicator used.

Data source

Our analysis is based on the Luxembourg Income Study database. Also the OECD Income Distribution and Poverty database is frequently used for comparative analyses (e.g. OECD, 2015,

and Thewissen et al, 2015). Detailed information is provided on the relevant websites. The LIS database allows users to access the microdata to derive consistent inequality measures from the underlying data at the individual and household level. The OECD database contains such variables based on a standardized questionnaire sent to member countries and filled out by them from national surveys. LIS has assembled data for most of the countries it covers in ‘waves’ for occasional years around 1975, 1980, 1985 and so on, at approximately 5-year intervals, whilst the OECD database has sought to include annual data for more recent years. LIS allows one to go back as far as around 1980 for rather more countries than the OECD database, but OECD has information on New Zealand, Portugal, and more than one year of information for Japan. Especially the coverage of the Gini’s of market income before the year 2004 is rather low in the OECD database: only twelve countries are well covered (Canada, Denmark, Finland, Germany, Israel, Italy, Japan, the Netherlands, New Zealand, Norway, Sweden and the United Kingdom). While even the LIS-data are by no means perfect, they produce some consistent patterns. The range of income inequality among LIS and OECD countries seems very wide at any point in time. Moreover, in spite of differences in the measurement of income inequality and the databases used, most studies have consistently found that there is a large difference in inequality among welfare states. Reports on inequality profiles for EU15 and other OECD countries for the latest data year available from OECD-data also consistently show – in general - Scandinavian and Benelux countries have the lowest income inequality, followed by continental European countries. Anglo Saxon welfare states have relatively higher inequality. Among them, the level of income inequality is highest in the United States.

Table 4 compares Gini coefficients (before and after social transfers and taxes) for the year 2010 or later from the OECD database with figures from LIS (2017), which are completely in line with our calculations. 31 countries listed countries are adopted in both the OECD-database and the LIS-database around 2013. Note that disposable income inequality data across countries of OECD-data and LIS-data are highly correlated (around 0.975). Correlation coefficients for primary income and for redistribution are somewhat lower (resp. 0.949 to 0.923). For most countries the difference in primary income inequality from OECD and from LIS do not exceed 5 percent, with exceptions for Brazil, Canada, Estonia, the Netherlands, Norway, Russia, Slovenia and Switzerland. What could explain these differences?

First and foremost, it is because the difference between income surveys. LIS micro data are predicated on different surveys across countries. From those surveys, LIS staff refined and formalized rules used to classify variables, offering a comparable micro dataset. Computations in the OECD dataset are based on the OECD income distribution questionnaires. Therefore, the sample of surveys is not the same, leading to the different values of income inequality and the redistributive effects of taxes and transfers. Moreover, OECD applies a new income definition since 2011. Data is calculated according to the new OECD Terms of reference. Compared to previous terms of reference, these include a more detailed breakdown of current transfers received and paid by households as well as a revised definition of household income, including the value of goods produced for own consumption as an element of self-employed income.

A second explanation for the diverging results is the difference in the definition of primary income, and the way income inequality before transfers and taxes is measured. Using LIS data, the degree of redistribution is calculated by comparing Gini coefficients on the basis of primary income and on the basis of gross income, in which primary income is considered as the sum of labor income, capital income and private transfers. With respect to pre-government income inequality using OECD data, it depends on market income. Consequently, the level of income disparity and overall redistributive effect differs when data is used from the LIS dataset and from the OECD dataset.

Table 4 OECD versus LIS: Income inequality and Redistribution across countries

	<i>LIS around 2013</i>				<i>OECD around 2013</i>			
	Data year	Gini Primary income	Gini Disposable income	Fiscal redistribution	Data year	Gini Primary income	Gini Disposable income	Fiscal redistribution
Australia	2010	0.477	0.330	0.147	2010	0.496	0.280	0.216
Austria	2013	0.493	0.279	0.215	2013	0.496	0.297	0.199
Brazil	2013	0.542	0.450	0.093	2013	0.575	0.470	0.105
Canada	2010	0.481	0.317	0.164	2010	0.440	0.316	0.124
Czech Republic	2013	0.457	0.258	0.199	2013	0.461	0.259	0.202
Denmark	2013	0.476	0.249	0.226	2013	0.476	0.249	0.226
Estonia	2013	0.540	0.352	0.188	2013	0.510	0.357	0.153
Finland	2013	0.487	0.259	0.228	2013	0.495	0.262	0.233
France	2010	0.494	0.289	0.204	2012	0.518	0.308	0.210
Germany	2013	0.520	0.291	0.229	2013	0.508	0.292	0.216
Greece	2013	0.567	0.332	0.235	2013	0.565	0.342	0.223
Hungary	2012	0.586	0.289	0.297	2012	0.564	0.338	0.226
Iceland	2010	0.393	0.245	0.149	2010	0.400	0.249	0.151
India	2011	0.492	0.479	0.013	2011	0.508	0.495	0.013
Ireland	2010	0.564	0.294	0.270	2010	0.578	0.298	0.280
Israel	2012	0.494	0.371	0.123	2012	0.481	0.371	0.110
Italy	2014	0.488	0.319	0.169	2014	0.512	0.326	0.186
Luxembourg	2013	0.475	0.283	0.192	2013	0.480	0.280	0.200
Mexico	2012	0.486	0.459	0.027	2012	0.473	0.457	0.016
Netherlands	2013	0.475	0.264	0.212	2013	0.439	0.289	0.150
Norway	2013	0.446	0.248	0.198	2013	0.412	0.252	0.160
Poland	2013	0.484	0.316	0.168	2013	0.464	0.299	0.165
Russia	2013	0.457	0.331	0.126	2011	0.485	0.376	0.109
Slovak Republic	2013	0.425	0.268	0.157	2013	0.428	0.269	0.159
Slovenia	2012	0.449	0.271	0.178	2012	0.411	0.250	0.161
South Africa	2012	0.664	0.572	0.093	2015	0.715	0.620	0.095
South Korea	2012	0.337	0.306	0.031	2012	0.338	0.307	0.031
Spain	2013	0.520	0.343	0.177	2013	0.523	0.345	0.178
Switzerland	2013	0.425	0.295	0.130	2013	0.387	0.295	0.092
United Kingdom	2013	0.537	0.330	0.207	2013	0.527	0.358	0.169
United States	2013	0.509	0.377	0.132	2013	0.513	0.396	0.117
Mean (31 common countries)	2012.3	0.492	0.325	0.167	2012.4	0.490	0.332	0.157

Source: OECD (data extracted 24 Aug 2017 from OECD.Stat) and Database Wang & Caminada (2017)

Although the way of measuring income inequality differs to some extent in the LIS-dataset and the OECD-dataset, the general pictures from both datasets are the same. Table 5 ranks 31 common countries in LIS-data and OECD-data from low to high for all data variables around 2013. The smallest disposable income disparity exists in Iceland, Denmark and Norway, while the largest values are found for the United States, Brazil, Mexico, India and South Africa, independent of the data source used. With respect to fiscal redistribution by taxes and transfers, Denmark, Finland, Germany, Greece and Ireland achieve the highest level, while India, Mexico and South Korea show the lowest values, again independent of the source used. Both data sets rank South Korea on top of the list for the lowest primary income inequality. The largest value for primary income inequality is found for South Africa.

Table 5 Ranking of common countries in LIS and OECD dataset

	Gini primary income		Gini disposable income		Fiscal redistribution	
	LIS	OECD	LIS	OECD	LIS	OECD
1	South Korea	South Korea	Iceland	Iceland	India	India
2	Iceland	Switzerland	Norway	Denmark	Mexico	Mexico
3	Slovak Republic	Iceland	Denmark	Slovenia	South Korea	South Korea
4	Switzerland	Slovenia	Czech Republic	Norway	Brazil	Switzerland
5	Norway	Norway	Finland	Czech Republic	South Africa	South Africa
6	Slovenia	Slovak Republic	Netherlands	Finland	Israel	Brazil
7	Russia	Netherlands	Slovak Republic	Slovak Republic	Russia	Russia
8	Czech Republic	Canada	Slovenia	Luxembourg	Switzerland	Israel
9	Luxembourg	Czech Republic	Austria	Australia	United States	United States
10	Netherlands	Poland	Luxembourg	Netherlands	Australia	Canada
11	Denmark	Mexico	Hungary	Germany	Iceland	Netherlands
12	Australia	Denmark	France	Switzerland	Slovak Republic	Iceland
13	Canada	Luxembourg	Germany	Austria	Canada	Estonia
14	Poland	Israel	Ireland	Ireland	Poland	Slovak Republic
15	Mexico	Russia	Switzerland	Poland	Italy	Norway
16	Finland	Finland	South Korea	South Korea	Spain	Slovenia
17	Italy	Australia	Poland	France	Slovenia	Poland
18	India	Austria	Canada	Canada	Estonia	United Kingdom
19	Austria	India	Italy	Italy	Luxembourg	Spain
20	France	Germany	United Kingdom	Hungary	Norway	Italy
21	Israel	Estonia	Australia	Greece	Czech Republic	Austria
22	United States	Italy	Russia	Spain	France	Luxembourg
23	Germany	United States	Greece	Estonia	United Kingdom	Czech Republic
24	Spain	France	Spain	United Kingdom	Netherlands	France
25	United Kingdom	Spain	Estonia	Israel	Austria	Australia
26	Estonia	United Kingdom	Israel	Russia	Denmark	Germany
27	Brazil	Hungary	United States	United States	Finland	Greece
28	Ireland	Greece	Brazil	Mexico	Germany	Hungary
29	Greece	Brazil	Mexico	Brazil	Greece	Denmark
30	Hungary	Ireland	India	India	Ireland	Finland
31	South Africa	South Africa	South Africa	South Africa	Hungary	Ireland

Note: Ranking by the value of Gini primary income, Gini disposable income and fiscal redistribution, respectively, from low to high.

Source: OECD (data extracted 24 Aug 2017 from OECD.Stat) and Database Wang & Caminada (2017)

5. Decomposition of redistributive effects of social transfers and taxes across LIS countries around 2011–2013

5.1 Budget size per social program

This section provides detailed results of the redistributive effect of welfare state programs across a selection of our 47 countries based on the most recent wave of LIS. We elaborate on the work of Mahler & Jesuit (2006) and Wang et al (2012 and 2014). However, we refine the Fiscal Redistribution approach. LIS data allow us to decompose the trajectory of the Gini coefficient from primary to disposable income inequality in several parts: we will distinguish 7 different social benefits and income taxes and social contributions in our empirical investigation across countries. We calculate the following (partial) redistributive effects, based on formula (6) and (7) and based on the LIS household income components list (see *Documentation Guide LLBIFR Dataset on Income Inequality 2017* for details): old-age/disability/survivor transfers, sickness

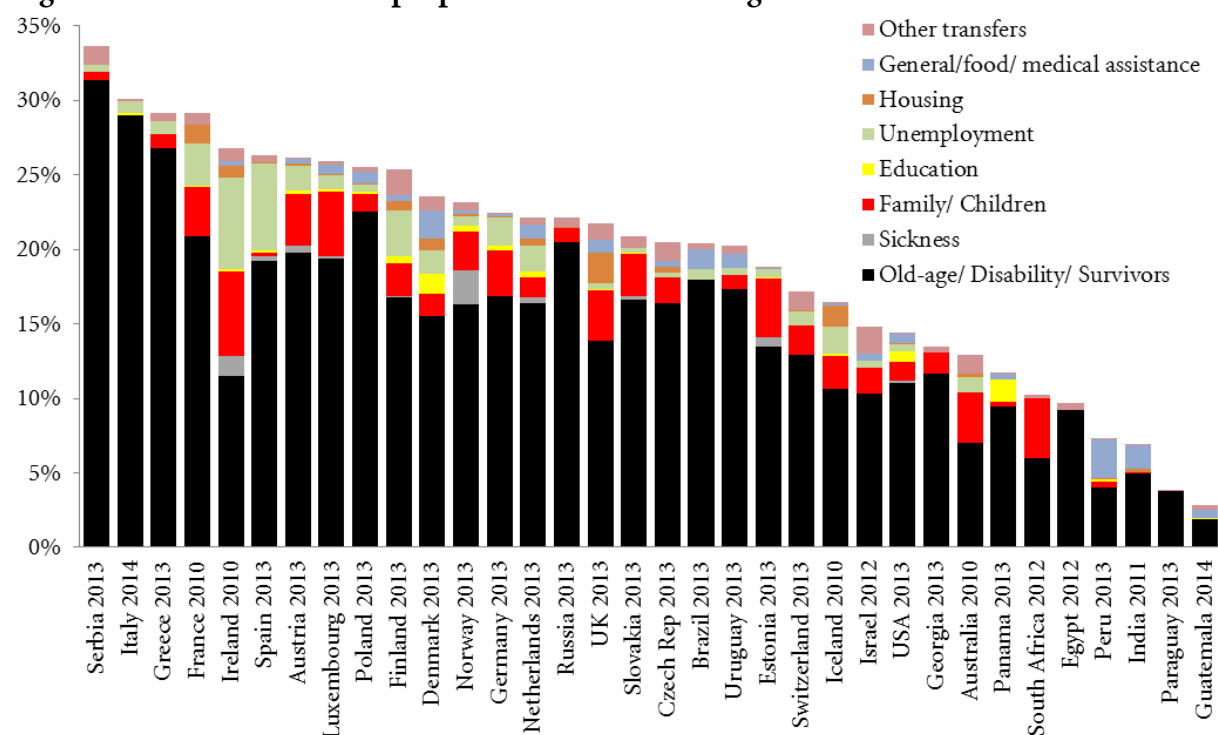
transfers, family/children transfers, education transfers, unemployment transfers, housing transfers, general/food/medical assistance transfers, other social security transfers, and income taxes and social security contributions.

It is useful to explore empirically two aspects of social benefits: programs' size and the progressiveness of each social benefit; see section 4.3. Is fiscal redistribution associated with transfers' overall size or with their target efficiency? Using LIS micro data it is possible to calculate a measure of the average value of social transfers as a percentage of households' gross income for each social program: the larger the value, the greater the share of total income that derives from transfers.

Figure 7 presents social benefits as a proportion of households' gross income for each benefit categorized in LIS. We selected 34 LIS countries for which full information is available on the whole trajectory from primary income to disposable income for data year around 2013. Countries are listed in order of their level of budget size from largest to smallest.¹⁸

We observe a considerable variance among developed countries in the average size of social benefits relative to total household income, ranging from 2.8% (Guatemala) to 33.6% (Serbia). Some countries (Italy, Greece and France) achieve the highest budget size of transfers (above 29%), followed by the majority of the countries with values between 20% and 29%, while 11 countries have the lowest level (less than 15%), among these the United States (14%).

Figure 7 Social transfers as a proportion of households' gross income around 2013



Source: Database Wang & Caminada (2017) based on LIS, and own calculations

In most countries old-age/disability/survivor transfers account for above 50 to 80 percent of total budget size. Family/children benefits accounts on average for 9 percent, unemployment compensation benefits for 5 percent and general/food/medical assistance benefits. Rather small social programs are sickness benefits, education transfers and housing benefits, accounting each for on average 1 percent of the total budget size. Transfers not allocated to a specific category (the

¹⁸ We have done the accounting exercise for all countries listed in the LIS database; see for details Annex B1.

category *Other transfers*) are somewhat troublesome in our decomposition analysis. In most countries the category *Other transfers* is rather small (share below 5%), while in Israel (2012) and Guatemala (2014) it is above 10%.

5.2 Fiscal redistribution per social program

To illustrate the idea of decomposing disposable income inequality, Table 6 presents the results of our sequential accounting decomposition exercise for the mean of a selection of 26 LIS countries with full tax/benefit information.¹⁹ Among all 26 countries relative fiscal redistribution is on average 33 percent.

Interestingly, only three programs account for 68 percent of total redistribution: old-age/disability/survivor scheme (54%), social programs for family and children (8%) and the unemployment scheme (6%). Income taxes account for another 23 percent of total redistribution. Other social benefit programs and contributions seem to have a rather limited redistributive effect; together they account for only 9 percent of the reduction in income inequality through transfers.

Table 6 Decomposition of disposable income inequality for 26 LIS countries 2013

	Gini	
(a) Gini primary income	0.496	
(b) Gini disposable income	0.331	
Overall redistribution (a-b)	0.165	
		<i>share</i>
Transfers	0.128	78%
Old-age/Disability/Survivor transfers	0.089	54%
Sickness transfers	0.002	1%
Family/Children transfers	0.013	8%
Education transfers	0.002	1%
Unemployment transfers	0.010	6%
Housing transfers	0.004	3%
General/food/medical assistance transfers	0.005	3%
Other transfers	0.003	2%
Income taxes and social security contributions	0.038	23%
Residual	-0.001	-1%
Overall redistribution	0.165	100%

Notes:

- When we take the mean of the decomposition results across countries, the sum of all partial redistributive effects amount (a little) over 100 percent due to missing observations. We rescaled the redistributive effects of each social program by applying an adjustment factor, which is defined as the overall redistribution given by formula (4) (=100%) divided by sum of all partial redistributive effects of all programs (over 100%), in order to correct for an over-estimated effect.
- LIS 26: Australia, Austria, Brazil, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Guatemala, Iceland, Ireland, Israel, Luxembourg, the Netherlands, Norway, Panama, Peru, Poland, Slovakia, South Africa, Spain, Switzerland, the United Kingdom and the United States.

Source: Database Wang & Caminada (2017) based on LIS, and own calculations

¹⁹ We lose another eight countries; for Egypt, Georgia, India, Italy, Russia, Paraguay, Serbia, and Uruguay data for taxes are not available.

In Table 7 we present the results of the decomposition of the trajectory of the Gini coefficient from primary to disposable income inequality for groups of countries for the 26 countries for the latest data year available in LIS. We clustered all countries to be a representative for English speaking countries, Continental European countries, Nordic countries, according to Esping-Anderson types of welfare states (Esping-Andersen and Myles, 2009; Arts and Gelissen, 2002; Bonoli, 1997; Ferrera, 1996).

In Table 7, some benefits or taxes do not have any redistributive effect. The meaning of this is twofold. First, such a benefit scheme does not exist in a specific country and/or data is not available in LIS (represented as *blanks*). Second, such a program exist, but does not have a redistributive effect, because the social expenditures of this program are rather low or the program is distributed equally among the population (noted as 0%).

Table 7 Decomposition of income inequality and redistributive effect of social transfers and taxes (latest data year)

LIS Dataset	Primary income (a)	Disposable income (b)	Absolute (a-b)	Relative, % (a-b)/a*100	Partial effects (shares)									
					Old-age/ Disability/ Survivor	Sickness transfers	Family/ Children	Education transfers	Unemployment	Housing	General/food/medical assistance	Other transfers	Taxes	Residual
panel a: LIS English speaking countries														
Australia 2010	0.477	0.330	0.147	31%	40%	0%	19%	0%	5%	1%	0%	7%	26%	0%
Ireland 2010	0.564	0.294	0.270	48%	29%	3%	15%	0%	19%	3%	1%	2%	26%	0%
United Kingdom 2013	0.537	0.330	0.207	39%	47%	0%	14%	0%	2%	11%	4%	5%	17%	0%
United States 2013	0.509	0.377	0.132	26%	53%	0%	8%	2%	2%	1%	5%	-1%	31%	0%
panel b: LIS Continental European countries														
Austria 2013	0.493	0.279	0.215	44%	62%	1%	8%	1%	6%	1%	2%	0%	20%	0%
France 2010	0.494	0.289	0.204	41%	65%		9%	0%	7%	6%		4%	9%	0%
Germany 2013	0.520	0.291	0.229	44%	61%		6%	1%	9%	1%	0%	0%	23%	0%
Luxembourg 2013	0.475	0.283	0.192	40%	60%	0%	12%	0%	4%	1%	4%	1%	18%	0%
Switzerland 2013	0.425	0.295	0.130	31%	77%	0%	6%		4%	0%		9%	4%	0%
panel c: LIS Nordic countries														
Denmark 2013	0.476	0.249	0.226	48%	58%		2%	5%	4%	4%	8%	2%	18%	-1%
Finland 2013	0.487	0.259	0.228	47%	54%	0%	4%	2%	9%	3%	2%	-4%	39%	-9%
Iceland 2010	0.393	0.245	0.149	38%	48%	0%	8%	0%	9%	5%	1%	0%	29%	0%
Netherlands 2013	0.475	0.264	0.212	45%	56%	1%	3%	2%	4%	3%	6%	0%	28%	-2%
Norway 2013	0.446	0.248	0.198	44%	60%	4%	6%	1%	2%	1%	2%	2%	22%	0%
panel d: LIS Southern European countries														
Greece 2013	0.567	0.332	0.235	41%	61%	0%	2%	0%	2%	0%		1%	33%	0%
Spain 2013	0.520	0.343	0.177	34%	59%	1%	1%	1%	17%	0%		2%	20%	0%
panel e: LIS Central Eastern European countries														
Czech Republic 2013	0.457	0.258	0.199	44%	69%		5%		1%	2%	2%	3%	18%	0%
Estonia 2013	0.540	0.352	0.188	35%	53%	0%	4%	0%	1%		0%	0%	41%	0%
Poland 2013	0.484	0.316	0.168	35%	86%		6%	0%	2%	1%	4%	1%	0%	0%
Slovakia 2013	0.425	0.268	0.157	37%	73%	0%	9%	0%	1%			5%	12%	0%

Table 7 Decomposition of income inequality (continued)

Table 7. Decomposition of income inequality, 1990-2014 (continued)					Partial effects (shares)									
LIS Dataset	Primary income (a)	Disposable income (b)	Absolute (a-b)	Relative, % (a-b)/a*100	Old-age/ Disability/ Survivor	Sickness transfers	Family/ Children	Education transfers	Unemployment	Housing	General/food/medical assistance	Other transfers	Taxes	Residual
panel f: LIS BRICS														
Brazil 2013	0.542	0.450	0.093	17%	61%				4%		15%	2%	20%	-1%
South Africa 2012	0.664	0.572	0.093	14%	24%		17%					-1%	58%	1%
panel g: Latin America														
Guatemala 2014	0.427	0.394	0.034	8%	-3%			1%			8%	6%	88%	0%
Panama 2013	0.514	0.467	0.048	9%	33%		8%	21%		0%	8%	0%	31%	0%
Peru 2013	0.483	0.455	0.028	6%	21%		16%	3%		0%	23%	0%	37%	0%
panel g: LIS others														
Israel 2012	0.494	0.371	0.123	25%	45%		9%		2%		4%	9%	32%	0%
Mean-LIS 26	0.496	0.331	0.165	33%	54%	1%	8%	1%	6%	3%	3%	2%	23%	-1%

Note:

When we take the mean of the decomposition results across countries, the sum of all partial redistributive effects amount (a little) over 100 percent due to missing observations. We rescaled the redistributive effects of each social program by applying an adjustment factor, which is defined as the overall redistribution given by formula (4) (=100%) divided by sum of all partial redistributive effects of all programs (over 100%), in order to correct for an over-estimated effect.

Source: Database Wang & Caminada (2017) based on LIS, and own calculations.

In most countries two dominant income components account for above 80 percent of total reduction in income inequality: the old-age/disability/survivor scheme, and the income taxes. However, cross country differences are huge. For example, in Switzerland, Poland and Slovakia, old-age/disability/survivor schemes account for over 70 percent of income redistribution while in Ireland and Peru it contributes to less than 30 percent. We even observe a negative impact in Guatemala.

Large redistributive effects through income taxes and contributions can be found in most country groups (with the exception of the Continental European countries). The United Kingdom, Denmark, Norway, Spain, Poland, Slovakia and Brazil are special cases because the income taxes contribute for a relatively small part (20% or below) to the reduction of income inequality between primary and disposable income.

The redistributive effect of family/children benefits is in the English speaking Countries relatively high (8-19%), compared to Nordic Countries (2-8%), Continental European Countries (6-9% with the exception of Luxembourg), and in Central Eastern European Countries (4-9%). Unemployment compensation benefits do have some effect too, especially in Continental European countries and Nordic countries. Remarkably, across countries all other social benefit programs seems to have rather limited redistributive effects.

It should be noted that the results are hardly affected by the ordering effect. Following equation (8), the partial redistributive effect of a specific social transfer will be highest (smallest) when computed as the first (last) social program; see section 3.4. Our analysis shows that the residual term is rather modest and in most cases below 2 percent (with exception for Finland). Changing the order of adding a specific benefit to primary income (or subtracting tax from gross income) does change the partial effect of this transfer (or tax) in total redistribution.

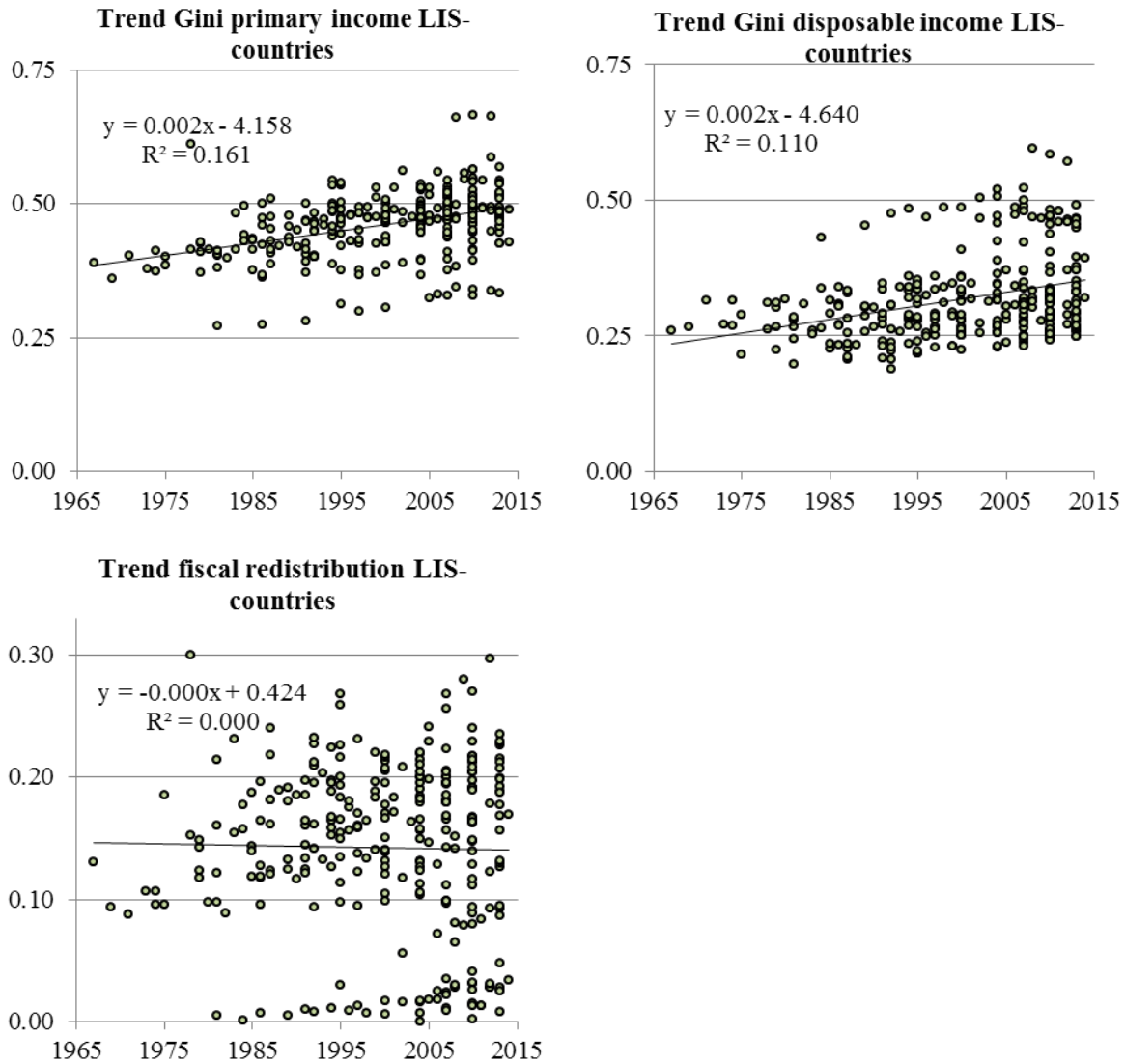
6. Trends in the distribution of primary and disposable income in LIS countries 1967-2014

6.1 Introduction and overview

Under the circumstance of increasing income inequality and public expenditure cuts, attention needs to be paid to the design of welfare states. How good is the tax-benefit system as a whole and its programs in narrowing income distribution? What is the trend of redistribution over time?

Figure 8 gives a sneak preview of the trend in the Gini's of primary income, disposable income and fiscal redistribution across time and space for all 293 datasets in LIS 1967-2014.

Figure 8 Gini's primary income, disposable income and fiscal redistribution across time and space



Source: Database Wang & Caminada (2017) based on LIS, and own calculations

A wide variety exists across time and space in both the level of primary and disposable income inequality and fiscal redistribution. The general pattern is that income inequality rose over time across 47 LIS countries, which is confirmed by a simple regression analysis in Figure 8. The estimated trend coefficients of both the Gini of primary income and the Gini of disposable income are statistically significant ($p < 0.01$) and positive. However, among the 47 LIS countries we do not find a general pattern that tax-benefit systems became more redistributive over time. The redistributive effect of taxes and social benefits on household income inequality vary widely across countries and time.

6.2 Inequality across countries 1985-2013

This section reviews the evidence on cross national comparisons of primary and disposable income inequality across countries over time. In empirical studies, the selection of countries and data-years differ due to the consideration of data quality and data availability. We selected 15 countries, with at least three data points (around 1985, 1997 and 2010 or later). Moreover, we selected countries for which full information is available on the whole trajectory from primary income to disposable income: Australia (85-95-10), Canada (87-97-10), Denmark, (87-95-13), Finland (87-95-13), France (84-94-10), Germany (84-94-13), Ireland (87-96-10), Israel (86-97-12), the Netherlands (83-99-13), Norway (86-95-13), Sweden (87-95-05), Switzerland (82-00-13), Taiwan (86-97-13), the United Kingdom (86-99-13) and the United States (86-97-13).

The changes in inequality levels are illustrated by the Gini coefficients. In order to give a general idea, we cluster the countries around 1985, 1997, and 2010 or later respectively, showing the average trends of inequality and redistribution. We show country profiles for all 15 LIS countries later in Figure 9.

Table 8 shows the 15 country-average trend of primary income and disposable income inequality from 1985 to 2013. This table highlights some significant differences across periods in a general way. On average, income inequality increased markedly. This increase was stronger during 1997-2013 compared to 1985-1997. The widening of income gaps was driven by rising inequality in the distribution of primary income, which was partly offset by social security transfers and income taxes and social security contributions. In the second decade, the primary income inequality and disposable income inequality rose more or less parallel.

It can be shown that inequality of primary income has increased by 11 percent over a twenty-five-year period averaged over the countries shown. This is a substantial increase over a relatively short period of time. Primary-income inequality has been the main driver of inequality trends in disposable incomes, but did redistribution policies have a substantial effect as well? Between 1983 and 2013, redistribution systems compensated 63 percent of the increase in primary-income inequality. Primary-income inequality rose by about 0.048, while redistribution rose 0.030. Taxes and transfers reduce inequality by about 38% around 2013; more than in the mid-1980s (35%); see Table 8.

Table 8 Trend Gini indices of primary income and disposable income and fiscal redistribution, 1983-2013

	Gini Primary income					Gini Disposable income					Fiscal redistribution				
	around 1985	around 1997	around 2013	change 85-13	%	around 1985	around 1997	around 2013	change 85-13	%	around 1985	around 1997	around 2013	change 85-13	%
Australia (85-95-10)	0.434	0.474	0.477	0.043	10%	0.292	0.308	0.330	0.039	13%	0.143	0.166	0.147	0.004	3%
Canada (87-97-10)	0.407	0.450	0.481	0.074	18%	0.283	0.291	0.317	0.034	12%	0.124	0.158	0.164	0.040	33%
Denmark (87-95-13)	0.416	0.444	0.476	0.060	14%	0.255	0.218	0.249	-0.005	-2%	0.161	0.227	0.226	0.065	41%
Finland (87-95-13)	0.388	0.475	0.487	0.099	26%	0.207	0.216	0.259	0.052	25%	0.181	0.259	0.228	0.047	26%
France (84-94-10)	0.496	0.486	0.494	-0.002	0%	0.338	0.288	0.289	-0.049	-14%	0.158	0.197	0.204	0.047	30%
Germany (84-94-13)	0.442	0.458	0.520	0.079	18%	0.265	0.270	0.291	0.026	10%	0.177	0.188	0.229	0.052	30%
Ireland (87-96-10)	0.510	<i>0.481</i>	0.564	0.055	11%	0.328	<i>0.325</i>	0.294	-0.034	-10%	0.181	<i>0.156</i>	0.270	0.089	49%
Israel (86-97-12)	0.473	0.495	0.494	0.021	4%	0.309	0.336	0.371	0.063	20%	0.165	0.159	0.123	-0.042	-26%
Netherlands (83-99-13)	0.483	0.426	0.475	-0.008	-2%	0.252	0.231	0.264	0.011	5%	0.231	0.196	0.212	-0.019	-8%
Norway (86-95-13)	0.362	0.422	0.446	0.085	23%	0.234	0.239	0.248	0.015	6%	0.128	0.183	0.198	0.070	55%
Sweden (87-95-05)	0.429	0.490	0.466	0.036	8%	0.212	0.221	0.237	0.025	12%	0.218	0.268	0.229	0.011	5%
Switzerland (82-00-13)	0.398	0.385	0.425	0.027	7%	0.309	0.280	0.295	-0.014	-5%	0.089	0.105	0.130	0.041	46%
Taiwan (86-97-13)	0.275	0.300	0.333	0.058	21%	0.269	0.287	0.308	0.039	15%	0.007	0.012	0.025	0.019	285%
UK (86-99-13)	0.500	0.530	0.537	0.037	7%	0.303	0.346	0.330	0.027	9%	0.196	0.184	0.207	0.010	5%
USA (86-97-13)	0.459	0.483	0.509	0.050	11%	0.340	0.360	0.377	0.037	11%	0.118	0.123	0.132	0.014	12%
Mean-15	0.431	0.453	0.479	0.048	11%	0.280	0.281	0.297	0.018	6%	0.152	0.172	0.182	0.030	20%

Notes

Ireland 1996: income data net of income taxes (marked *italic*).

Sweden is included although latest data year available is 2005.

Source: Database Wang & Caminada (2017) based on LIS, and own calculations

Country-specific results are also presented in Table 8. Tax-benefit systems in Ireland, Germany, Sweden, Finland and Denmark achieve the greatest reduction in inequality, lowering the Gini value by 22.5 points or more around 2013, while the smallest redistributive effect is seen Taiwan, Israel, Switzerland, the United States and Australia (less than 15 points). Through the entire period, disposable income inequality became significantly larger in Israel and Finland, whereas it decreased in France, Ireland, Switzerland and Denmark. In the period around 1985-1997, higher disposable income inequality was mainly ‘caused’ by higher primary income inequality (although primary income inequality declined in Israel and Sweden). In this period, government redistribution has offset the widening of income gaps through public cash transfers and household taxes either in full (e.g. Denmark, France, Ireland, the Netherlands and Switzerland) or in part (in all others; see Figure 9). On average across countries, disposable income inequality hardly changed (+0.001). Cross-country variance is larger since the mid-1990s. Primary income inequality increased in all countries (with Israel and Sweden as exceptions), markedly in Ireland, Germany, the Netherlands and Switzerland. Disposable income inequality increased in all countries except for Ireland and the United Kingdom. On average only 37 percent of the rise of income inequality was offset by redistribution through taxes and transfers in the period 1997-2013 (was: 93% for 1985-1997). Fiscal redistribution rose in 11 of our 15 countries in the period 1985-1997 and in 9 countries in the period around 1997-2013. Moreover, fiscal redistribution rose since 1983 in all countries with Israel and the Netherlands as exceptions.

In contrast to the results in Immervoll and Richardson (2011), we do not confirm their finding that tax-benefit policies have become less effective in redistribution since the mid-1990s when the total population (instead of the working-age population) is taken into consideration; see Table 9. Among the total population both primary income inequality and redistribution continued to rise after the mid-1990s; we do not find that the fiscal redistribution effect of taxes and benefits on household income inequality declined, although is stabilized among the working-age population. As a result, among the total population tax-benefit systems in the mid-2000s are even more effective at reducing inequality compared to the mid-1990s. So, the claim that reduced redistribution is a main driver of widening income gaps since the mid-1990’s must be toned down. Moreover, our finding is a stimulus to analyze several programs (parts) of fiscal redistribution in more detail, especially for 1995 onwards. Table 9 summarizes the results for trends in the redistribution among the working-age population and the total population for 15 countries with full tax and benefit information for around 1985, around 1995 and around 2013.

Table 9 Trend in fiscal redistribution among working-age and total population, 1985-2013

	Total population			Working-age population		
	Gini Primary income	Gini Disposable income	Fiscal redistribution	Gini Primary income	Gini Disposable income	Fiscal redistribution
Around 1985	0.431	0.280	0.152	0.384	0.275	0.109
Around 1997	0.453	0.281	0.172	0.398	0.279	0.119
Around 2013	0.479	0.297	0.182	0.417	0.296	0.121
Change 1985-2013	0.048	0.018	+0.030	0.033	0.021	+0.012
Change 1985-1997	0.022	0.002	+0.020	0.014	0.004	+0.010
Change 1997-2013	0.026	0.016	+0.010	0.019	0.017	+0.002
	<i>Share of rise inequality primary income offset by fiscal redistribution</i>			<i>Share of rise inequality primary income offset by fiscal redistribution</i>		
1985-2013	63%			37%		
1985-1997	93%			73%		
1997-2013	37%			10%		

Source: Database Wang & Caminada (2017) based on LIS, and own calculations

6.3 Redistributive effect of taxes and transfers 1985-2013

Table 10 highlights that the trend of overall redistribution is mainly caused by transfers. From the mid-1980s to the mid-1990s, total redistribution increased, driven by the stronger redistributive effect of transfers. In the decade from the mid-1990s to around 2013, hardly any change was observed in overall redistribution. The average total redistribution increased by 0.030 point in 15 LIS countries from around 1985 to around 2013.

Figure 9 illustrates the trends of overall, tax and transfers redistribution for each 15 LIS country. In all countries, total redistribution was mainly driven by transfer redistribution. The redistribution achieved by public cash transfers was more than twice as large as that achieved through taxes, except for Australia (1985), Finland (2013), Israel (1986 and 1997), Taiwan (1986) and the United States (1986 and 1997).

Table 10 Redistribution across 15 LIS countries, 1985-2013

	Fiscal redistribution				Partial effects: changes 1985-2013	
	around 1985	around 1997	around 2013	change 85-13	From Transfers	From Taxes
Australia (85-95-10)	0.143	0.166	0.147	0.004	0.021	-0.017
Canada (87-97-10)	0.124	0.158	0.164	0.040	0.038	0.002
Denmark (87-95-13)	0.161	0.227	0.226	0.065	0.053	0.013
Finland (87-95-13)	0.181	0.259	0.228	0.047	0.012	0.036
France (84-94-10)	0.158	0.197	0.204	0.047	0.042	0.005
Germany (84-94-13)	0.177	0.188	0.229	0.052	0.041	0.011
Ireland (87-96-10)	0.181	0.156	0.270	0.089	0.062	0.027
Israel (86-97-12)	0.165	0.159	0.123	-0.042	-0.016	-0.026
Netherlands (83-99-13)	0.231	0.196	0.212	-0.019	-0.035	0.016
Norway (86-95-13)	0.128	0.183	0.198	0.070	0.054	0.016
Sweden (87-95-05)	0.218	0.268	0.229	0.011	0.016	-0.005
Switzerland (82-00-13)	0.089	0.105	0.130	0.041	0.057	-0.016
Taiwan (86-97-13)	0.007	0.012	0.025	0.019	0.028	-0.009
UK (86-99-13)	0.196	0.184	0.207	0.010	0.013	-0.003
USA (86-97-13)	0.118	0.123	0.132	0.014	0.019	-0.005
Mean-15	0.152	0.172	0.182	0.030	0.027	0.003

Source: Database Wang & Caminada (2017) based on LIS, and own calculations

From the mid-1980s to around 2013, total redistribution increased in all countries except Israel and the Netherlands. This was driven by additional redistribution of social transfers. Tax systems became less redistributive in half of the countries: Australia, Israel, Sweden, Switzerland, Taiwan, the United Kingdom and the United States.

From the mid-1990s to around 2013 the patterns of redistribution across countries are more diverse, both in overall redistribution and in tax and transfers redistribution. In this decade, total redistribution hardly changed or fell in all countries (with Ireland as exception). See figure 9 for the country profiles.

Figure 9 Trends in inequality and fiscal redistribution in 15 LIS countries

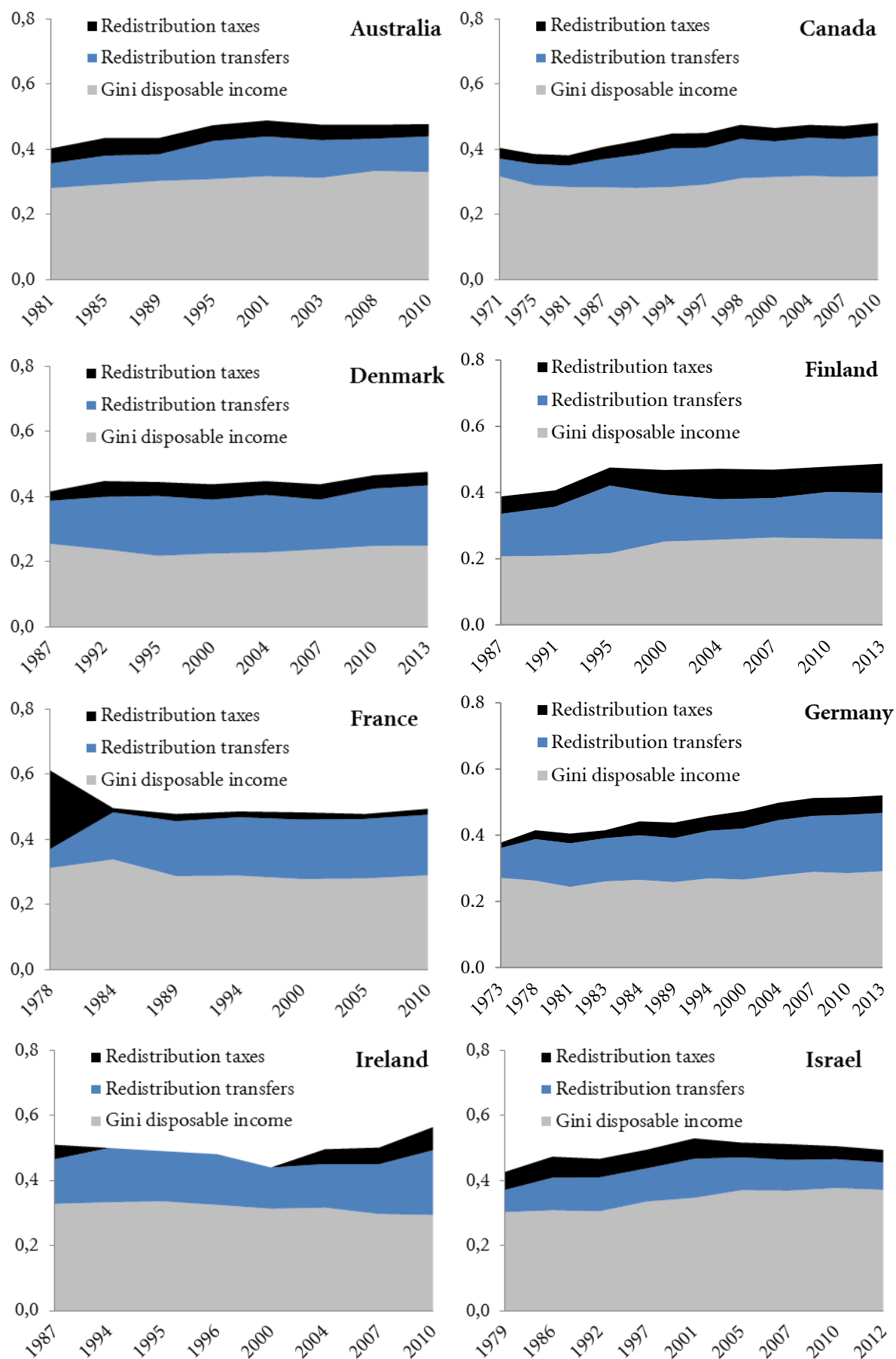
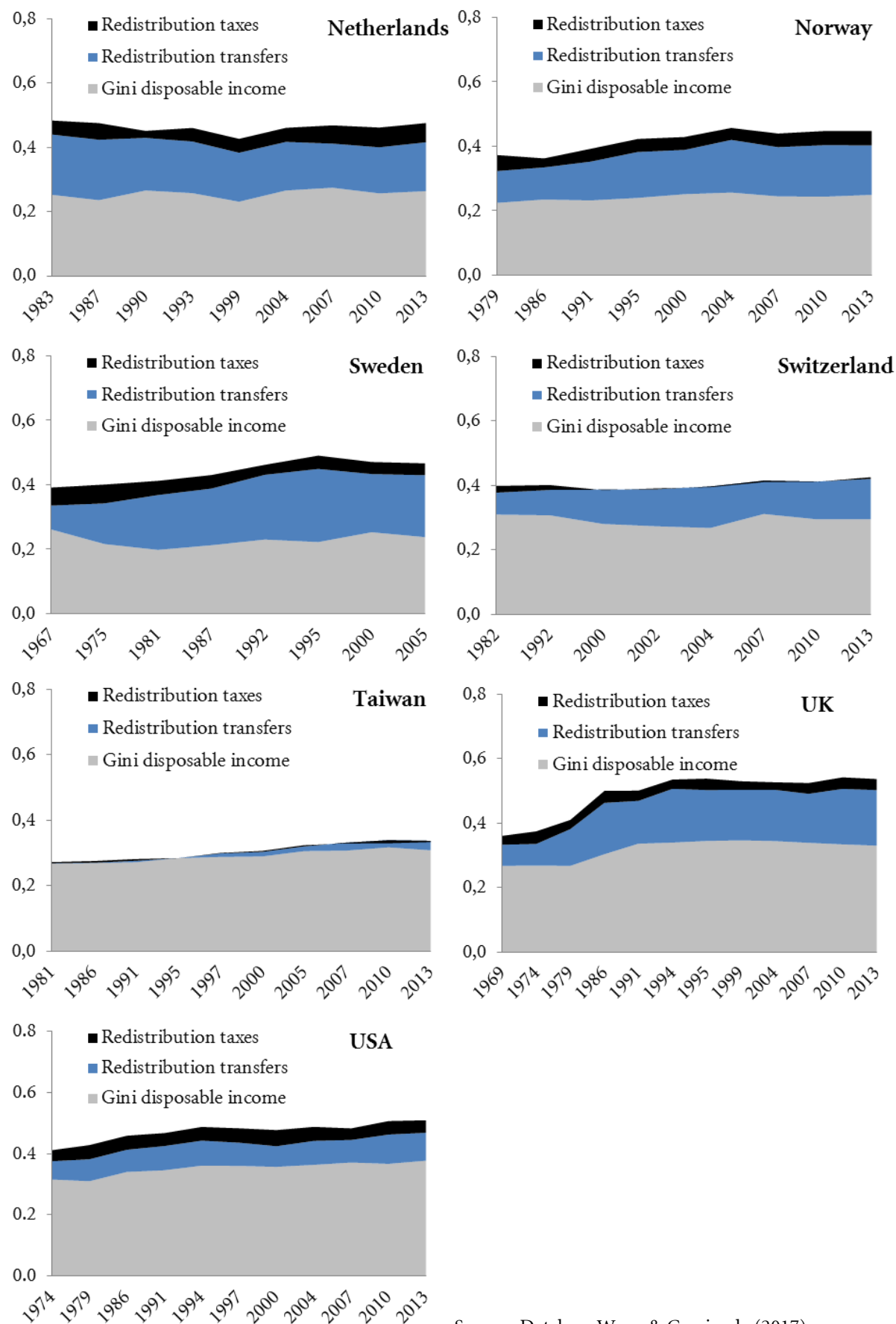


Figure 9 Trends in inequality and fiscal redistribution in 15 LIS countries (continued)



Source: Database Wang & Caminada (2017)

6.4 Inequality and fiscal redistribution before and after the Great Recession

This section examines the impact of the economic crisis that started in 2008 on income distribution and fiscal redistribution. 23 countries are selected which contain full information on income and taxes before the Great Recession (around 2006-2007) and the latest year (2012 and later). As shown in Table 11, primary income inequality has increased in all countries since around 2007, except for Guatemala, Israel, Peru, Poland and Slovakia. However, Gini disposable income has decreased in a large number of countries with 1 percent decrease on average. The most significant reduction in disposable income inequality appears in Guatemala with 17 percent. Estonia and Spain, on the other hand, are the countries with the largest increase in inequality of disposable income. We do not find that fiscal redistribution has been less effective since the Great Recession. On the contrary, the increase in fiscal redistribution has been offsetting the rising primary income inequality and led to more equal disposable income distribution. Especially, Guatemala, Panama and Switzerland are the countries with the largest increase in fiscal redistribution (over 30%).

Table 11 Trend Gini indices of primary income and disposable income and fiscal redistribution, 2007-2013

	Gini Primary income				Gini Disposable income				Fiscal Redistribution			
	Before crisis	After crisis	change 07-13	%	Before crisis	After crisis	change 07-13	%	Before crisis	After crisis	change 07-13	%
Austria 2007-2013	0.485	0.493	0.009	2%	0.284	0.279	-0.005	-2%	0.201	0.215	0.014	7%
Brazil 2006-2013	0.558	0.542	-0.016	-3%	0.487	0.450	-0.037	-8%	0.071	0.093	0.021	30%
Czech Republic 2007-2013	0.446	0.457	0.011	2%	0.251	0.258	0.007	3%	0.195	0.199	0.004	2%
Denmark 2007-2013	0.438	0.476	0.038	9%	0.238	0.249	0.011	5%	0.200	0.226	0.027	13%
Estonia 2007-2013	0.493	0.540	0.047	9%	0.312	0.352	0.040	13%	0.181	0.188	0.007	4%
Finland 2007-2013	0.469	0.487	0.018	4%	0.264	0.259	-0.005	-2%	0.205	0.228	0.023	11%
Germany 2007-2013	0.512	0.520	0.008	2%	0.289	0.291	0.002	1%	0.223	0.229	0.006	3%
Greece 2007-2013	0.515	0.567	0.052	10%	0.320	0.332	0.012	4%	0.195	0.235	0.040	20%
Guatemala 2006-2014	0.490	0.427	-0.063	-13%	0.472	0.394	-0.078	-17%	0.018	0.034	0.016	85%
Israel 2007-2012	0.512	0.494	-0.018	-3%	0.369	0.371	0.003	1%	0.143	0.123	-0.020	-14%
Luxembourg 2007-2013	0.456	0.475	0.020	4%	0.276	0.283	0.007	3%	0.180	0.192	0.012	7%
Netherlands 2007-2013	0.468	0.475	0.007	2%	0.274	0.264	-0.011	-4%	0.194	0.212	0.018	9%
Norway 2007-2013	0.439	0.446	0.008	2%	0.244	0.248	0.005	2%	0.195	0.198	0.003	1%
Panama 2007-2013	0.516	0.514	-0.001	0%	0.481	0.467	-0.014	-3%	0.035	0.048	0.013	37%
Peru 2007-2013	0.524	0.483	-0.041	-8%	0.500	0.455	-0.045	-9%	0.024	0.028	0.004	18%
Poland 2007-2013	0.490	0.484	-0.006	-1%	0.310	0.316	0.006	2%	0.180	0.168	-0.012	-7%
Slovakia 2007-2013	0.503	0.425	-0.078	-16%	0.248	0.268	0.021	8%	0.255	0.157	-0.099	-39%
South Korea 2006-2012	0.330	0.337	0.007	2%	0.305	0.306	0.001	0%	0.025	0.031	0.006	26%
Spain 2007-2013	0.475	0.520	0.046	10%	0.307	0.343	0.037	12%	0.168	0.177	0.009	6%
Switzerland 2007-2013	0.410	0.425	0.015	4%	0.311	0.295	-0.016	-5%	0.099	0.130	0.031	31%
Taiwan 2007-2013	0.329	0.333	0.004	1%	0.307	0.308	0.001	0%	0.022	0.025	0.003	15%
United Kingdom 2007-2013	0.524	0.537	0.012	2%	0.339	0.330	-0.009	-3%	0.186	0.207	0.021	11%
United States 2007-2013	0.483	0.509	0.027	6%	0.371	0.377	0.006	2%	0.111	0.132	0.020	18%
Mean	0.472	0.477	0.005	1%	0.329	0.326	-0.003	-1%	0.144	0.151	0.007	5%

Source: Database Wang & Caminada (2017) based on LIS, and own calculations

On average income inequality decreased slightly and fiscal redistribution rose since the Great Recession. The increase in fiscal redistribution mainly comes from social transfers while the redistributive effect of income taxes has been decreasing, for both total population and working-age population. Although all changes are rather small, our findings are not fully in line with OECD (2016) which states that the economic recovery has not reduced income inequality, because redistribution decreased in a majority of countries recently. However, both OECD (2016: 3) and our analysis find that fiscal redistribution dampened the increase in market income inequality since 2007. The differences in inequality between market income and disposable income varied considerably across countries and time, thus revealing significant differences in the ability of tax-benefit systems to cushion the rise of inequality (cf. OECD, 2015: 103).

Table 12 Trend in fiscal redistribution among working-age and total population, 2007-2013

	Total population			Working-age population		
	Gini Primary income	Gini Disposable income	Fiscal redistribution	Gini Primary income	Gini Disposable income	Fiscal redistribution
Around 2007	0.472	0.329	0.144	0.422	0.324	0.099
Around 2013	0.477	0.326	0.151	0.423	0.324	0.099
Change	0.005	-0.003	0.007	0.000	0.000	0.000
- from social transfers			0.014			0.006
- from taxes			-0.006			-0.006

Source: Database Wang & Caminada (2017) based on LIS, and own calculations

6.5 Program size and targeting of transfers

Considering the redistributive effect of social benefits, a distinction can be made between programs' size and the extent to which benefits are targeted toward low-income groups by means-testing; see section 4.3. Using LIS micro data it is possible to calculate a measure of the average value of social transfers as a percentage of households' gross income: the larger the value, the greater the share of total income that is derived from transfers. It is also possible to calculate a summary index of the degree to which transfers are targeted toward low-income groups. This is done by applying Kakwani's (1986) 'index of concentration' to transfers (see section 4.3). This index takes on the value of -1.0 if the poorest person gets all transfer income, 0 if everybody gets an equal amount, and +1.0 if the richest person gets all transfer income.

Based on a rather lengthy time-series around 1985-2013 figures for the size and target efficiency of social benefits are calculated for 15 LIS countries and are reported in Table 13.

Table 13 Budget size and targeting efficiency across 15 LIS countries, 1985-2013

	Budget size (%)			Targeting		
	around 1985	around 2013	change 85-13	around 1985	around 2013	change 85-13
Australia (85-10)	10.7%	12.9%	2.2%	-0.340	-0.318	0.022
Canada (87-10)	12.8%	18.2%	5.4%	-0.184	-0.066	0.119
Denmark (87-13)	20.5%	23.6%	3.0%	-0.122	-0.199	-0.077
Finland (87-13)	19.1%	25.5%	6.4%	-0.150	-0.033	0.117
France (84-10)	23.0%	29.1%	6.1%	0.026	0.082	0.056
Germany (84-13)	16.9%	22.4%	5.5%	-0.250	-0.118	0.132
Ireland (87-10)	18.9%	26.8%	7.9%	-0.149	-0.087	0.062
Israel (86-12)	14.6%	14.8%	0.2%	-0.109	0.010	0.119
Netherlands (83-13)	29.0%	22.2%	-6.8%	-0.003	-0.117	-0.114
Norway (86-13)	14.0%	23.2%	9.2%	-0.244	-0.064	0.180
Sweden (87-05)	27.6%	28.1%	0.4%	-0.030	-0.074	-0.044
Switzerland (82-13)	8.1%	17.2%	9.1%	0.089	-0.144	-0.232
Taiwan (86-13)	0.5%	9.9%	9.4%	0.048	0.077	0.029
UK (86-13)	21.9%	21.7%	-0.1%	-0.138	-0.123	0.016
USA (86-13)	10.9%	13.8%	2.9%	-0.207	-0.091	0.116
Mean-15	16.6%	20.6%	4.1%	-0.118	-0.084	0.033

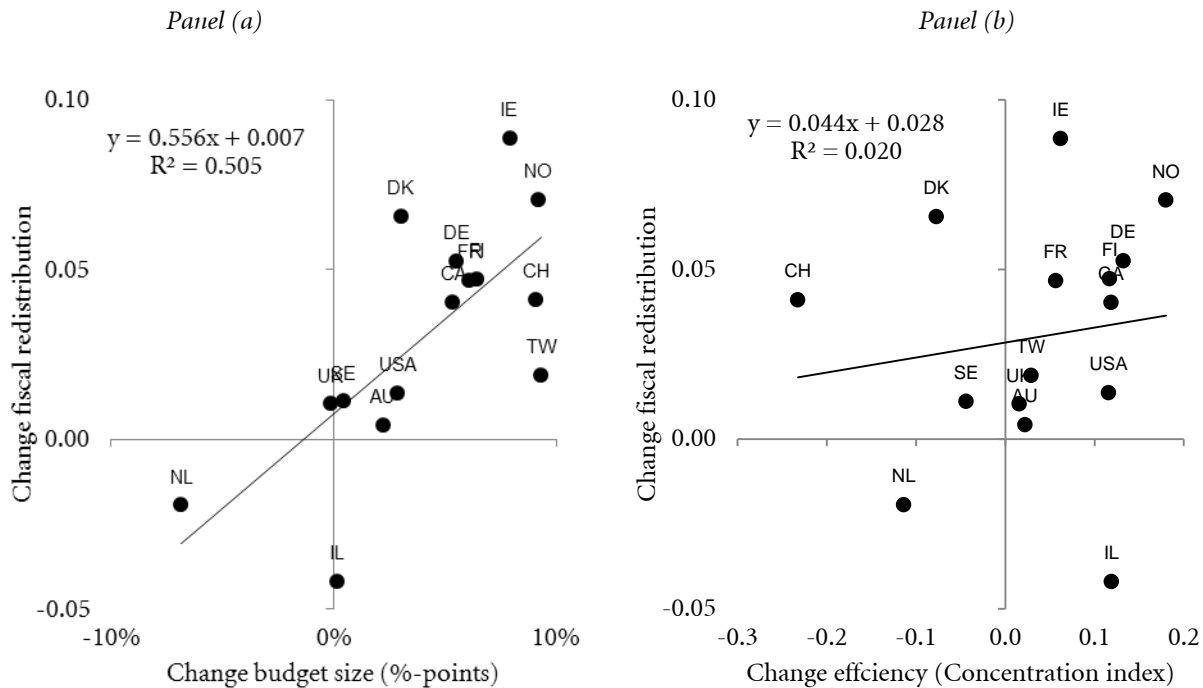
Source: Database Wang & Caminada (2017) based on LIS, and own calculations

There is considerable variance among countries in the average size of social benefits relative to total household income. In the mid-1980s, five countries (Denmark, France, the Netherlands, Sweden and the United Kingdom) achieve a high budget size of transfers (20% or more), whereas it is low in Australia, Canada, Israel, Norway, Switzerland, Taiwan and the United States (less than 15%). Around 2013, more countries achieve a high budget size (20% or over), while Australia, Canada, Israel, Switzerland, Taiwan and the United States still have budget sizes less than 15 percent. Over time social benefits size increased in all countries, with an exception for the Netherlands.

Targeting efficiency is more diverse across countries. In the mid-1980s, cash benefits are most targeted to the poor in Australia and Germany (values less than -0.25), and more universally distributed in Sweden, the Netherlands and France (values between -0.03 and +0.03). Around 2013, Australia targeted more to the poor than other countries (-0.34). Transfers were spread more universally in 11 out of our 15 countries. Generally speaking, transfers are less targeted to the poor and more universally distributed around 2013 than in earlier periods. On the contrary, we observe social benefits to be more targeted to the poor over time in Switzerland, the Netherlands, Denmark and Sweden.

Changes in the fiscal redistribution appear to be statistically significant related to changes in the overall budget size (see figure, panel a), while no relationship is found with changes in the targeting of T/B systems is found (see figure 10, panel b). Especially Ireland, Denmark and Norway experienced an increase in both the budget size and fiscal redistribution, while fiscal redistribution and the budget size of social programs declined in the Netherlands.

Figure 10 Changes in fiscal redistribution, budget size and targeting 15 countries, 1985–2013



Source: Database Wang & Caminada (2017) based on LIS, and own calculations

7. Decomposition of redistributive effects of social transfers and taxes over time

How have the redistributive effects of the different parts of welfare states altered over time and across countries? This section shows trends of detailed redistributive effects across a selection of LIS countries with full information on taxes and benefits. 8 countries are selected based on two criteria: 1) the country has full tax/benefit information at least three data points (around 1985, around 1997 and 2010 or later); 2) the category *Other transfers* amounts to less than 20 percent of total fiscal redistribution²⁰.

We calculate the following (partial) redistributive effects over time, based on the LIS household income components list: old-age/disability/survivor transfers, sickness transfers, family/children transfers, education transfers, unemployment transfers, housing transfers, general/food/medical assistance transfers, other social security transfers and income taxes and social security contributions. As explained before, we consider state old-age pension benefits as part of our analysis, because they are part of the safety net and generate significant reduction in poverty and income inequality. Occupational and private pensions are also taken into account.

To illustrate the idea of decomposition from primary to disposable income inequality, Table 14 reports the trends of redistributive effects of the different parts of tax-benefit system averaged for eight LIS countries from the mid-1980s to around 2013.

The dominant pattern was that of increasing fiscal redistribution. Increasing fiscal redistribution came from old-age/disability/survivor benefits and to a lesser extent from unemployment benefits and housing benefits. Less fiscal redistribution was generated by sickness benefits, education benefits and income taxes.

²⁰ In fact after our selection, other transfers amounts to more than 10 percent only in Finland 1987.

Table 14 Decomposition of disposable income inequality for 8 countries 1985-2013: averages by periods

	Gini around 1985	Gini around 1995	Gini around 2013	Change 1985-2013
(a) Gini primary income	0.447	0.460	0.485	0.039
(b) Gini disposable income	0.289	0.286	0.310	0.021
Overall redistribution (a-b)	0.158	0.174	0.176	0.018
<i>Transfers</i>	75%	78%	78%	3%
Old-age/Disability/Survivor transfers	47%	52%	56%	9%
Sickness transfers	1%	1%	0%	-1%
Family/Children transfers	7%	8%	7%	0%
Education transfers	6%	2%	1%	-5%
Unemployment transfers	5%	7%	6%	1%
Housing transfers	1%	3%	2%	2%
General/food/medical assistance transfers	2%	3%	3%	0%
Other transfers	7%	3%	2%	-5%
Income taxes and social security contributions	25%	22%	24%	-1%
Residual	0%	0%	-2%	-2%
Overall redistribution	100%	100%	100%	

Notes

- When we take the mean of the decomposition results across countries, the sum of all partial redistributive effects amount (a little) over 100 percent due to missing observations. We rescaled the redistributive effects of each social program by applying an adjustment factor, which is defined as the overall redistribution given by formula (4) (=100%) divided by sum of all partial redistributive effects of all programs (over 100%), in order to correct for an over-estimated effect.
- Selected countries: Australia, Finland, France, Germany, Israel, the Netherlands, Switzerland, and the United Kingdom.

Source: Database Wang & Caminada (2017) based on LIS, and own calculations

With respect to trends in the redistributive effects of several social programs across countries, the results are diverse. Figure 11 presents how the redistributive effect of each social program changed over time across 8 LIS countries.

Countries are ranked in order to their fiscal redistribution from highest to lowest. For example, Finland, Germany and the Netherlands rank high in descending order of redistribution around 1985 and 2013. On the other extreme, Switzerland and the United States rank low at the bottom of our list of redistribution. Note that the country ranking altered over time.

Figure 11 Decomposition of fiscal redistribution of social transfers and taxes in 8 countries, 1985-2013



Source: Database Wang & Caminada (2017) based on LIS, and own calculations

Over time, the Netherlands dropped in our country ranking on redistribution from place 1 to 3. Germany did the opposite. Also Finland is located in the top-3 of countries with relatively high levels of fiscal redistribution. On the bottom of our list we find the United States, Switzerland and Israel with the lowest levels of redistribution by social transfers and taxes.

Old-age/disability/survivor benefits attribute most to redistribution in all countries around 2013 (35% and over). From the mid-1980s to around 2013, the main pattern was an increasing contribution of these programs to redistribution, except for Australia and Germany. Overall, old age and survivors benefits account for 47 percent of the total fiscal redistribution among our 8-country-average around 1985 and 56 percent around 2013.

The redistributive effect of benefits for family/children, education and housing varies across countries. Overall, these benefits account for 11 percent of the total fiscal redistribution among our 8-country-average in 2013; an decrease with 3 points since 1985. The decrease comes mainly from education benefits.

The redistributive effect of unemployment compensation and sickness benefits decreased in halve of the countries, namely Australia, France, the Netherlands and the United States. The overall contribution of unemployment and sickness benefits to total fiscal redistribution among our 8-country-average was 6 percent, both around 1985 and around 2013.

Taxes attributed less to fiscal redistribution in the period 1985-2013 on average (25% versus 24% among our 8-country-average). However, cross-country differences are large. Income taxes became more progressive in Finland, France and the Netherlands – consistent with the trend towards greater primary-income inequalities, which, in itself, would increase taxation at the top end. Effective income-tax rates faced by households, however, on average declined in Australia, Germany, Israel, Switzerland and the United States.

8. Conclusion and future research

8.1 Income inequality and fiscal redistribution around 2001-2013

In the first part of this paper, we have investigated income distribution and redistributive effect attributed to social transfers and taxes across 47 countries around 2011-2013, based on the micro household income data from LIS. We have provided primary and disposable income inequality, total and disaggregated redistributions in a comparative way, across much more countries than that have been studied before, offering an accurate, detailed picture of redistribution of incomes through taxes and transfers across social welfare states.

Nordic countries, Czech Republic and the Netherlands have the smallest income disparity, while India, Dominican Republic, Colombia, China and South Africa have the largest. Nordic countries show the most equally distributed disposable incomes and primary incomes. On average, large primary income disparity exists in English speaking countries. Generally speaking, European countries achieve lower levels of income inequality than other countries.

With respect to redistributive effect, our budget incidence analysis indicates that the pattern is diverse across countries. The largest redistribution is found for Nordic Countries, Ireland, Greece, Germany, Austria, the Netherlands, the United Kingdom and France, while Mexico, Colombia, Taiwan, India, Dominican Republic and Paraguay show rather limited overall redistributive effects. On average, the share of social transfers in total redistribution is 81 percent, while taxes account for 19 percent of redistribution. Thus, in most countries social transfers are the dominant instruments in reducing income inequality. We also find that this redistributive effect can almost fully be attributed to the budget size of transfers, while the extent to which benefits are targeted toward low income groups does not seem to play a role.

As far as specific social programs are concerned, in most countries two dominant income components account for above 50 to 75 percent of total reduction in income inequality: the public old age pensions and the survivors schemes (including disability benefits), and the income taxes. However, cross country differences are huge. For example, in Continental European, Central Eastern European and Southern European Countries the public old age and survivor benefits account for a large part of total redistribution, while these figures are much lower for English speaking Countries (29-47%), for Nordic Countries (48-60%). In Nordic Countries, English speaking Countries and Latin America income taxes play a major role (above 25%) compare to other countries (with the exceptions of the United Kingdom, Denmark and Norway). Also the redistributive effect of social assistance (family and children benefits) is in the English speaking Countries relatively high (8-19%), compared to Nordic Countries (2-8%), Continental European Countries (6-12%), and in Central Eastern European Countries (4-9%). In Nordic Countries also a variety of other social programs contribute to the reduction of inequality. Remarkably, across countries all other social benefit programs seems to have rather limited redistributive effects, although the food and medical assistance schemes do have some effect too.

8.2 Trends in income inequality and fiscal redistribution 1967-2014

In the second part of this paper, we have investigated changes in the income distribution over time and whether and to what extent taxes and social contributions have contributed to this trend. We have provided trends of primary and disposable income inequality, overall and disaggregated redistributions by social programs in a comparative way, across much more countries than that have been studied before, offering an accurate, detailed picture of redistribution of incomes through taxes and transfers across social welfare states.

We have applied a sequential budget incidence analysis for a selected group of 15 countries (with full tax/benefit information). The welfare states reduce income inequality on average by 38 percent around 2013; higher compared to 35 percent for around 1985. Inequality of primary income has increased by 11 percent over a twenty-five-year period averaged over these 15 countries. This is a substantial increase over a relatively short period of time. Primary-income inequality has been the main driver of inequality trends in disposable incomes, but fiscal redistribution compensated 63 percent of the increase in primary-income inequality.

In contrast to the results of other studies, especially by the OECD, we do not find that tax-benefit systems have become less effective in fiscal redistribution. Tax-benefit systems around 2013 are more effective at reducing income inequality compared to the mid-1980s and the mid-1990s. So, the claim that reduced redistribution is a main driver of widening income gaps must be toned down.

State old age and survivors benefits (including disability schemes) attribute most to fiscal redistribution in the majority of the countries; the main pattern was a increasing contribution of these programs to redistribution in the period 1985-2013 (except for Germany and Finland). Overall, old age and survivors benefits account for 47 percent of the total fiscal redistribution among our 8-country-average around 1985 and 56 percent around 2013. Also taxes attributed more to fiscal redistribution in the period 1985-2013 on average (25% versus 24% among our 8-country-average). Again, cross-country differences are large. Income taxes became more progressive in Finland and the Netherlands, and generated less fiscal redistribution in the United States, Australia and Israel. For some countries the redistributive effect of benefits for family, children, education and housing is rather high and account for 15 percent and over of the total fiscal redistribution, as in Australia and France. Overall, these benefit account for 11 of the total fiscal redistribution among our country-average around 2013, while it was 14 percent around 1985.

8.3 Future research

This empirical analysis does not show why benefits and taxes have become more or less redistributive. It can be expected that, as primary income inequality rises, the tax-benefit systems will automatically have a more redistributive impact, because of the progressivity built into these systems. But also policy changes will certainly explain a part of the changes in redistribution. Future research should shed some light on the impact of specific policy reforms in changing the redistributive effect of welfare states.

In near future research will focus on households with very low income as well—those in poverty. The budget incidence approach based on LIS data allows us to employ all kind of cross-national analyses.²¹ How well is social expenditure targeted to the poor? Moreover, with LIS data on fiscal redistribution we are able to analyze differences in anti-poverty approaches of countries (Europe versus the United States) and/or to judge the effectiveness of poverty reduction by taxes and transfers across countries. To this end, we are able to assemble a databank of fiscal redistribution on poverty that can be used by scholars and policy analysts to study the effects of different kinds of programs on poverty, income adequacy in retirement, and the distribution of financial well-being generally. This project is named *Leiden LIS Budget Incidence Fiscal Redistribution Dataset on Relative Income Poverty Rates* (2017/2018) and will become available soon via our website ([Leiden Law School / Economics / Data](#)).

21 In line with our earlier work. See Caminada et al (2012b) and Caminada & Martin (2011 and 2015).

References

- Arts W & Gelissen J (2002), Three worlds of welfare capitalism or more? A state-of-the-art report, *Journal of European Social Policy* 12(2): 137-158.
- Atkinson AB (1970), On the Measurement of Inequality, *Journal of Economic Theory* 2: 244-263.
- Atkinson AB (1979), Horizontal Equity and the Distribution of the Tax Burden, in: HJ Aaron & MJ Boskins (eds.), *The Economics of Taxation*, Washington: The Brookings Institution: 3-18.
- Atkinson AB (1987), On the measurement of poverty, *Econometrica* 55(4): 749-764.
- Atkinson AB (1996), Seeking to Explain the Distribution of Income, in: J Hills (ed.), *New Inequalities*, Cambridge University Press, Cambridge.
- Atkinson AB (2000), The Changing Distribution of Income: Evidence and Explanation, *German Economic Review* 1 (1): 3-18.
- Atkinson AB (2003), Income Inequality in OECD Countries: Data and Explanations, *CESifo Economic Studies* 49(4): 479-513.
- Atkinson AB (2015), *Inequality: What can be Done*, Cambridge, Massachusetts, Harvard University Press.
- Atkinson AB & Brandolin A (2001), Promise and Pitfalls in the Use of Secondary Data-Sets: Income Inequality in OECD Countries as a Case Study, *Journal of Economic Literature* 39(3) (September): 771-800.
- Atkinson AB, Brandolini A, & Smeeding T (2001), Producing Time Series Data for Income Distribution: Sources, Methods, and Techniques, *LIS Working Paper Series* #295.
- Atkinson AB, Rainwater L & Smeeding TM (1995), Income Distribution in OECD Countries: Evidence from the Luxembourg Income Study, *OECD Social Policy Studies* 18, Paris.
- Avram S, Levy H & Sutherland H (2014), Income Redistribution in the Europe Union, *IZA Journal of European Labor Studies* 3(22): 1-29.
- Been J, Caminada K, Goudswaard K & Vliet O van, Public/private pension mix, income inequality, and poverty among the elderly in Europe: an empirical analysis using new and revised OECD data, *Social Policy and Administration* (51).
- Behrendt C (2000), Is there income poverty in Western Europe? Methodological pitfalls in the measurement of poverty in a comparative perspective, *LIS Working Paper Series* #258.
- Behrendt C (2002), Holes in the safety net? Social security and the alleviation of poverty in a comparative perspective, in: R Sigg & C Behrendt (eds.) *Social Security in the Global Village*, International Social Security Series, Volume 8, New Brunswick / London: Transaction Publishers: 333-358.
- Belfield C, Blundell R, Cribb J, Hood A & Joyce R (2017), Two Decades of Income Inequality in Britain: The Role of Wages, Household Earnings and Redistribution, *Economica*, 84: 157-179.
- Blank RM & Blinder AS (1986), Macroeconomics, Income Distribution, and Poverty, in: S Danziger & D Weinberg (eds.), *Fighting Poverty: What Works and What Doesn't*, Cambridge, MA, Harvard University Press: 180-208.
- Blank RM, Card D, Levy F & Medoff JL(1993), Poverty, Income Distribution, and Growth: Are They Still Connected?, *Brookings Papers on Economic Activity* 2: 285-339.
- Blinder AS & Esaki HY (1978), Macroeconomic Activity and Income Distribution in the Postwar United States, *The Review of Economics and Statistics* 60: 604-609.
- Bonoli G (1997), Classifying Welfare States: a Two-dimension Approach, *Journal of Social Policy* 26(3): 351-372.
- Bradley D, Huber E, Moller S, Nielsen F & Stephens J (2003), Distribution and Redistribution in Postindustrial Democracies, *World Politics* 55(2): 193-228.
- Brady D (2004), The welfare state and relative poverty in rich western democracies, 1967-1997, *LIS Working Paper Series* #390.

- Brandolini A & Smeeding TM (2007a), Inequality Patterns in Western-Type Democracies: Cross-Country Differences and Time Changes, *LIS Working Paper Series* #458.
- Brandolini A & Smeeding TM (2007b), Inequality: International Evidence, in: SN Durlauf & LE Blume (eds.), *The New Palgrave Dictionary of Economics*, Basingstoke: Palgrave Macmillan: 1013-1021.
- Brandolini A & Smeeding TM (2009), Income Inequality in Richer and OECD Countries, in: W Salverda, B Nolan & TM Smeeding (eds.), *The Oxford Handbook of Economic Inequality*, Oxford University Press.
- Breen R, García-Peñalosa C & Orgiazzi E (2008), Factor Components of Inequality: Cross-Country Differences and Time Changes, *LIS Working Paper Series* #503.
- Burniaux JM, Dang TT, Fore D, Förster M, Mira dErcole M & Oxley H (1998), Income distribution and poverty in selected OECD countries, *OECD Working Papers* 189.
- Caminada K & Goudswaard KP (2001), International Trends in Income Inequality and Social Policy, *International Tax and Public Finance* 8(4): 395-415.
- Caminada CLJ & Goudswaard KP (2005), Are public and private social expenditures complementary?, *International Advances in Economic Research* 11(2): 175-189.
- Caminada K & Goudswaard KP (2009), Effectiveness of Poverty Reduction in the EU15. A Descriptive Analysis, *Poverty & Public Policy* 1(2), Article 5: 1-51.
- Caminada K & Goudswaard KP (2010), How well is social expenditure targeted to the poor?, in: P Saunders & R Sainsbury (eds.), *Social Security, Poverty and Social Exclusion in Rich and Poorer Countries*, International Studies on Social Security, volume 16, Mortsels, Belgium: Intersentia: 97-112.
- Caminada K, Goudswaard K & Wang C (2012a), Disentangling income inequality and the redistributive effect of taxes and transfers in 20 LIS countries mid 1980s – mid 2000s, *LIS Working Paper Series* #581.
- Caminada K, Goudswaard K & Koster F (2012b), Social income transfers and poverty: A cross-country analysis for OECD countries, *International Journal of Social Welfare* 21(2): 115-126.
- Caminada K & Martin M (2011), Differences in Anti-Poverty Approaches Between Europe and The United States: A Cross-Atlantic Descriptive Policy Analysis, *Poverty & Public Policy*, Vol. 3, Issue 2, Article 3: 1-17.
- Caminada K & Martin M (2015), A cross-Atlantic descriptive policy analysis of differences in anti-poverty approaches in Europe and the United States. In: MJ Skidmore (red.) *Poverty in America: Urban and Rural Inequality and Deprivation in the 21st Century*, Westphalia Press: 278-297.
- Champernowne DG (1974), A Comparison of Measures of Inequality of Income Distribution, *Economic Journal* 84:787-816.
- Chen WH, Förster M & Llena-Nozal A (2011), Trends in Households Earnings Inequality: The Role of Changing Family Formation Practice, in *Divided We Stand: Why Inequality Keeps Rising*, Paris: Organisation of Economic Co-operation and Development: 193-224.
- Chevan A & Stokes R (2000), Growth in Family Income Inequality, 1970-1990: Industrial Restructuring and Demographic Change, *Demography* 37: 365-380.
- Coulter PB (1989), *Measuring Inequality: A Methodological Handbook*, Westview Press, London.
- Creedy J & Ven J (2001), Decomposing Redistributive Effects of Taxes and Transfers in Australia: Annual and Lifetime Measures, *Australian Economic Papers* 40(2): 185-198.
- Dalton H (1936), *Principles of Public Finance*, third edition, George Routledge & Sons, London.
- Danziger S, Haveman R & Plotnick R (1981), How Income Transfer Programs Affect Work, Savings and Income Distribution: A Critical Assessment, *Journal of Economic Literature* 19 (September): 975-1028.
- De Agostini P, Paulua A, Sutherlandm H & Tasseva I (2014), The Effect of Tax-Benefit Changes on the Income Distribution in EU Countries Since the Beginning of the Economic Crisis, *EUROMOD Working Paper*, no. EM9/14.

- Ervik R (1998), The Redistributive Aim of Social Policy. A Comparative Analysis of Taxes, Tax Expenditure Transfers and Direct Transfers in Eight Countries, *LIS Working Paper Series* #184.
- Esping-Andersen G & Myles J (2009), Economic Inequality and the Welfare State, in: W Salverda, B Nolan & TM Smeeding (eds.), *The Oxford Handbook of Economic Inequality*, New York: Oxford University Press: 639-664.
- Feld LP (1999), Tax competition and income redistribution: An empirical analysis for Switzerland, *Public Choice* 105: 125–164.
- Ferrarini T & Nelson K (2003) Taxation of Social Insurance and Redistribution: a Comparative Analysis of Ten Welfare States, *Journal of European Social Policy* 13(1): 21–33.
- Ferrera M (1996), The “Southern” Model of Welfare in Social Europe, *Journal of European Social Policy* 6(1): 17-37.
- Figini P (1998), Inequality Measures, Equivalence Scales and Adjustment for Household Size and Composition, *LIS Working Paper Series* 185.
- Figari F & Paulus A (2015), The Distributional Effects of Taxes and Transfers Under Alternative Income Concepts: The Importance of Three “T”s, *Public Finance Review* 43(3): 347-372.
- Förster M (2000), Trend and Driving Factors in Income Distribution and Poverty in the OECD Area, *Labour Market and Social Policy Occasional Papers* no. 42, OECD, Paris.
- Förster M & Pearson M (2002), Income distribution and poverty in the OECD area: trends and driving forces, *OECD Economic Studies*, No. 34, 2002/1, Paris: OECD: 7-39.
- Förster M & Mira d’Ercole M (2005), Income Distribution and Poverty in OECD Countries in the Second Half of the 1990s, *OECD Social, Employment and Migration Working Papers*, no. 22.
- Foster JE, Greer J & Thorbecke E (1984), A class of decomposable poverty indices, *Econometrica* 52: 761-766.
- Frick JR, Büchel F & Krause P(2000), Public transfers, income distribution, and poverty in Germany and the United States in: R Hauser & I Becker (eds.) *The Personal Distribution of Income in an International Perspective*, Berlin, Germany, Springer-Verlag: 176-204.
- Fuest C, Niehues J & Peichl A (2010), The redistributive effects of tax benefit systems in the enlarged EU, *Public Finance Review* 38(4): 473-500.
- Gillespie WI (1965), Effects of Public Expenditures on the Distribution of Income in: R Musgrave (eds.), *Essays in Fiscal Federalism*, The Brookings Institution, Washington.
- Gornick JC & Jäntti M (2012), Child poverty in cross-national perspective: Lessons from the Luxembourg Income Study, *Children and Youth Services Review* 34(3): 558-568.
- Gornick JC, Ragnarsdóttir BH & Kostecki S (2013), LIS, Cross-National Data Center in Luxembourg – An Overview, *LIS Technical Working Paper Series* #5.
- Gottschalk P, Gustafsson B & Palmer E (eds.) (1997), *Changing Patterns in the Distribution of Economic Welfare*, Cambridge University Press, Cambridge.
- Gottschalk P & Smeeding TM (1997), Cross-National Comparisons of Earnings and Income Inequality, *Journal of Economic Literature* 35(2): 633-687.
- Gottschalk P & Smeeding TM (1998), Empirical Evidence on Income Inequality in Industrialized Countries, *LIS Working Paper Series* 154 (revised).
- Gottschalk P & Smeeding TM (2000), Empirical Evidence on Income Inequality in Industrialized Countries, in: AB Atkinson & F Bourguignon (eds.), *Handbook of Income Distribution*, Amsterdam: North-Holland: 261-308.
- Goudswaard KP & Caminada K (2010), The redistributive effect of public and private social programs: a cross-country empirical analysis, *International Social Security Review* 63(1): 1-19.
- Guillaud E, Olckers M & Zemmour M (2017), Four Levers of Redistribution: The Impact of Tax and Transfer Systems on Inequality Reduction, *LIS Working Papers Series* #695, Luxembourg.

- Gustafsson B & Johansson M (1999), In Search of Smoking Guns: What Makes Income Inequality Vary over Time in Different Countries?, *American Sociological Review* 64: 585-605.
- Hagenaars A & Vos K de (1987), The definition and measurement of poverty, *The Journal of Human Resources* 23(2): 211-221.
- Harrison B & Bluestone B (1988), *The Great U-Turn: Corporate Restructuring and the Polarizing of America*. NY: Basic Books.
- Hauser R & Becker I (1999), Changes in the distribution of pre-government and post-government income in Germany 1973 – 1993, in: R Hauser & I Becker (eds.), *The Personal Distribution of Income in an International Perspective*, Berlin: Springer-Verlag: 72-98.
- Heisz A (2007), Income Inequality and Redistribution in Canada: 1976 to 2004, *Analytical Studies Branch Research paper Series*, No. 298.
- Hills J, Paulus A, Sutherland H & Tasseva I (2014), A Lost Decade? Decomposing the Effect of 2001-11 Tax-Benefit Policy Changes on the Income Distribution in EU Countries. *ImPRovE Worling Papers*, 14/03. ImPRovE, Antwerp, Belgium.
- Immervoll H, Levy H, Lietz Ch, Mantovani D, Donoghue CO, Sutherland H & Verbist G (2005), Household incomes and redistribution in the European Union: Quantifying the equalising properties of taxes and benefits, *EUROMOD Working Papers* EM9/05.
- Immervoll H & Richardson L (2011), Redistribution Policy and Inequality Reduction in OECD Countries: What Has Changed in Two Decades?, *OECD Social, Employment and Migration Working Papers*, No. 122, OECD Publishing.
- Jäntti M (1997), Inequality in five countries in the 1980s: The role of demographic shifts, markets and government policies, *Economica* 64: 415-40.
- Jenkins SP (1995), Accounting for Inequality Trends: Decomposition Analyses for the UK 1971-86, *Economica* 62: 29-63.
- Jenkins SP (1999/2010), INEQDECO: Stata module to calculate inequality indices with decomposition by subgroup, *Statistical Software Components S366002*, Boston College Department of Economics, revised 19 Apr 2001. [Software available at: <http://ideas.repec.org/c/boc/bocode/s366007.html>].
- Jesuit DK & Mahler VA (2004), State redistribution in comparative perspective: A cross-national analysis of the developed countries, *LIS Working Paper Series* #392.
- Jesuit DK & Mahler VA (2010), Comparing government redistribution across countries: The problem of second-order effects, *LIS Working Paper Series* 546.
- Jesuit DK & Mahler VA (2017), Fiscal redistribution in comparative perspective: Recent evidence from the Luxembourg Income Study (LIS) datacenter, *LIS Working Paper Series* 717.
- Journard I, Pisu M & Bloch D (2012), Tackling Income Inequality: The Role of Taxes and Transfers, *OECD Journal: Economic Studies*, http://dx.doi.org/10.1787/eco_studies-2012-5k95xd6l65lt.
- Kakwani NC (1977a), Measurement of Tax Progressivity: An International Comparison, *Economic Journal* 87:71-80.
- Kakwani NC (1977b), Applications of Lorenz Curves in Economic Analysis, *Econometrica* 45 (3): 719-727.
- Kakwani NC (1986), *Analyzing Redistribution Policies: A Study Using Australian Data*, Cambridge: Cambridge University Press.
- Kammer A, Niehues J & Peichl A (2012), Welfare regimes and welfare state outcomes in Europe, *Journal of European Social Policy*, 22(5): 455–471.
- Kenworthy L & Pontusson J (2005), Rising Inequality and the Politics of Redistribution in Affluent Countries, *Perspectives on Politics* 3(3): 449-471
- Kenworthy L (2011), Targeting May Not Be So Bad, in: *Progress for the Poor*, New York: Oxford University Press.
- Kiefer DW (1984), Distributional Tax Progressivity Indexes, *National Tax Journal* 37: 497-513.

- Kim H (2000a), Anti-Poverty Effectiveness of Taxes and Income Transfers in Welfare States, *International Social Security Review* 53(4): 105–129.
- Kim H (2000b), Do welfare states reduce poverty? A critical shortcoming in the standard analysis of the anti-poverty effect of welfare states, *LIS Working Paper Series* #233.
- Kirchgässner G & Pommerehne W (1996), Tax harmonization and tax competition in the European Union: Lessons from Switzerland, *Journal of Public Economics* 60: 351–371.
- Korpi W & Palme J (1998), The Paradox of Redistribution and Strategies of Equality: Welfare State Institutions, Inequality, and Poverty in the Western Countries, *American Sociological Review* 63: 661–687.
- Kristjánsson AS (2011), Income Redistribution in Iceland: Development and European Comparisons, *European Journal of Social Security* 13(4): 392–423.
- Kuznets S (1955), Economic Growth and Income Inequality, *American Economic Review* 45: 1–28.
- Lambert PJ (1993), *The distribution and redistribution of income: A mathematical analysis*, Manchester: Manchester University Press.
- Lambert PJ, Nesbakken R & Thoresen TO (2010), On the Meaning and Measurement of Redistribution in Cross-Country Comparisons, *LIS Working Paper Series* #532.
- Lerman RI & Yitzhaki S (1985), Income Inequality Effects by Income Source: A New Approach and Applications to the United States, *The Review of Economics and Statistics* 67(1): 151–156.
- LIS Cross-National Data Center in Luxembourg (2017), *Luxembourg Income Study (LIS) Database*, <http://www.lisdatacenter.org>, (accessed between August and October 2017, through the secured remote-execution system from the LIS database, for 47 countries). Luxembourg: LIS.
- Mahler VA & Jesuit DK (2006), Fiscal redistribution in the developed countries: new insights from the Luxembourg Income Study, *Socio-Economic Review* 4: 483–511.
- Marcus J & Danziger S (2000), Income Poverty in Advanced Countries, in: AB Atkinson & F Bourguignon (eds.), *Handbook of Income Distribution*, New York: Elsevier-North Holland Publishers: 309–378.
- McCall L (2001), *Complex Inequality: Gender, Class, and Race in the New Economy*. NY: Routledge.
- Mitchell D (1991), *Income Transfers in Ten Welfare States*, Aldershot: Avebury.
- Mocan N (1999), Structural Unemployment, Cyclical Unemployment, and Income Inequality, *The Review of Economics and Statistics* 81: 122–134.
- Moene KO & Wallerstein M (2003), Earnings Inequality and Welfare Spending: A Disaggregated Analysis, *World Politics* 55: 485–516.
- Morillas JR (2009), Redistribution as an Income Mobility Process: The Identification and Measurement of Redistribution, *LIS Working Paper Series* #513.
- Morris M & Western B (1999), Inequality in Earnings at the Close of the Twentieth Century, *Annual Review of Sociology* 25: 623–57.
- Musgrave RA, Case KE & Leonard HB (1974), The Distribution of Fiscal Burdens and Benefits, *Public Finance Quarterly* 2(July): 259–311.
- Musgrave RA & Tun Thin (1948), Income Tax Progression, 1929–48, *Journal of Political Economy* 56: 498–514.
- Nell G (2005), Prosperity and the welfare state: The effect of benefit generosity and wage coordination on absolute poverty and prosperity in cross-national perspective, *LIS Working Paper Series* #424.
- Nielsen F & Alderson AS (1997), The Kuznets Curve and the Great U-Turn: Patterns of Income Inequality in U.S. Counties, 1970–1990, *American Sociological Review* 62: 12–33.
- Nieuwenhuis R, Munzi T & Gornick JC (2016), Comparative research with net and gross income data: An evaluation of two netting down procedures for the LIS Database, *Review of Income and Wealth*, DOI: 10.1111/roiw.12233.

- Nolan B & Marx I (2009), Economic Inequality, Poverty, and Social Exclusion in: W Salverda, B Nolan & TM Smeeding (eds.), *The Oxford Handbook of Economic Inequality*, New York: Oxford University Press: 315-341.
- OECD (2008), *Growing unequal? Income distribution and Poverty in OECD Countries*, Paris: OECD.
- OECD (2011), *Divided We Stand: Why Inequality Keeps Rising*, Paris: OECD.
- OECD (2015), *In It Together: Why Less Inequality Benefits All*, Paris: OECD.
- OECD (2016), *Income Inequality remains high in the fact of weak recovery*, Paris: OECD.
- OHiggins M, Schmaus G & Stephenson G (1990), Income Distribution and Redistribution: A Microdata Analysis for Seven Countries, in: T Smeeding, M OHiggins & L Rainwater (eds.), *Poverty, Inequality, and Income Distribution in Comparative Perspective*, Harvester Wheatsheaf, Hemel Hempstead.
- Palme M (1996), Income Distribution Effects of the Swedish 1991 Tax Reform: An Analysis of a Microsimulation Using Generalized Kakwani Decomposition, *Journal of Policy Modeling* 18(4): 419-443.
- Paul S (2004), Income sources effects on inequality, *Journal of Development Economics* 73: 435-451.
- Piketty T (2014), *Capital in the Twenty-First Century*, Cambridge: The Belknap Press of Harvard University Press.
- Plotnick R (1984), The Redistributive Impact of Cash Transfers, *Public Finance Quarterly* 12: 27-50.
- Pressman S (2009), Public Policies and the Middle Class throughout the World in the Mid 2000s, *LIS Working Paper Series* #517.
- Pyatt G (1976), On the interpretation and disaggregation of Gini coefficients, *The Economic Journal* 86 (Jun): 243-255.
- Ravallion M (2015), The Luxembourg Income Study, *The Journal of Economic Inequality* 13: 527-547 (DOI 10.1007/s10888-015-9298-y)
- Reynolds M & Smolensky E (1977a), *Public Expenditures, Taxes and the Distribution of Income: The United States 1950, 1961, 1970*, Academic Press, New York.
- Reynolds M & Smolensky E (1977b), Post Fisc Distributions of Income 1950, 1961, and 1970, *Public Finance Quarterly* 5: 419-438.
- Ringen S (1991), Households, standard of living and inequality, *Review of Income and Wealth* 37: 1-13.
- Shorrocks AF (1982), Inequality decomposition by factor components, *Econometrica* 50: 193-211.
- Shorrocks, AF (1983), Ranking Income Distributions, *Economica* 50(197): 3-17.
- Silber J (1994), Income Distribution, Tax Structure, and the Measurement of Tax Progressivity, *Public Finance Quarterly* 22 (1): 86-102.
- Smeeding TM (2000), Changing Income Inequality in OECD Countries: Updated Results from the Luxembourg Income Study (LIS), in: R Hauser & I Becker (eds.) *The Personal Distribution of Income in an International Perspective*, Berlin, Germany, Springer-Verlag: 205-224.
- Smeeding TM (2005), Public Policy, Economic Inequality, and Poverty: The United States in Comparative Perspective, *Social Science Quarterly* 86 (supplement): 955-983.
- Smeeding TM (2004), Twenty Years of Research in Income Inequality, Poverty and Redistribution in the Developed World: Introduction and Overview, *Socio-Economic Review* 2: 149-163.
- Smeeding TM (2008), The LIS/LES Project: Overview and Recent Developments, *LIS Working Paper Series* #294.
- Smeeding T & Latner (2015), PovcalNet, WDI and 'All the Ginis': a critical review, *The Journal of Economic Inequality*, 13 (4): 603-628.
- Smolensky E, Hoyt W & Danziger S (1987), A Critical Survey of Efforts to Measure Budget Incidence in: HM van de Kar & BL Wolfe (eds.), *The Relevance of Public Finance for Policy-Making*, Proceedings IIFP Congress 1985, Detroit: 165-179.
- Stark O, Taylor JE & Yitzhaki S (1986), Remittances and inequality, *Economic Journal* 96: 722-740.

- Stephens JD (1995), Preserving the Social Democratic Welfare State, *Nordic Journal of Political Economy* 22: 143-161.
- Swabish J, Smeeding TM & Osberg L (2006), Income Distribution and Social Expenditures: A Cross National Perspective, in: DB Papadimitriou (ed.), *The Distributional Effects of Government Spending and Taxation*, Northampton MA: Edward Elgar Publishing: 247-288.
- Thewissen S, Kenworthy L, Nolan B, Roser M & Smeeding T (2015), Rising Inequality and Living Standards in OECD Countries: How Does the Middle Class Fare?, *LIS Working Paper Series* #656.
- Wang C & Caminada K (2011a), Disentangling income inequality and the redistributive effect of social transfers and taxes in 36 LIS countries, *LIS Working Paper Series* #567.
- Wang C & Caminada K (2011b), *Leiden LIS Budget Incidence Fiscal Redistribution Dataset*, posted at the website of LIS cross-national data center Luxembourg (<http://www.lisdatacenter.org/resources/other-databases/>) and posted at the website of Leiden University (www.economie.leidenuniv.nl).
- Wang C, Caminada K & Goudswaard K (2012), The redistributive effect of social transfer programmes and taxes: A decomposition across countries, *International Social Security Review* 65(3): 27-48.
- Wang C, Caminada K & Goudswaard K (2014), Income distribution in 20 countries over time, *International Journal of Social Welfare* 23(3): 262-275.
- Wang J & Caminada K (2017), *Leiden LIS Budget Incidence Fiscal Redistribution Dataset on Income Inequality* (Version 1, November 2017). Open Access at [Leiden Law School / Economics / Data](http://www.leidenlaw.nl/economics/data)
- Wang J, Caminada K & Wang C (2017), Measuring income polarization for 20 European countries, 2004-2013: A Shapley growth-redistribution decomposition, *Eastern European Economics* (DOI: 10.1080/00128775.2017.1345637).
- Whiteford P (2008), How much redistribution do governments achieve? The role of cash transfers and household taxes, growing unequal: income distribution and poverty in OECD countries, in: *Growing unequal? Income distribution and poverty in OECD countries*, Paris: Organisation of Economic Co-operation and Development: 97-121.
- Whiteford P (2010), The Australian Tax-Transfer System: Architecture and Outcomes, *The Economic Record* 86 (275): 528-544.

Annex A Documentation Guide Leiden LIS Budget Incidence Fiscal Redistribution Dataset on Income Inequality 2017 for 47 LIS countries - 1967-2014

Assembled by Jinxian Wang & Koen Caminada

Version 1, November 2017

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Dataset available via websites:

- ✓ LIS Cross-National Data Center in Luxembourg:
<http://www.lisdatacenter.org/resources/other-databases/>
- ✓ Leiden University, Department of Economics:
<https://www.universiteitleiden.nl/en/law/institute-for-tax-law-and-economics/economics/data-sets>

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[Leiden LIS Budget Incidence Fiscal Redistribution Dataset on Income Inequality 2017](#)

A more detailed description of these data and method will come available in Koen Caminada, Jinxian Wang, Kees Goudswaard & Chen Wang (2017), Income inequality and fiscal redistribution in 47 LIS-countries (1967-2014), *LIS Working Paper*. Please cite this working paper when referring to the data set, along with the web address www.economie.leidenuniv.nl.

Aim

The update and extension of the Leiden LIS Budget Incidence Fiscal Redistribution Dataset on Income Inequality 2017 presents the disentanglement of income inequality and the redistributive effect of social transfers and taxes in 47 LIS countries for the period 1967-2014 (Waves I - Wave IX of LIS). This dataset allows researchers and public policy analysts to compare fiscal redistribution across developed countries and middle income countries over the last five decades. Research may employ these data in addressing several important research issues. Often addressed questions in the empirical literature on the welfare state concerns the sources of variance across countries and over time in the extent and nature of fiscal redistribution. Changes (in the generosity) of welfare states can be linked to (changes in the fiscal redistribution). Best-practice among countries can be identified and analyzed in more detail. In exploring the causes and effects of welfare state redistribution in the developed countries and middle income countries, the literature has increasingly moved towards more disaggregated measures of social policy, an enterprise in which the Leiden LIS Budget Incidence Fiscal Redistribution Dataset on Income Inequality 2017, with its detailed data on taxes and a large number of individual social benefits, offers a rich source of information.

Research could focus on households with very low income as well—those in poverty. The budget incidence approach based on LIS data allows researchers to employ all kinds of cross-national analyses. How well is social expenditure targeted to the poor? Moreover, with LIS data on fiscal redistribution research is able to analyze differences in anti-poverty approaches of countries (Europe versus the United States) and/or to judge the effectiveness of poverty reduction by taxes and transfers across countries.

The assembled databank of fiscal redistribution can be used by scholars and policy analysts to study the effects of different kind of programs on poverty, income adequacy in retirement, and the distribution of economic well-being generally.

Content dataset 2017

This data set offers a number of measures of fiscal redistribution in the developed countries, drawing upon data from 293 Luxembourg Income Study surveys conducted in 47 countries between 1967 and 2014 (5,437,818 disposable income observations). In this dataset we have computed several kinds of results, namely income inequality before social transfers and taxes, income inequality after social transfers and taxes, the overall redistributive effect, the partial effect of redistribution by several social transfers and the partial effect of redistribution by income taxes and social security contributions.

This dataset provides an update and extension of the Leiden LIS Budget Incidence Fiscal Redistribution Dataset (Wang & Caminada, 2011b) in three ways.

- ♥ First, the updated dataset covers a larger number of countries (47 versus 36) and a longer period (1967-2014 versus 1967-2006) using the most recent LIS data available.
- ♥ Second, the LIS staff implemented a major LIS Database template revision linked to the release of the Wave VII (centered on 2007) microdata. Most components of this revised template have also been applied, retroactively, to all earlier waves of the microdata. The revised template increased both comparability over-time and cross-national. As a result, most figures of our prior assembled dataset on fiscal redistribution are – unfortunately – not directly comparable with the figures produced for the current Leiden LIS Budget Incidence

Fiscal Redistribution Dataset on Income Inequality 2017. To obtain a consistent time-series, all calculations of the database of Wang & Caminada (2011b) were redone using the new 2011 LIS Template, also extending the time-series with the most recent waves (2006 onwards).

- ♥ Third, we offer a more user-friendly version of the database allowing users to easily select income inequality variables and fiscal redistribution variables for (a group of) countries and/or specific data years via pivot tables. Somewhat arbitrary we labeled countries as follows:

<i>Anglo-Saxon</i> (3):	Australia, Canada and United States;
<i>EU15</i> (14):	Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Spain, Sweden and United Kingdom;
<i>CEE</i> (6):	Czech Republic, Estonia, Hungary, Poland, Slovakia and Slovenia;
<i>Europe – other</i> (5):	Georgia, Iceland, Norway, Serbia and Switzerland;
<i>BRICS</i> (5):	Brazil, China, India, Russia and South Africa;
<i>Latin America</i> (9):	Colombia, Dominican Republic, Guatemala, Mexico, Panama, Paraguay, Peru and Uruguay;
<i>Middle East</i> (2):	Egypt and Israel;
<i>South-East Asia</i> (3):	Japan, South Korea and Taiwan.

Based on the current assembled dataset, we explore how income inequality have evolved across countries and over time and what effects of fiscal redistribution are. Our dataset offers a number of measures of fiscal redistribution in the developed countries and middle income countries, namely:

- 1) LIS descriptives: Median and mean equivalized income, gross versus net information of income and the number of observation for each wave (= 293 datasets; 47 countries over time; 5,437,818 disposable income observations).
[Table A1 in Excel Spreadsheet; a pivot table allows users to select countries and/or specific data years]
- 2) A measure of overall fiscal redistribution, as reflected in the difference between the Gini indexes of pre-tax-transfer primary income and post-tax-transfer disposable income. We offer measures of both absolute fiscal redistribution ($Gini_{pri} - Gini_{dhi}$) and relative fiscal redistribution ($(Gini_{pri} - Gini_{dhi}) / Gini_{pri}$). Moreover, we have computed the shares of absolute and relative fiscal redistribution resulting from direct taxes and social transfers. All figures are presented for both the Total population and the Working-age population (18-64).
[Table A2 in Excel Spreadsheet; a pivot table allows users to select countries and/or specific data years]
- 3) The average size of social transfers as a proportion of households' pre-tax income (gross income), and a summary index of the degree to which transfers are targeted toward low-income groups. Our measure ranges from -1.0 (the poorest recipient receives all transfer income) to +1.0 (the richest recipient receives all transfer income).
[Table A3 in Excel Spreadsheet; a pivot table allows users to select countries and/or specific data years]

In order to disentangle income inequality even further by income source two additional statistics are provided for:

- 4) The budget size that is associated with several social transfers. The average size of a social transfer is defined as a proportion of households' gross income (codes refer to LIS Household Income Components List; see Annex A1 for details):
- a) Old-age/disability/survivor transfers (hitsil+hitsup+hitsudi+hitsap)
 - b) Sickness transfers (hitsissi+hitsiswi)
 - c) Family/children transfers (hitsisma+hitsufa+hitsafa)
 - d) Education transfers (hitsued+hitsaed)
 - e) Unemployment transfers (hitsisun+hitsuun+hitsaun)
 - f) Housing transfers (hitsaho+hitsahe)
 - g) General/food/medical assistance transfers (hitsagen+hitsafo+hitsame)
 - h) Other transfers (all social transfers minus transfers a to g)
 - i) Income taxes and social security contributions (hxit)
- [Table A4 in Excel Spreadsheet; a pivot table allows users to select countries and/or specific data years]
- 5) A measure of the extent of fiscal redistribution that is associated with several social transfers and income taxes and social security contributions (codes refer to LIS Household Income Components List; see Annex A1 for details):
- a) Old-age/disability/survivor transfers (hitsil+hitsup+hitsudi+hitsap)
 - b) Sickness transfers (hitsissi+hitsiswi)
 - c) Family/children transfers (hitsisma+hitsufa+hitsafa)
 - d) Education transfers (hitsued+hitsaed)
 - e) Unemployment transfers (hitsisun+hitsuun+hitsaun)
 - f) Housing transfers (hitsaho+hitsahe)
 - g) General/food/medical assistance transfers (hitsagen+hitsafo+hitsame)
 - h) Other transfers (all social transfers minus transfers a to g)
 - i) Income taxes and social security contributions (hxit)
- [Table A5 in Excel Spreadsheet; a pivot table allows users to select countries and/or specific data years]

A description of the decomposition method of Gini coefficient is given in sections 3.3 and 3.4 of the main text.

For 289 out of all 293 LIS datasets, we are able to decompose total redistribution into partial effects of one to seven social transfer programs and taxes and social security contributions mentioned above. Unfortunately, in Austria (1995 and 1987) and Spain (1980) data of the social programs are not available at all. Taiwan (1995) is not computed as it misses information on total social security transfers and income taxes and social security contributions.

The data set presents the results of the decomposition of income inequality and the redistributive effect of several social transfers and taxes and contributions for LIS countries. Some benefits or taxes do not have any redistributive effect. The meaning of this is twofold. First, such a benefit scheme does not exist in a specific country and/or data is not available in LIS (represented as *blanks*). Second, such a program exist, but does not have a redistributive effect, because the social expenditures of this program is rather low or the program is distributed equally among the population (noted as 0%). In all tables, when Gross/net information is marked as “net”, the redistributive effect of taxes is represented as blanks.

It should be noted that LIS allocate social transfers to several categories (see above and in Tables A4 and A5 of our Excel Spreadsheet). Unfortunately, the category *Old-age/disability/survivor transfers* cannot be further divided into old-age, disability and survivor transfers distinctively as part of the variable *hitsil* does not contain more specific income sources; see Annex A.

Results should be interpreted with caution because the redistributive effect of the category *Other transfers* (= transfers not allocated to a specific category) amounts for several countries and years 20 percent and over. This high share of the category *Other transfers* is the case for 53 datasets (out of 289) concerning 18 countries (out of all 47): Canada (1994, 1997, 1998, 2000, 2004, 2007, 2010), Colombia (2013), Denmark (1987, 1992), Dominican Republic (2007), Estonia (2000), Germany (1973), Hungary (2007, 2009, 2012), Ireland (1987), Japan (2008), Mexico (1994, 1996, 1998, 2000, 2002, 2004, 2008, 2010, 2012), Norway (1979, 1986), Paraguay (2010), Slovenia (1997, 1999, 2004, 2007, 2010, 2012), South Korea (2006, 2008, 2010, 2012), Spain (1980, 1985), Sweden (2005), Taiwan (1991, 1997, 2000, 2005, 2007, 2010, 2013), the United Kingdom (1986, 1991) and Uruguay (2004). Of course, high figures for transfers not allocated to a specific category (the category *Other transfers*) are somewhat troublesome in our decomposition analysis of fiscal redistribution, especially when LIS allocates less to this category over time due to higher data quality.

The treatment of pensions needs special attention. Public pension plans are generally seen as part of the safety net, generating large antipoverty effects through transfers and taxes (contributions). 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, 2008:120). Occupational and private pensions are not antipoverty programs 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. 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 primary income or as a transfer? We deal with this bias rather pragmatically by following LIS Household Income Variables List (LIS, 2017): occupational and mandatory private pensions are earmarked and treated as social security transfers; see Annex A1 for details.

Choice of income unit: see section 3.5 main text

Gross and net income datasets in LIS: see section 3.2 main text

Measuring the redistributive effects of taxes and social transfers: see section 3.1 main text

Countries and other measurement issues: see section 3.7 main text

Origin of the idea

The original database on Fiscal Redistribution based on LIS data was initiated by Jesuit & Mahler in 2004 ([LIS Working Paper #392](#)). This Leiden Budget Incidence Fiscal Redistribution Dataset on Income Inequality 2017 refines, updates and extends their Fiscal Redistribution approach. LIS data allowed us to decompose the trajectory of the Gini coefficient from primary to disposable income inequality in several parts: the dataset distinguish 7 main different social benefits and income taxes and social contributions across countries.

Jesuit & Mahler (2004) and Mahler & Jesuit (2006) divided overall government redistribution only into 3 components: the redistributive effects from unemployment benefits, from pensions, and from taxes. They applied their empirical exercise for 13 countries with LIS-data around the

years 1999/2000 (59 datasets). Wang & Caminada (2011b) assembled a comparable dataset for 36 LIS-countries for the period 1979-2006 (177 datasets). Overall government redistribution was divided into 13 components. The current Leiden LIS Budget Incidence Fiscal Redistribution Dataset on Income Inequality 2017 covers a much wider range of 47 countries using the most recent LIS data available (293 datasets). Data on disposable income e.g. is available for 5,437,818 individual disposable income observations summarized over all countries and waves, i.e. on average 18,559 observations per dataset. The coverage varies per country. The highest number of observations is for Norway 2013 (# 234,519), while the lowest number of observations is for Hungary 1999 (#1,636); see Descriptives for details (Table A1 in Excel Spreadsheet].

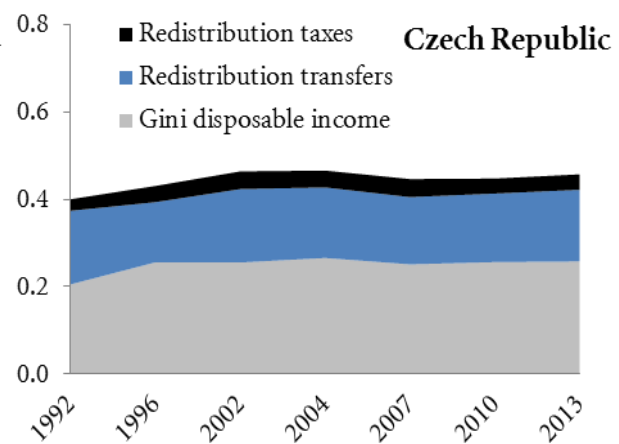
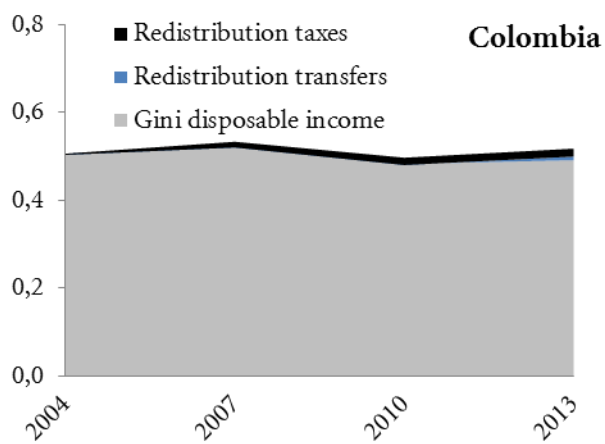
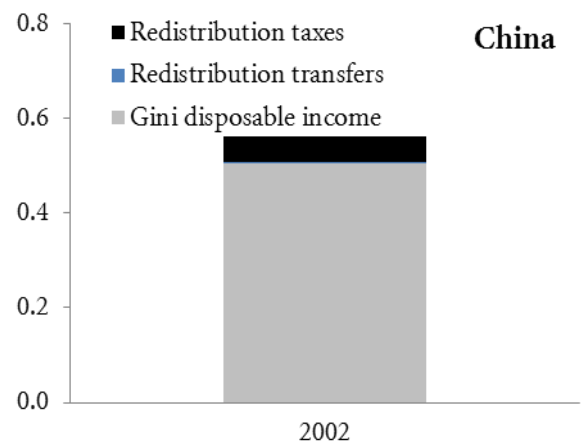
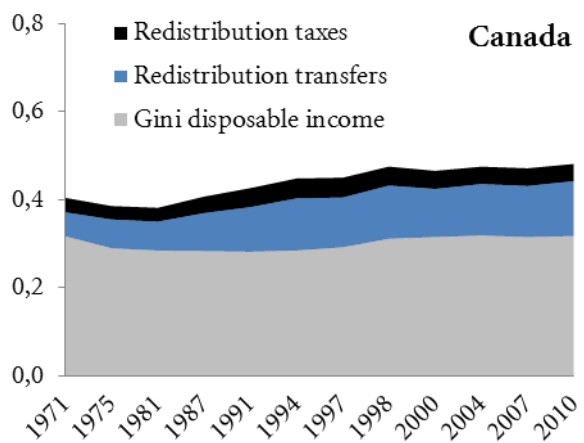
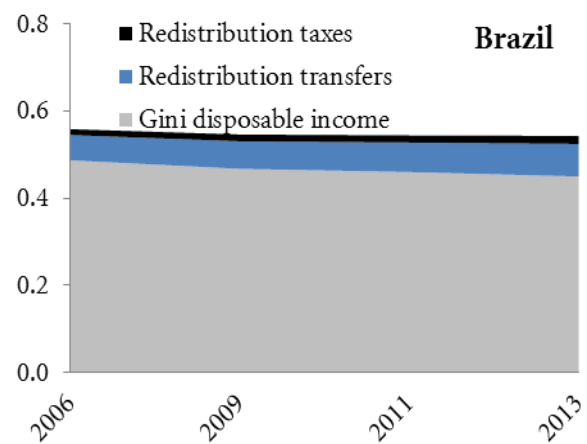
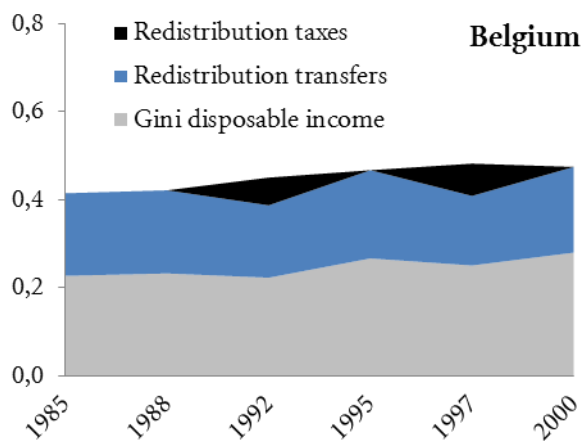
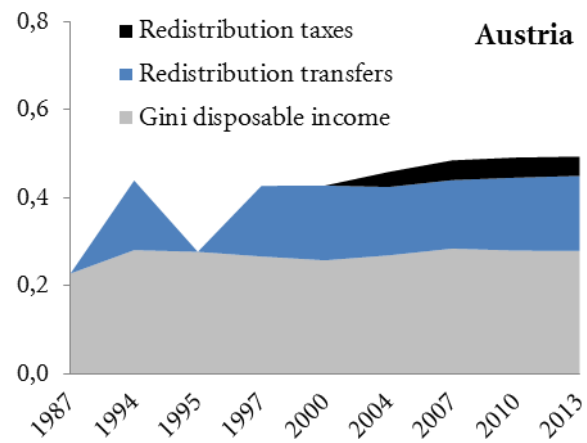
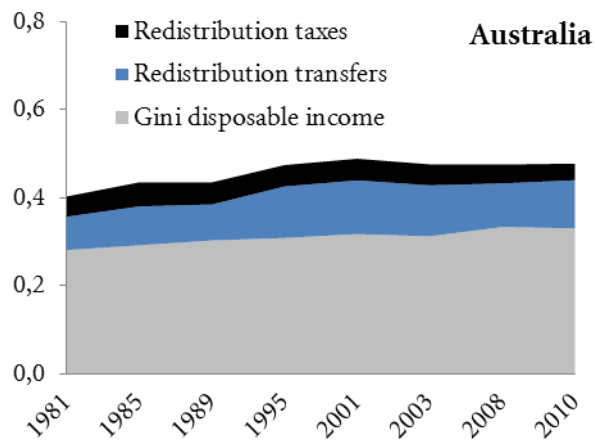
Comparability of fiscal redistribution datasets 2005/2008, 2011 and 2017

LIS has, for 35 years, grown and evolved in order to adapt to the needs of researchers throughout the world. The LIS staff implemented a major LIS Database template revision – referred to as the 2011 Template – linked to the release of the Wave VII (centered on 2007) microdata. Most components of this revised template have also been applied, retroactively, to all earlier waves of the microdata. As a result, figures of prior assembled datasets on fiscal redistribution by both Jesuit & Mahler (2005/2008) and Wang & Caminada (2011b) are unfortunately not comparable with the figures produced for the current Leiden LIS Budget Incidence Fiscal Redistribution Dataset on Income Inequality 2017.

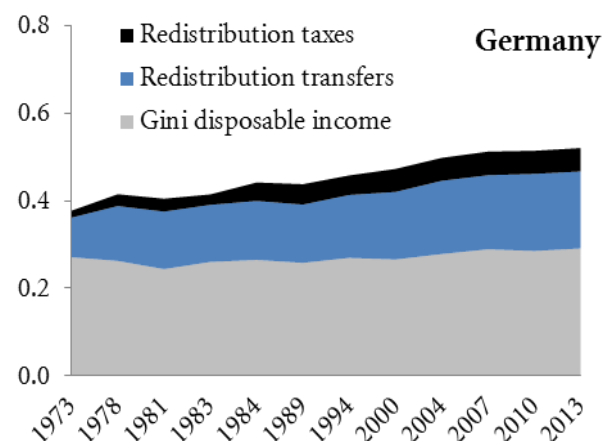
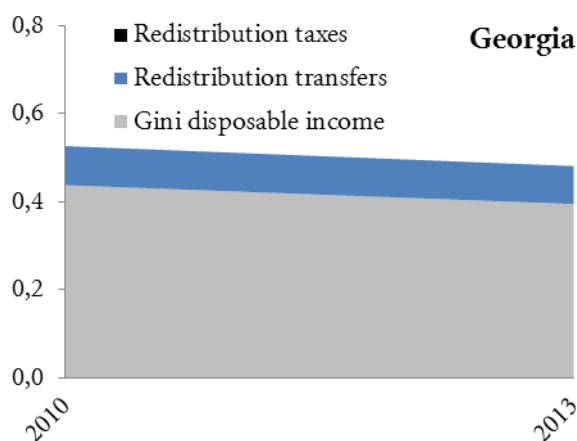
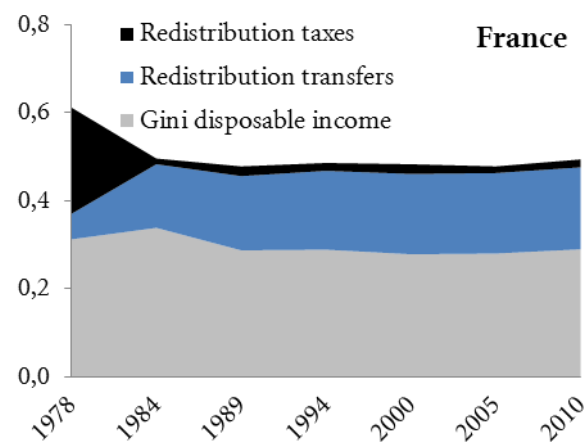
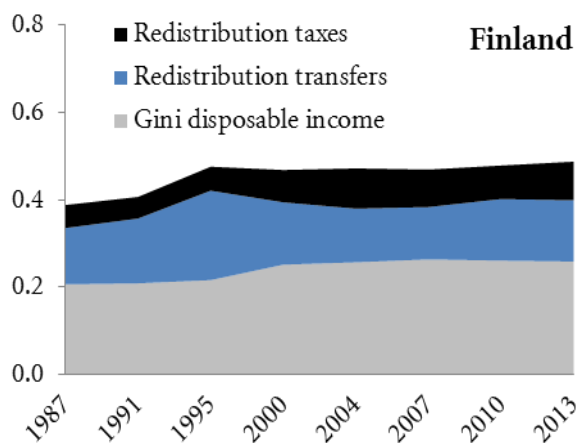
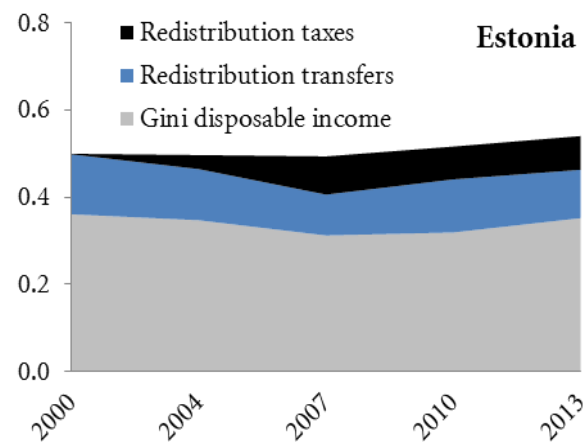
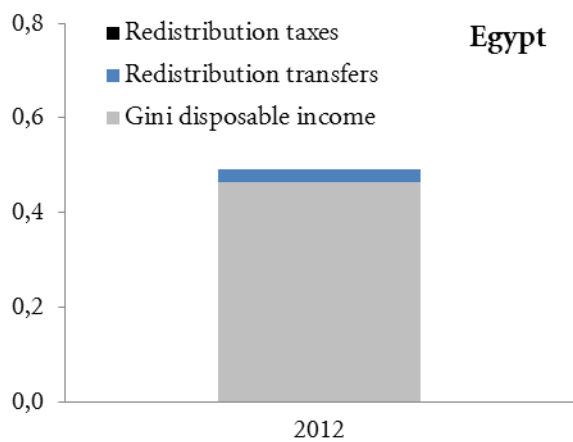
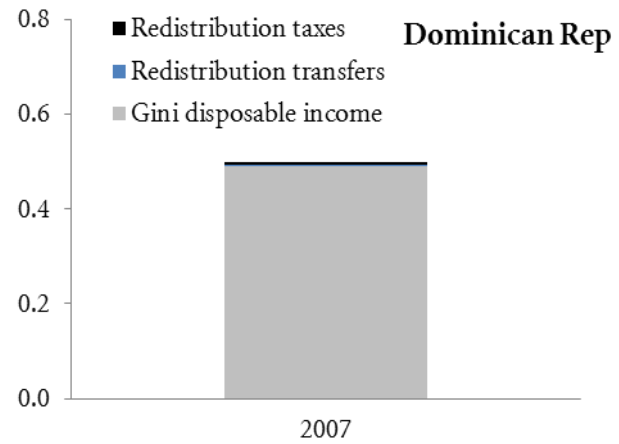
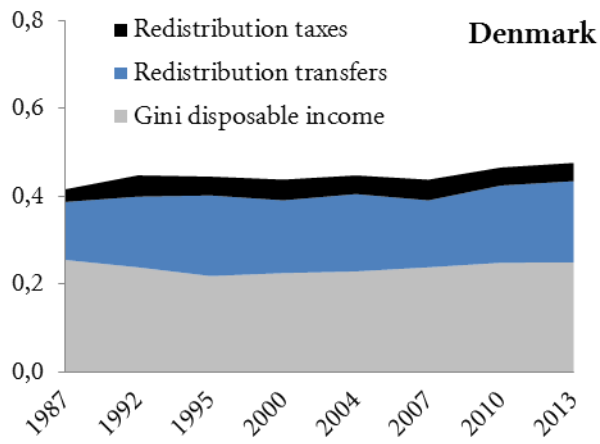
Especially the inclusion of an increasing number of datasets from middle-income countries by the LIS staff necessitated conceptual adjustments and changes to the list of harmonized variables into the 2011 Template. The revision by LIS was guided by several principles and goals (Gornick et al, 2013): (1) to restructure the variables, especially the income variables, to achieve a more logical, comparable, and comprehensive list; (2) to standardize most of the variables, which led to the use of fewer country-specific codes; and (3) to introduce easy-to-use dummy or categorical variables to complement the more detailed ones that are still provided. The revised 2011 LIS Template increased both comparability over-time and cross-national. Moreover, LIS' data users have to make fewer assumptions and do less recoding as they carry out their research. A drawback of the new 2011 LIS Template is that results obtained today for income, income inequality and fiscal redistribution are not comparable with results obtained before 2011.

	Fiscal Redistribution Dataset	Budget Incidence Fiscal Redistribution Dataset	Budget Incidence Fiscal Redistribution Dataset on Income Inequality
Assembled	David Jesuit & Vincent Mahler	Chen Wang & Koen Caminada	Jinxian Wang & Koen Caminada
Launch / Last update	August 2005 / February 2008	August 2011	September 2017
# Countries Countries	13 Australia, Belgium, Canada, Denmark, Finland, France, Germany, Netherlands, Norway, Sweden, Switzerland, United Kingdom, United States	36 Australia, Austria, Belgium, Brazil, Canada, Colombia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Guatemala, Hungary, Ireland, Israel, Italy, Korea, Luxembourg, Mexico, Netherlands, Norway, Peru, Poland, Romania, Russia, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Taiwan, United Kingdom, United States, and Uruguay.	47 Australia, Austria, Belgium, Brazil, Canada, China, Colombia, Czech Republic, Denmark, Dominican Republic, Egypt, Estonia, Finland, France, Germany, Georgia, Greece, Guatemala, Hungary, Iceland, India, Ireland, Israel, Italy, Japan, Luxembourg, Mexico, the Netherlands, Norway, Panama, Paraguay, Peru, Poland, Romania, Russia, Serbia, Slovak Republic, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, the UK, the USA, and Uruguay.
# LIS Waves Time-series	I, II, III, IV and V 1979-2002	I, II, III, IV, V and VI 1979-2006	I, II, III, IV, V, VI, VII, VIII and IX 1969-2014
# LIS Datasets	59	177	293
Redistribution from	Unemployment benefits Pensions Direct taxes	Sickness benefits (V16) Occupational injury and disease benefits (v17) Disability benefits (v18) State old-age and survivors benefits (v19) Child/family benefits (v20) Unemployment compensation benefits (v21) Maternity and other family leave benefits (v22) Military/veterans/war benefits (v23) Other social insurance benefits (v24) Social assistance cash benefits (v25) Near-cash benefits (v26) Mandatory payroll taxes (v7+v13) Income taxes (v11)	Old-age/disability/survivor transfers (hitsil+hitsup+hitsudi+hitsap) Sickness transfers (hitsissi+hitsiswi) Family/children transfers (hitsisma+hitsufa+hitsafa) Education transfers (hitsued+hitsaed) Unemployment transfers (hitsisun+hitsuun+hitsaun) Housing transfers (hitsaho+hitsahe) General/food/medical assistance transfers (hitsagen+hitsafo+hitsame) Other transfers Income taxes and social security contributions (hxit)
LIS Working Paper Availability Reference	LIS Working Paper #392 http://www.lisdatacenter.org/ Mahler, V.A. & D.K. Jesuit (2006), Fiscal redistribution in the developed countries: new insights from the Luxembourg Income Study, <i>Socio-Economic Review</i> 4 483–511.	LIS Working Paper # 567 www.economie.leidenuniv.nl Wang, C. & K. Caminada (2011a), Disentangling income inequality and the redistributive effect of social transfers and taxes in 36 LIS countries, <i>LIS Working Paper #567</i> .	LIS Working Paper # www.economie.leidenuniv.nl K. Caminada, J. Wang, K. Goudswaard & C. Wang (2017), Income inequality and fiscal redistribution in 47 LIS countries (1967-2014), <i>LIS Working Paper #</i> .

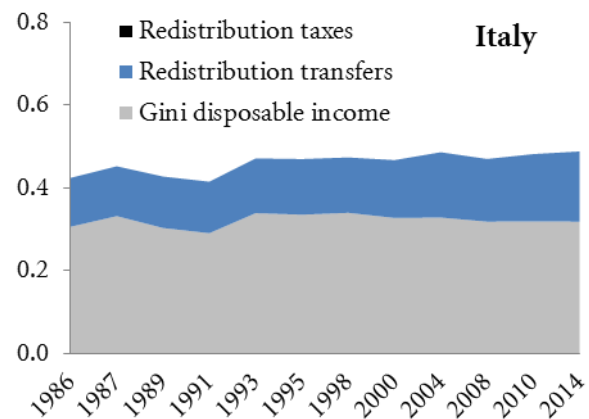
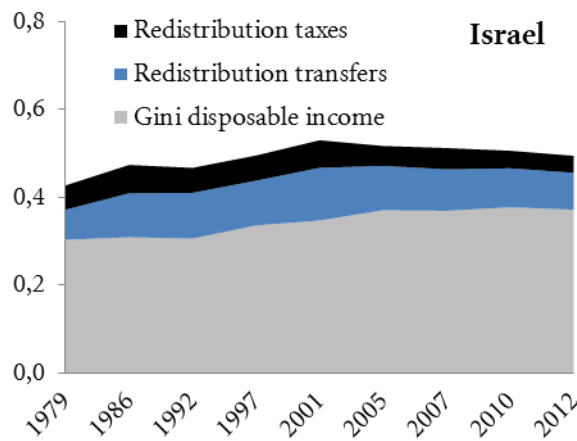
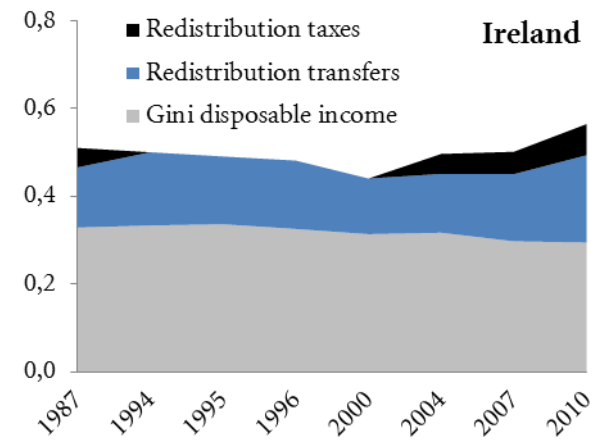
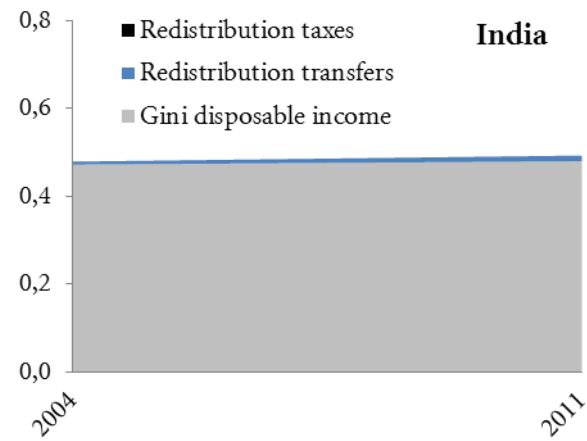
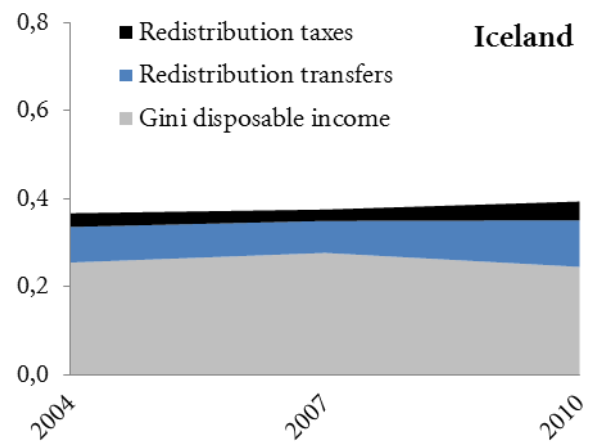
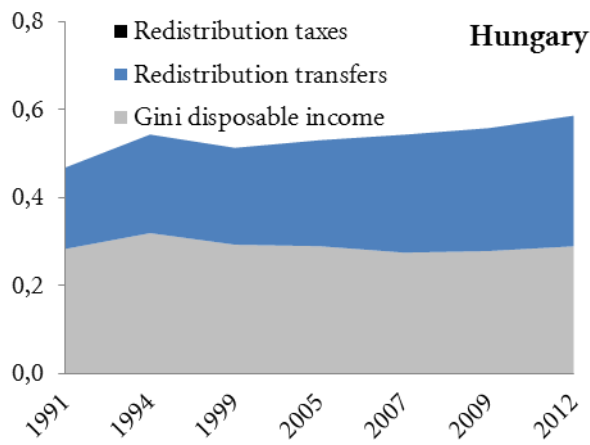
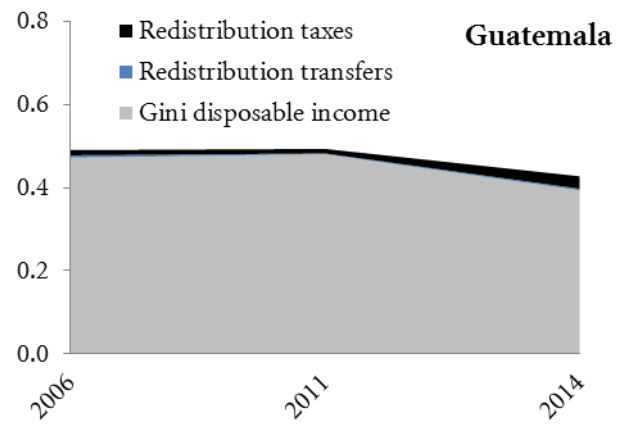
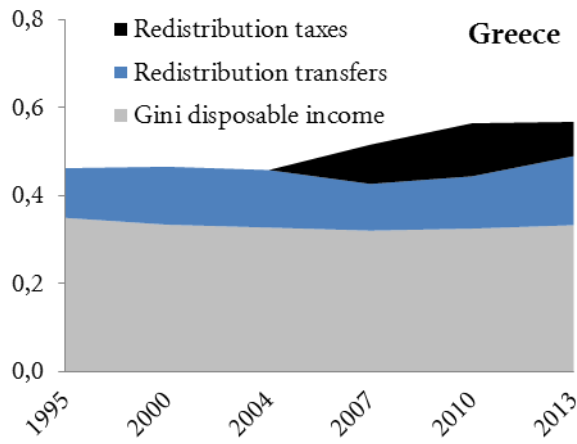
Income inequality and fiscal redistribution by social transfers and taxes in 47 LIS countries 1967-2014



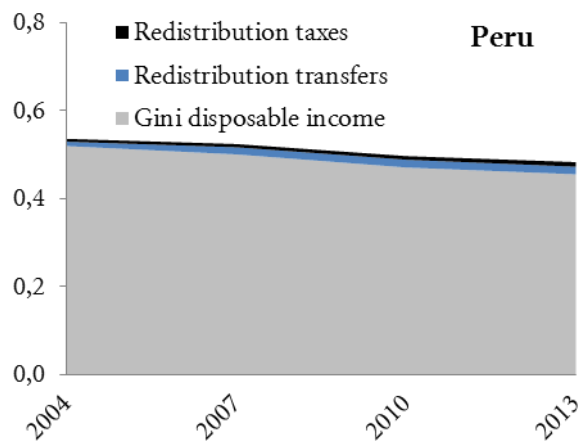
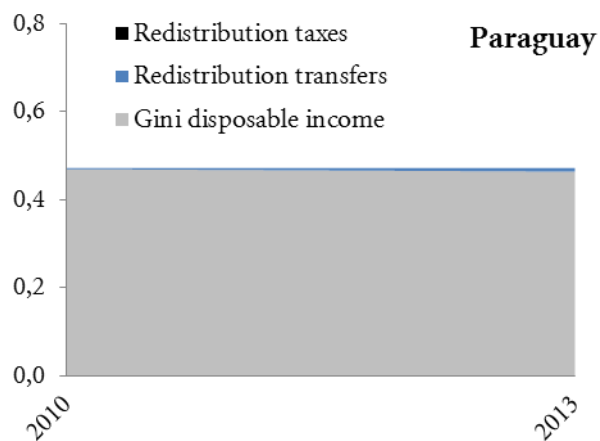
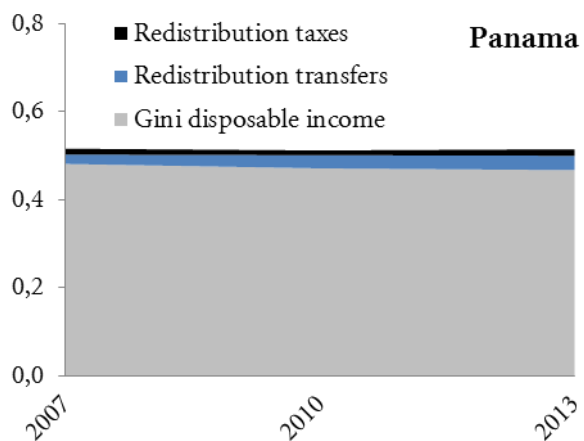
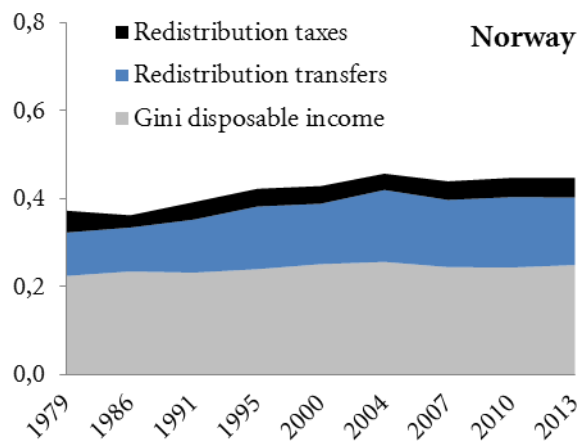
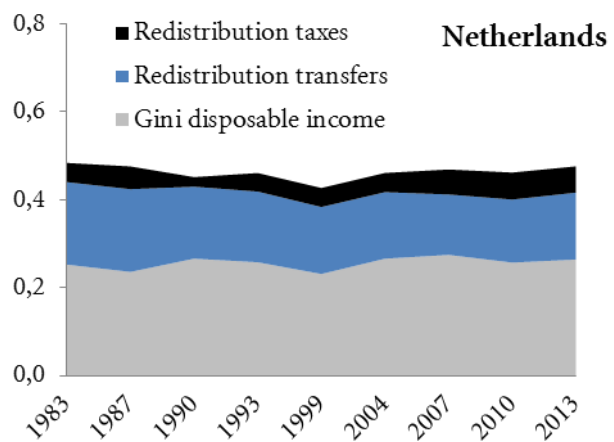
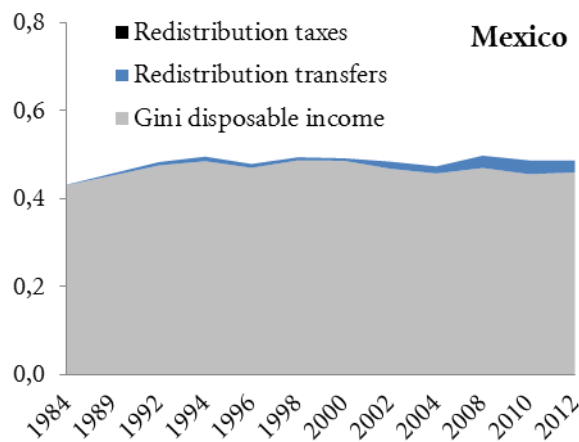
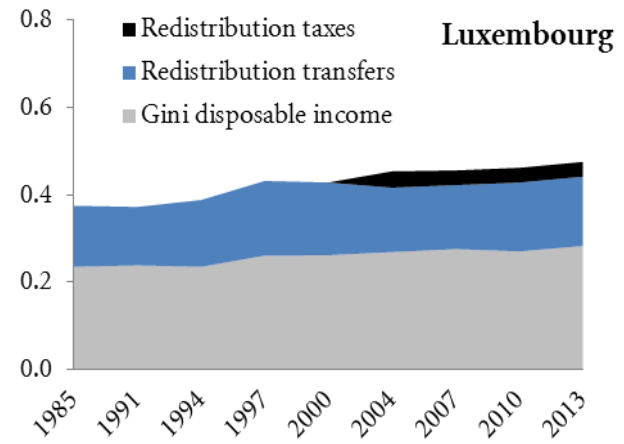
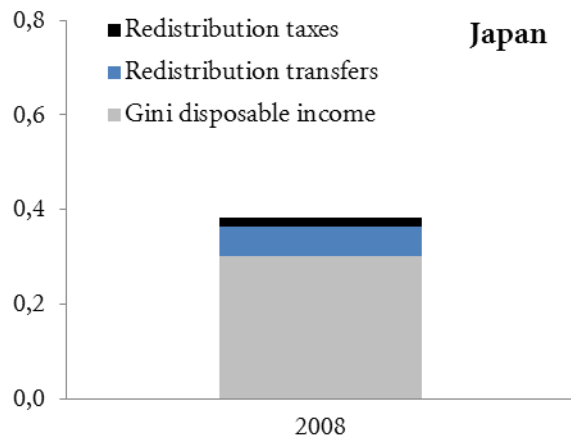
Income inequality and fiscal redistribution by social transfers and taxes in 47 LIS countries 1967-2014



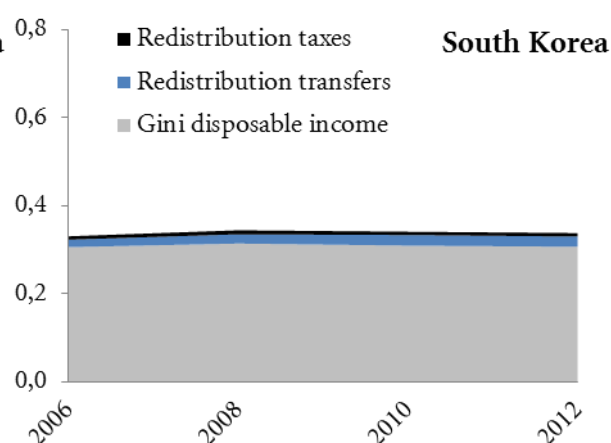
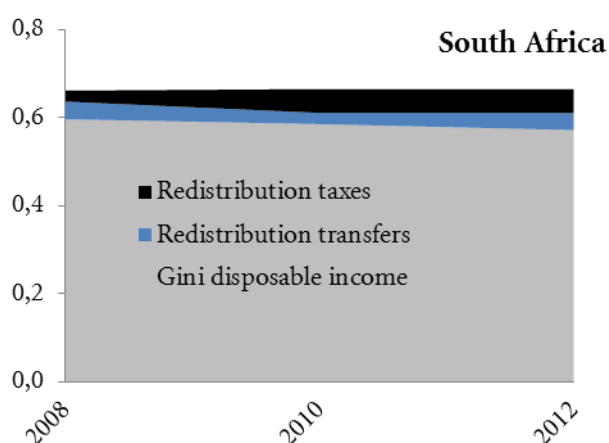
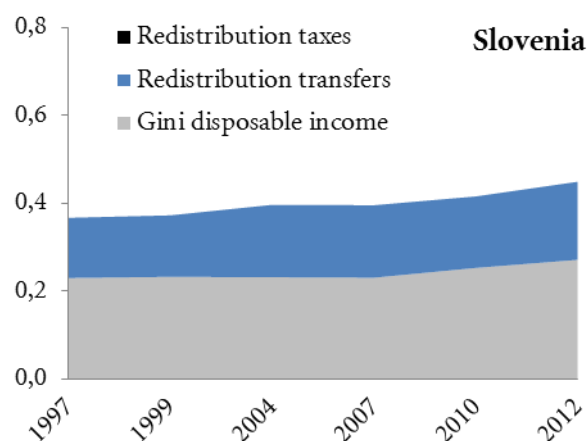
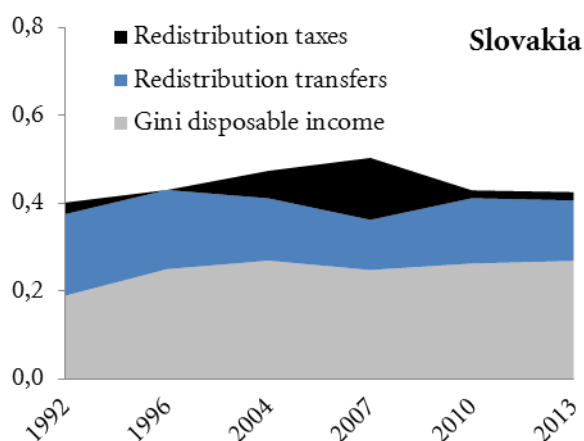
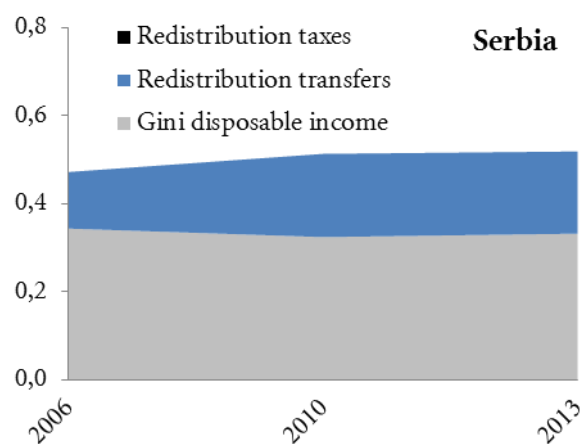
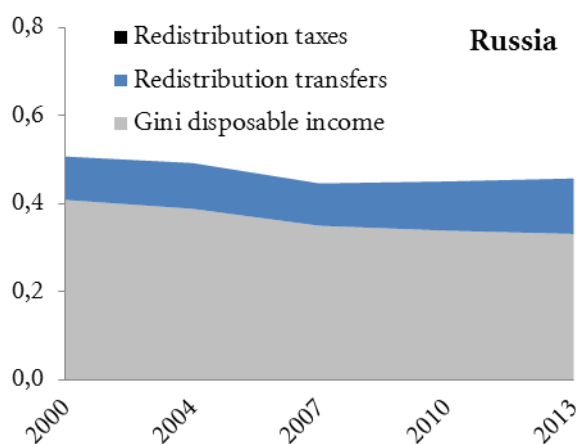
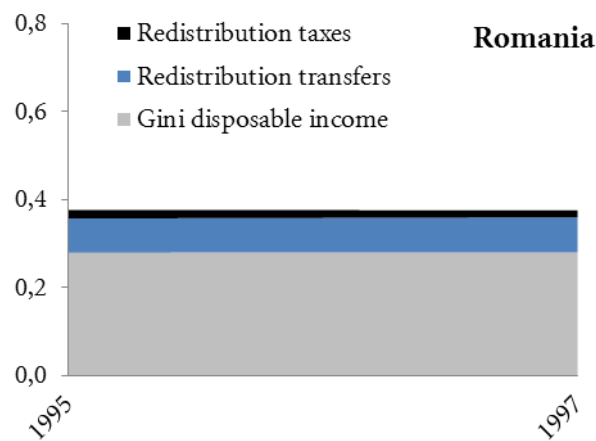
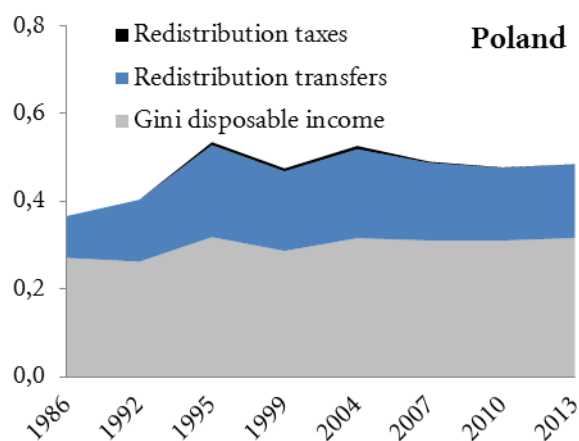
Income inequality and fiscal redistribution by social transfers and taxes in 47 LIS countries 1967-2014



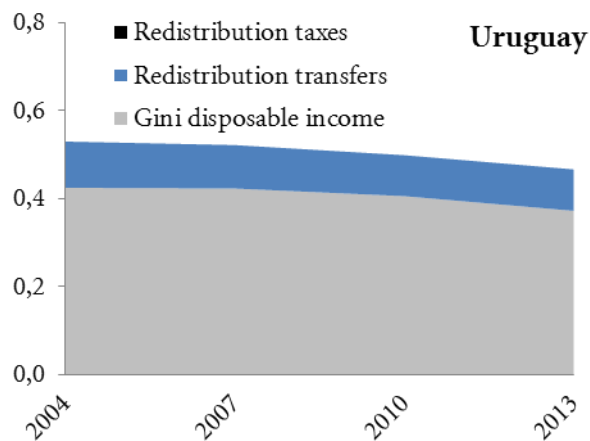
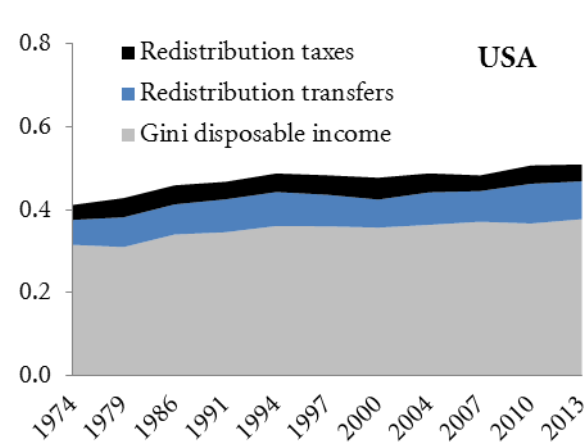
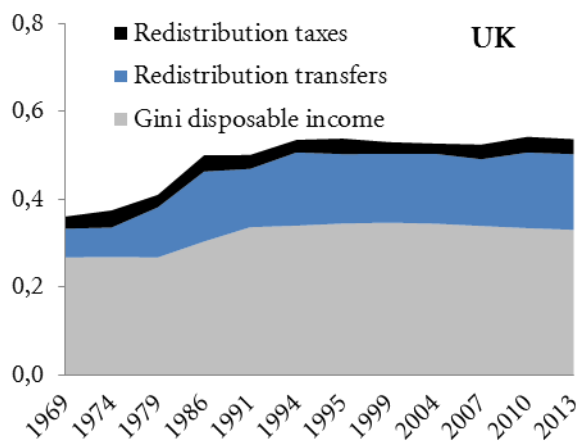
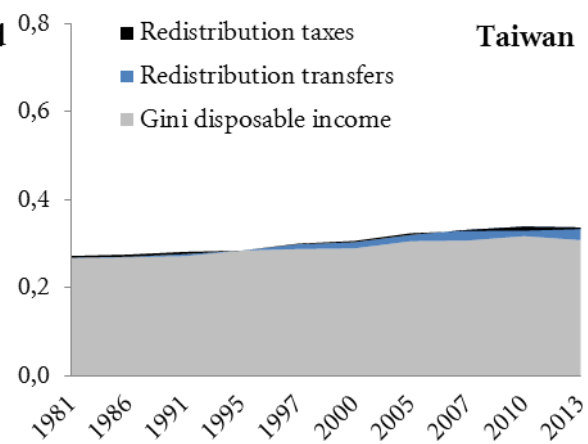
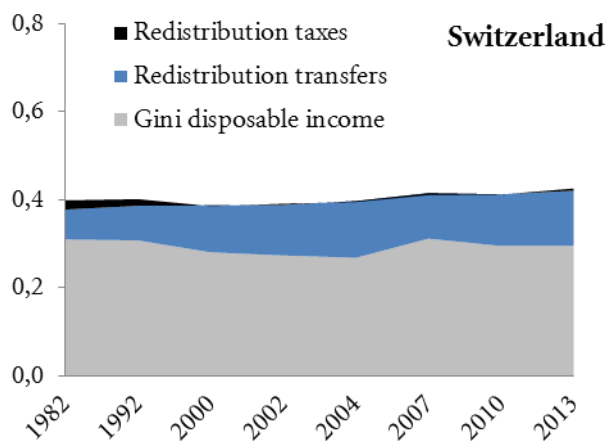
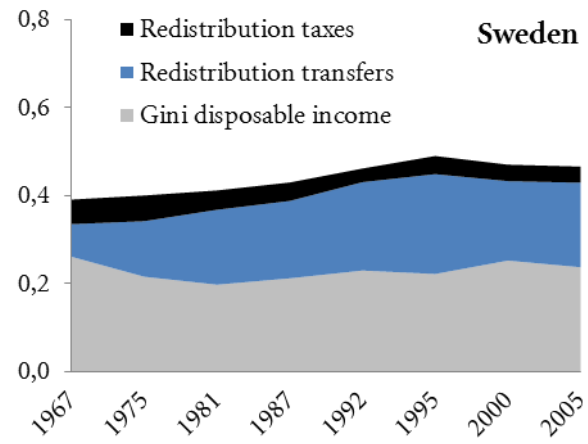
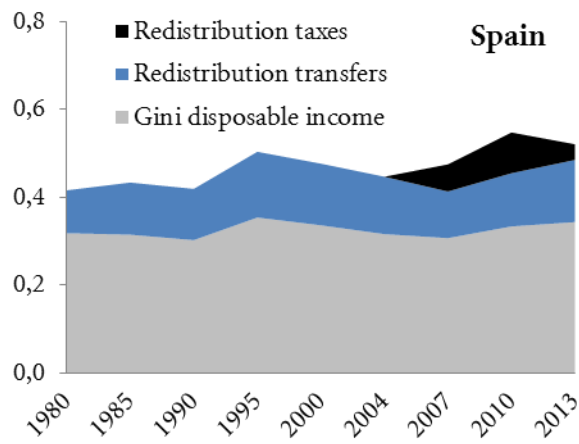
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Income inequality and fiscal redistribution by social transfers and taxes in 47 LIS countries 1967-2014



Income inequality and fiscal redistribution by social transfers and taxes in 47 LIS countries 1967-2014



Annex A1: Household Income Components List

Table A1 presents the framework for accounting income inequality and redistribution through various income sources. Below we provide the household income components list of LIS, by variable name and meaning. More specific explanation of the data can be found in the user-friendly LIS website (<http://www.lisdatacenter.org/>). In Table A2 household (pre-tax) income is divided into 3 parts: factor income (labor income + capital income), social security transfers and private transfers. In each part, there are more specific income sources, which can be helpful for studies focusing on different elements of income. Table A5 provides household aggregated income sources provided by LIS. Using those aggregated variables, it is more convenient to process and present income distribution and decomposition results.

In this Leiden Budget Incidence Fiscal Redistribution Database on Income Inequality 2017 we compute five kinds of results, namely income inequality before social transfers and taxes, income inequality after social transfers and taxes, the overall redistributive effect, the partial effect of transfer redistribution and the partial effect of redistribution by several transfers and income taxes. In calculating pre-tax-transfer income inequality, we use primary income, which consists of factor income (sum of labor income and capital income), and private transfers; gross income is equal to primary income plus social security transfers; in calculating post-tax-transfer income, we use net disposable income (dhi). Difference between $Gini_{pri}$ and $Gini_{gross}$ is the redistribution from total transfers while difference between $Gini_{gross}$ and $Gini_{dhi}$ is the redistribution from income taxes and social security contribution. For some countries and waves which only report net incomes, gross income is equal to net disposable income (dhi). In addition, we use the number of persons in a household (nhhmem) and household weight (hwgt) in LIS dataset so as to obtain equivalized income and weighted results.

Table A1 Income distribution indicator list

Income Distribution Indicator	Redistribution Measurement	Specific Income Source
Gini (pri)		Primary Income (factor+hitp)
Transfers Redistribution	$Gini(pri) - Gini(pri+trans)$	
Gini (pri+trans)		Primary Income + social security transfers (factor+hitp+hits)
Taxes Redistribution	$Gini(pri+trans) - Gini(dhi)$	
Gini (dhi)		Net disposable Income (dhi)
Overall Redistribution	$Gini(pri) - Gini(dhi)$	

Source: LIS

Table A2 Household income variables in LIS dataset

Factor income	HILERB	basic wages and salaries	HILER regular paid employment income	HILE paid employment income	HIL labor income	
	HILERS	wage supplements				
	HILERD	director wages				
	HILEC	casual paid employment income				
	HILSF	farm self-employment income		HILSN non-farm self- employment income	HILS self-employment income	
	HILSNB	profit from businesses				
	HILSNH	household production activities				
	HICIDI	interest		HICID interest and dividends		HIC capital income
	HICIDD	dividends				
	HICVIP	voluntary individual pensions		HICREN rental income		
	HICRENR	rental income from real estate				
	HICRENL	rental income from land				
	HICRENM	rental income from machinery				
	HICROY	royalties				
HITP Private transfers	HITPED	merit-based education transfers		HITPIH interhousehold transfers	HITP private transfers	
	HITPNP	transfers from non-profit institutions				
	HITPIHA	alimony/child support				
	HITPIHR	remittances				
	HITPIHFT	other family transfers				
HITS Social security transfers	HITSILMIP	mandatory individual pensions		HITSIL long-term insurance transfers	HITSI work- related insurance transfers	
	HITSILO	occupational pensions				
	HITSILEPO	old-age insurance public pensions	HITSILEP employment-related public pensions			
	HITSILEPD	disability insurance public pensions				
	HITSILEPS	survivors insurance public pensions				
	HITSILWI	work-injury pensions		HITSIS short-term insurance		
	HITSISSI	sickness wage replacement				
	HITSISMA	maternity/parental wage replacement				
	HITSISWI	work-injury wage replacement				
	HITSISUN	unemployment wage replacement				
	HITSUPO	old-age universal pensions		HITSUP old- age/disability/survivors universal pensions	HITSU universal benefits	
	HITSUPD	disability universal pensions				
	HITSUPS	survivors universal pensions				
	HITSUUN	unemployment universal benefits		HITSUFA family/child universal benefits		
	HITSUDI	disability universal benefits				
	HITSUFACA	child allowances				
	HITSUFAAM	advance maintenance				
	HITSUFACC	non-work related child care benefits				
	HITSUED	education-related universal benefits		HITSAP old-age/disability/ survivors assistance pensions	HITSA assistance benefits	
	HITSAGEN	general social assistance				
	HITSAPO	old-age assistance pensions				
	HITSAPD	disability assistance pensions				
	HITSAPS	survivors assistance pensions				
	HITSAUN	unemployment assistance				
	HITSAFA	family/maternity/child assistance				
	HITSAED	education assistance				
	HITSAHO	housing assistance				
	ITSAHE	heating assistance				
	HITSAFO	food assistance				
	HITSAME	medical assistance				

Detailed information via <http://www.lisdatacenter.org/wp-content/uploads/our-lis-documentation-variables-list.pdf>

Source: LIS

Table A3 Household aggregated income variables in LIS dataset

Name	Label	Definition
DHI	disposable household income	Total monetary and non-monetary current income net of income taxes and social security contributions.
FACTOR	factor income	Total current monetary and non-monetary income from labor and capital (HIL+HIC).
HITS	social security transfers	Total current monetary and non-monetary social security transfers
HITP	private transfers	Total current monetary and non-monetary private transfers.
HXIT	income taxes and social security redistribution	Total monetary and non-monetary expenditures on income taxes and social security contributions.
HITSIL+HITSUP +HITSUDI+HITS AP	old-age/disability/survivor transfers	1) Monetary long-term work-related insurance transfers from the public social security system and/or from private insurers through monetary long-term work-related insurance transfers from the public social security system and/or from private insurers through mandatory schemes, and from the employers or occupational organizations (occupational schemes), which cover mainly the active population. 2) Pensions and monetary transfers for old-age, disability and survivors from the public programs, which are universal in structure. 3) Monetary disability-related transfers from public programs, which are universal in structure. Such transfers cover people in connection with disability, sickness or injury. 4) Pensions and similar monetary transfers for old-age, disability and survivors, received from the state through social programs targeted towards individuals or households in need.
HITSISSI+HITSIS WI	sickness transfers	1) Short-term work-related insurance monetary transfers from sickness insurance schemes that cover mainly the active population. Such transfers replace or supplement employment income during periods of temporary interruptions (or reductions) of employment caused by temporary inability to work due to (non-work related) sickness or injury, or cover the additional costs incurred in such circumstances (e.g. rehabilitations benefits). 2) Short-term insurance monetary transfers for temporary total or partial work inability caused by a work-injury or occupational disease, stemming from schemes specifically set up with the purpose of covering work-injury and occupational diseases.
HITSISMA+HITS UFA+HITSFAFA	family/children transfers	1) Short-term work-related monetary insurance transfers from maternity, paternity, or parental leave insurance schemes. 2) Monetary family-related transfers from public programs, which are universal in structure. 3) Monetary and non-monetary family-related transfers received from the state through social programs that are targeted on individuals or households in need.
HITSUED+HITS AED	education transfers	1) Monetary education-related transfers from public programs, which are universal in structure. 2) Monetary and non-monetary education-related transfers received from the state through social programs that are targeted on individuals or households in need.
HITSISUN+HITS UUN+HITSAUN	unemployment transfers	1) Short-term monetary transfers from the unemployment insurance aimed to compensate for the partial or total loss of labor income and to help the job seeker integrate the labor market. 2) Monetary transfers from unemployment public programs, which are universal in structure. 3) Monetary transfers received from unemployment social programs that are targeted on individuals or households in need.
HITSAHO+HITS AHE	housing transfers	1) Monetary and non-monetary housing-related transfers received from the state through social programs that are targeted on individuals or households in need. 2) Monetary and non-monetary heating-related transfers received from the state through social programs that are targeted on individuals or households in need.
HITSAGEN+HIT SAFO+HITSAME	General/food/medical assistance transfers	1) Monetary transfers from minimum income guarantee systems/last resort systems, received from the state through social programs that are targeted on individuals or households in need. 2) Monetary and non-monetary food-related transfers received from the state through food assistance programs that are targeted on individuals or households in need. 3) Monetary and non-monetary health-related transfers received from the state through medical care programs that are targeted on individuals or households in need.

Notes:

- Old-age/disability/survivor transfers: in some cases the variable HITSIL is missing but its sub-components are available, we then use it sub-components (sum of HITSILMIP, HITSILO, HITSILEP and HITSILWI) instead, including AU10, AU08, CA10, CA07, CA04, CA00, CA98, CA97, CA94, CA91, CA87, CA81, CA75, CA71, DK92, DK87, JP08. In other cases, HITSIL and its subcomponents, together with variables HITSUP, HITSUDI AND HITSAP are missing or provides poor information while the variables in the additional set 1 in the LIS variable list are available. In such cases old-age/disability/survivor transfers are computed based on sum of HIATOLD,

HIATDIS and HIATSUR, including EE13, EE10, EE07, EE04, GR04, GR00, GR95, IS10, IS07, IS04, LU04, NL04, NO13, NO10, NO07, NO04, NO00, NO95, RU00, ES04, SE00.

- Sickness transfers are computed based on the variable HIATSIC in the additional set1 in LIS variable list in IS10, IS07, IS04, LU04, UK13, UK10, UK07.
- Family/children transfers are computed based the variable HIATFAM in the additional set1 in LIS variable list in AT04, CA07, EE04, GR04, IS10, IS07, IS04, LU04, RU13, RU10, RU07, RU04, RU00, ES04.
- Education transfers are computed based the variable HIATEDU in the additional set1 in LIS variable list in IT14, IT10, IT08, LU04, US13, US10, US07, US04, US00, US97, US94, US91.
- Unemployment transfers are computed based the variable HIATFAM in the additional set1 in LIS variable list in AT04, LU04, ES04, ES90, ES85.
- Housing transfers are computed based the variable HIATHOU in the additional set1 in LIS variable list in GR10, GR07, LU04, RU00.

Variable construction via <http://www.lisdatacenter.org/our-data/lis-database/documentation/>.

Source: LIS

Annex A2: Gross and net income datasets in LIS

Country-comparative and trend analyses of income distribution based on LIS gross/net datasets should be done with caution. LIS provides gross income data in most countries and years while providing income data that are net of (income) taxes in others. Of the 293 LIS datasets available at the time of writing, 194 are classified as gross, 84 as net and 15 as ‘mixed’; see Table A4 for a specification.

To compare LIS gross and net datasets, researchers can apply at least four different approaches. The first approach includes both gross and net datasets in the same comparative analysis, acknowledging that the incomparabilities may lead to biased results (e.g. Wang et al, 2012; Wang et al, 2014). The second approach is to restrict analyses to either gross or net datasets (e.g. Gornick & Jäntti, 2012). This will result in accurate findings but limits the scope of the analyses. Third, one can present separate analyses based on LIS gross and net datasets (e.g. Wang et al, 2014). However, the limitation of this approach is that the different results using gross and net datasets could originate from the different income concepts, or from real differences across countries or both. The fourth strategy is to gross up net income data or net down gross income data. With LIS, grossing up is not possible as most net datasets do not contain information on taxes. To estimate gross income, country-specific details on the tax systems are required. Instead, Nieuwenhuis et al (2016) come up with a net down procedure to modify income data to approximate net income data. One shortcoming of this strategy is that in net datasets the comparison between pre-tax-transfer income and post-tax-transfer income only captures the effects of transfers, whereas in gross datasets this comparison would capture both effects of taxes and transfers. We offer a user-friendly version of the database allowing users to easily select income inequality variables (gross and/or net) and fiscal redistribution variables for (a group of) countries and/or specific data years via pivot tables.

Table A4 Gross and net income data in LIS

	Gross income	Net income	Mixed	
Australia	AU10, AU08, AU03, AU01, AU95, AU89, AU85, AU81	AT00, AT97, AT94 BE00, BE95, BE88, BE85	AT95, AT87	
Austria	AT13, AT10, AT07, AT04			
Belgium	BE97, BE92			
Brazil	BR13, BR11, BR09, BR06			
Canada	CA10, CA07, CA04, CA00, CA98, CA97, CA94, CA91, CA87, CA81, CA75, CA71			
China				
Colombia	CO04			
Czech Republic	CZ13, CZ10, CZ07, CZ04, CZ02, CZ96, CZ92			
Denmark	DK13, DK10, DK07, DK04, DK00, DK95, DK92, DK87			
Dominican Rep	DO07			
Egypt		EG12	CN02 CO13, CO10, CO07	
Estonia	EE13, EE10, EE07, EE04			
Finland	FI13, FI10, FI07, FI04, FI00, FI95, FI91, FI87			
France				
Georgia				
Germany	DE13, DE10, DE07, DE04, DE00, DE94, DE89, DE84, DE83, DE81, DE78, DE73			
Greece	GR13, GR10, GR07			
Guatemala	GT14, GT11, GT06			
Hungary				
Iceland	IS10, IS07, IS04			
India		IN11, IN04 IE00, IE96, IE95, IE94	EE00	
Ireland	IE10, IR07, IE04, IE87			
Israel	IL12, IL10, IL07, IL05, IL01, IL97, IL92, IL86, IL79			
Italy				
Japan	JP08			
Luxembourg	LU13, LU10, LU08, LU04			
Mexico				
Netherlands	NL13, NL10, NL07, NL04, NL99, NL93, NL90, NL87, NL83			
Norway	NO13, NO10, NO07, NO04, NO00, NO95, NO91, NO86, NO79			
Panama	PA13, PA10, PA07			
Paraguay		PY10, PY13	FR10, FR05, FR00, FR94, FR89, FR84, FR78	
Peru	PE13, PE10, PE07, PE04			
Poland	PL13, PL10, PL07, PL04, PL99			
Romania	RO97, RO95			
Russia				
Serbia				
Slovak Republic	SK13, SK10, SK07, SK04, SK92			
Slovenia				
South Africa	ZA12, ZA10, ZA08			
South Korea	KR12, KR10, KR08, KR06			
Spain	ES13, ES10, ES07	ES04, ES00, ES95, ES90, ES85, ES80		
Sweden	SE05, SE00, SE95, SE92, SE87, SE81, SE75, SE67			
Switzerland	CH13, CH10, CH07, CH04, CH02, CH00, CH92, CH82			
Taiwan	TW13, TW10, TW07, TW05, TW00, TW97, TW95, TW91, TW86, TW81			
United Kingdom	UK13, UK10, UK07, UK04, UK99, UK95, UK94, UK91, UK86, UK79, UK74, UK69			
United States	US13, US10, US07, US04, US00, US97, US94, US91, US86, US79, US74			
Uruguay				UY13, UY10, UY07, UY04

See for a continuously updated overview: <http://www.lisdatacenter.org/our-data/lis-database/datasets-information/>

Annex B1 Social transfers as a proportion of households' gross income (total population)

LIS Dataset	Gross / net	All social benefits	Old-age/ Disability/ Survivor	Sickness	Family/ Children	Education	Unemployment	Housing	General/food/ medical assistance	Other transfers	Residual	Taxes
Australia 2010	Gross	12.9%	7.0%	0.0%	3.4%	0.1%	1.0%	0.2%	0.0%	1.3%	0.0%	15.5%
Australia 2008	Gross	11.9%	6.6%	0.0%	3.4%	0.1%	0.7%	0.2%	0.0%	0.9%	0.0%	17.2%
Australia 2003	Gross	13.5%	7.6%	0.1%	3.6%		1.4%		0.0%	0.8%	0.0%	20.0%
Australia 2001	Gross	14.0%	7.6%	0.0%	3.9%		1.4%		0.0%	1.0%	0.0%	19.0%
Australia 1995	Gross	13.7%	7.3%	0.1%	3.1%	0.5%	1.9%		0.0%	0.7%	0.0%	20.1%
Australia 1989	Gross	9.7%	5.7%	0.2%	2.0%	0.2%	1.1%			0.6%	0.0%	21.6%
Australia 1985	Gross	10.7%	6.6%	0.2%	1.2%	0.1%	1.4%			1.3%	0.0%	22.4%
Australia 1981	Gross	9.7%	5.8%	0.2%	1.3%	0.2%	1.0%			1.0%	0.0%	21.6%
Austria 2013	Gross	26.1%	19.8%	0.4%	3.5%	0.2%	1.7%	0.1%	0.3%	0.0%	0.0%	25.4%
Austria 2010	Gross	25.7%	18.7%	0.4%	4.3%	0.2%	1.8%	0.2%	0.2%	0.0%	0.0%	24.6%
Austria 2007	Gross	23.8%	17.7%	0.3%	4.0%	0.2%	1.3%	0.2%	0.1%	0.0%	0.0%	25.6%
Austria 2004	Gross	26.7%	20.4%	0.2%	4.3%	0.2%	1.2%	0.1%	0.1%	0.0%	0.0%	25.1%
Austria 2000	Net	27.4%	20.1%	0.1%	5.6%	0.2%	1.0%	0.3%	0.0%	0.0%	0.0%	
Austria 1997	Net	26.9%	19.5%	0.1%	5.3%	0.2%	1.4%	0.2%	0.0%	0.1%	0.0%	
Austria 1995	Mix											
Austria 1994	Net	25.4%	17.9%	0.1%	5.3%	0.3%	1.2%	0.2%	0.2%	0.1%	0.0%	
Austria 1987	Mix											
Belgium 2000	Net	24.5%	16.1%	0.4%	4.7%	0.1%	3.0%	0.0%	0.1%	0.1%	0.0%	
Belgium 1997	Gross	21.7%	13.6%		3.6%	0.1%	2.5%	0.0%	0.2%	1.7%	0.0%	30.3%
Belgium 1995	Net	28.0%	17.4%	0.3%	6.0%	0.1%	3.8%	0.0%	0.1%	0.3%	0.0%	
Belgium 1992	Gross	22.6%	14.9%		4.4%	0.2%	2.9%			0.2%	0.0%	26.6%
Belgium 1988	Net	27.8%	14.6%	1.6%	6.5%		4.0%			1.0%	0.0%	
Belgium 1985	Net	26.8%	13.8%	1.6%	6.9%		3.7%			0.8%	0.0%	
Brazil 2013	Gross	20.4%	18.0%				0.7%		1.4%	0.4%	0.0%	9.0%
Brazil 2011	Gross	20.2%	18.1%				0.6%		1.0%	0.4%	0.0%	8.6%
Brazil 2009	Gross	21.0%	18.8%				0.9%		0.9%	0.4%	0.0%	8.4%
Brazil 2006	Gross	20.7%	18.7%				0.6%		0.7%	0.7%	0.0%	8.2%
Canada 2010	Gross	18.2%	11.7%		0.3%				1.0%	5.1%	0.0%	18.9%
Canada 2007	Gross	17.0%	9.1%		1.6%				0.9%	5.4%	0.0%	20.0%
Canada 2004	Gross	17.0%	9.0%						1.0%	7.0%	0.0%	21.2%
Canada 2000	Gross	15.8%	8.1%						1.2%	6.4%	0.0%	23.7%
Canada 1998	Gross	17.5%	8.1%						1.9%	7.5%	0.0%	20.2%
Canada 1997	Gross	16.2%	7.3%						1.5%	7.4%	0.0%	20.3%
Canada 1994	Gross	17.0%	6.7%						2.1%	8.3%	0.0%	19.9%
Canada 1991	Gross	15.8%	8.3%		0.9%		3.4%			3.3%	0.0%	19.8%
Canada 1987	Gross	12.8%	7.1%		0.9%		2.2%			2.5%	0.0%	19.0%
Canada 1981	Gross	10.1%	5.1%		1.1%		1.7%			2.2%	0.0%	15.3%
Canada 1975	Gross	10.3%	4.4%		2.3%		2.1%			1.5%	0.0%	14.7%
Canada 1971	Gross	7.7%	3.9%		1.4%		0.6%			1.7%	0.0%	14.8%
China 2002	Mix	12.7%	11.1%				0.5%		0.1%	0.7%	0.4%	5.1%
Colombia 2013	Mix	11.2%	8.3%							2.9%	0.0%	12.5%
Colombia 2010	Mix	11.4%	9.5%							1.8%	0.0%	11.4%
Colombia 2007	Mix	10.3%	8.6%							1.7%	0.0%	12.4%
Colombia 2004	Gross	8.2%	8.2%							0.0%	0.0%	4.9%
Czech Republic 2013	Gross	20.5%	16.4%		1.7%		0.4%	0.4%	0.4%	1.3%	0.0%	13.8%
Czech Republic 2010	Gross	20.8%	16.1%		2.2%		0.5%	0.2%	0.1%	1.7%	0.0%	13.8%
Czech Republic 2007	Gross	20.0%	14.6%		3.2%		0.3%	0.1%	0.2%	1.6%	0.0%	17.0%
Czech Republic 2004	Gross	20.7%	15.1%		2.8%		0.6%	0.2%	0.6%	1.4%	0.0%	17.4%
Czech Republic 2002	Gross	20.9%	14.9%		2.8%		0.7%	0.2%	1.1%	1.2%	0.0%	16.3%
Czech Republic 1996	Gross	17.0%	11.7%		1.9%		0.3%	0.1%	0.6%	2.4%	0.0%	17.5%
Czech Republic 1992	Gross	24.1%	14.5%		3.2%		0.3%			6.1%	0.0%	13.4%

LIS Dataset	Gross / net	All social benefits	Old-age/ Disability/ Survivor	Sickness	Family/ Children	Education	Unemployment	Housing	General/food/ medical assistance	Other transfers	Residual	Taxes
Denmark 2013	Gross	23.6%	15.5%		1.5%	1.3%	1.6%	0.8%	1.9%	0.9%	0.0%	32.1%
Denmark 2010	Gross	22.4%	14.7%		1.6%	1.0%	1.8%	0.7%	1.5%	1.0%	0.0%	31.8%
Denmark 2007	Gross	20.0%	13.1%		1.7%	0.8%	1.2%	0.7%	1.4%	1.1%	0.0%	33.5%
Denmark 2004	Gross	22.6%	13.2%	0.9%	2.4%	0.8%	2.5%	0.8%	1.6%	0.3%	0.0%	32.6%
Denmark 2000	Gross	21.2%	12.5%	0.9%	2.1%	0.8%	2.5%	0.7%	1.6%	0.1%	0.0%	34.1%
Denmark 1995	Gross	24.3%	12.8%	1.1%	2.3%	0.6%	4.9%	0.8%	1.7%	0.1%	0.0%	34.1%
Denmark 1992	Gross	22.7%	1.7%	1.1%	1.6%		5.0%			13.3%	0.0%	33.4%
Denmark 1987	Gross	20.5%	1.0%	1.0%	1.5%		3.3%			13.7%	0.0%	31.5%
Dominican Rep. 2007	Gross	2.8%	2.4%							0.3%	0.0%	2.4%
Egypt 2012	Net	9.7%	9.2%							0.5%	0.0%	
Estonia 2013	Gross	19.1%	13.5%	0.7%	3.9%	0.1%	0.5%		0.1%	0.0%	0.3%	15.0%
Estonia 2010	Gross	21.0%	14.3%	0.5%	5.0%	0.2%	0.7%		0.1%	0.0%	0.2%	15.5%
Estonia 2007	Gross	15.4%	11.1%	0.4%	3.5%	0.1%	0.1%		0.1%	0.0%	0.2%	15.9%
Estonia 2004	Gross	17.5%	12.1%	0.3%	3.9%	0.5%	0.4%		0.1%	0.1%	0.0%	16.7%
Estonia 2000	Mix	22.4%		0.8%		1.5%	0.3%			19.7%	0.0%	12.1%
Finland 2013	Gross	25.5%	16.8%	0.1%	2.2%	0.5%	3.1%	0.6%	0.4%	1.7%	0.2%	24.3%
Finland 2010	Gross	24.6%	15.4%	0.1%	2.3%	0.6%	3.2%	0.6%	0.4%	1.8%	0.1%	23.3%
Finland 2007	Gross	23.5%	13.7%	0.1%	2.3%	0.5%	4.1%	0.6%	0.3%	1.7%	0.1%	24.2%
Finland 2004	Gross	23.4%	14.5%	0.1%	2.7%	0.7%	2.9%	0.6%	0.4%	1.3%	0.2%	25.6%
Finland 2000	Gross	23.6%	14.2%	0.1%	3.1%	0.6%	3.0%	0.7%	0.4%	1.3%	0.1%	27.5%
Finland 1995	Gross	29.9%	15.6%		4.3%	0.7%	5.6%	0.8%	0.5%	2.4%	0.0%	28.2%
Finland 1991	Gross	22.5%	13.5%	0.7%	4.1%		1.5%			2.6%	0.0%	25.0%
Finland 1987	Gross	19.1%	12.0%	0.6%	2.8%		0.7%			3.0%	0.0%	26.6%
France 2010	Mix	29.1%	20.9%		3.4%	0.0%	2.9%	1.2%		0.8%	0.0%	4.8%
France 2005	Mix	30.3%	21.7%	0.6%	3.5%	0.2%	2.3%	1.3%	0.5%	0.1%	0.0%	4.8%
France 2000	Mix	27.5%	18.6%	0.6%	3.9%	0.3%	2.2%	1.5%	0.4%	0.1%	0.0%	6.0%
France 1994	Mix	27.9%	18.9%	0.6%	3.5%	0.5%	2.7%	1.4%	0.3%	0.2%	0.0%	5.3%
France 1989	Mix	25.7%	16.1%		4.0%		2.8%			2.8%	0.0%	6.5%
France 1984	Mix	23.0%	14.3%		4.0%		2.2%			2.5%	0.0%	6.6%
France 1978	Mix	20.4%	12.4%		4.1%	0.3%	0.9%			1.0%	1.9%	5.4%
Georgia 2013	Net	13.5%	11.7%		1.4%	0.0%				0.4%	0.0%	
Georgia 2010	Net	14.6%	12.6%		1.4%	0.0%				0.5%	0.0%	
Germany 2013	Gross	22.4%	16.8%		3.1%	0.3%	1.9%	0.1%	0.1%	0.1%	0.0%	26.1%
Germany 2010	Gross	23.1%	17.3%		3.1%	0.2%	2.0%	0.1%	0.1%	0.2%	0.0%	26.3%
Germany 2007	Gross	22.2%	16.2%		2.9%	0.1%	2.0%	0.2%	0.2%	0.6%	0.0%	26.5%
Germany 2004	Gross	22.1%	15.6%		3.2%	0.2%	1.9%	0.3%	0.2%	0.7%	0.0%	25.3%
Germany 2000	Gross	20.6%	14.9%		3.0%	0.2%	1.6%	0.2%	0.2%	0.5%	0.0%	27.3%
Germany 1994	Gross	18.5%	14.1%		1.6%	0.2%	1.9%	0.2%	0.3%	0.2%	0.0%	25.9%
Germany 1989	Gross	16.8%	13.6%		1.4%	0.2%	0.9%	0.2%	0.2%	0.3%	0.0%	27.1%
Germany 1984	Gross	16.9%	13.6%		1.6%	0.2%	1.1%	0.2%	0.2%	0.0%	0.0%	25.6%
Germany 1983	Gross	17.9%	13.4%		1.6%		0.8%			2.1%	0.0%	18.8%
Germany 1981	Gross	17.8%	12.2%		1.9%		0.4%			3.3%	0.0%	24.2%
Germany 1978	Gross	16.9%	13.5%		1.9%		0.4%			1.1%	0.0%	19.2%
Germany 1973	Gross	12.2%	4.2%							8.0%	0.0%	18.7%
Greece 2013	Gross	29.6%	26.8%	0.0%	0.9%	0.0%	0.9%	0.0%		0.5%	0.4%	20.5%
Greece 2010	Gross	26.2%	23.4%	0.0%	0.7%	0.0%	1.0%	0.0%		0.2%	0.8%	22.0%
Greece 2007	Gross	20.2%	17.7%	0.1%	1.3%	0.0%	0.5%	0.1%		0.1%	0.3%	24.6%
Greece 2004	Net	22.0%	20.2%	0.1%	0.6%	0.1%	0.6%	0.1%	0.3%	0.0%	0.0%	
Greece 2000	Net	21.8%	20.4%	0.2%	0.5%	0.0%	0.5%	0.0%	0.1%	0.1%	0.0%	
Greece 1995	Net	20.9%	19.6%	0.1%	0.5%	0.0%	0.1%	0.0%	0.3%	0.2%	0.0%	
Guatemala 2014	Gross	2.8%	1.9%			0.0%			0.5%	0.3%	0.0%	14.6%
Guatemala 2011	Gross	1.9%	1.7%			0.0%			0.1%	0.1%	0.0%	5.6%
Guatemala 2006	Gross	3.0%	1.7%			0.4%		0.1%	0.8%	0.0%	0.0%	6.0%

LIS Dataset	Gross / net	All social benefits	Old-age/ Disability/ Survivor	Sickness	Family/ Children	Education	Unemployment	Housing	General/food/ medical assistance	Other transfers	Residual	Taxes
<i>Hungary 2012</i>	<i>Net</i>	32.6%	16.9%	0.3%	4.2%		0.6%	0.3%		3.1%	7.2%	
<i>Hungary 2009</i>	<i>Net</i>	38.7%	19.9%	0.6%	3.7%		1.6%	0.3%		2.3%	10.4%	
<i>Hungary 2007</i>	<i>Net</i>	34.7%	15.4%	0.6%	3.9%		1.3%	0.2%		3.1%	10.3%	
<i>Hungary 2005</i>	<i>Net</i>	35.4%	24.2%	0.7%	6.3%		1.2%	0.1%		3.0%	0.0%	
<i>Hungary 1999</i>	<i>Net</i>	31.6%	23.4%	0.7%	6.0%		1.2%			0.3%	0.0%	
<i>Hungary 1994</i>	<i>Net</i>	33.0%	20.2%	1.1%	8.0%		1.5%			2.3%	0.0%	
<i>Hungary 1991</i>	<i>Net</i>	31.5%	17.9%	1.0%	9.2%		2.0%			1.5%	0.0%	
Iceland 2010	Gross	16.4%	10.6%	0.0%	2.2%	0.2%	1.8%	1.5%	0.1%	0.0%	0.0%	26.6%
Iceland 2007	Gross	10.9%	7.8%	0.0%	1.9%	0.1%	0.2%	0.8%	0.1%	0.0%	0.0%	25.9%
Iceland 2004	Gross	12.6%	8.6%	0.0%	2.1%	0.2%	0.5%	1.1%	0.1%	0.0%	0.0%	27.1%
<i>India 2011</i>	<i>Net</i>	6.9%	5.0%		0.0%		0.0%	0.2%	1.6%	0.1%	0.0%	
<i>India 2004</i>	<i>Net</i>	4.7%	3.4%		0.0%		0.0%	0.4%	0.8%	0.0%	0.0%	
Ireland 2010	Gross	26.8%	11.5%	1.4%	5.7%	0.1%	6.1%	0.8%	0.3%	0.8%	0.0%	19.2%
Ireland 2007	Gross	21.0%	10.0%	1.0%	5.5%	0.1%	2.9%	0.4%	0.2%	0.9%	0.0%	15.3%
Ireland 2004	Gross	18.2%	9.4%	0.8%	4.9%	0.0%	1.9%	0.5%	0.2%	0.5%	0.0%	16.1%
<i>Ireland 2000</i>	<i>Net</i>	16.8%	9.1%	0.8%	3.8%	0.3%	2.2%	0.2%		0.5%	0.0%	
<i>Ireland 1996</i>	<i>Net</i>	20.5%	10.2%	0.7%	3.7%	0.3%	5.0%	0.3%	0.1%	0.1%	0.0%	
<i>Ireland 1995</i>	<i>Net</i>	19.9%	10.0%	0.7%	3.6%	0.3%	4.8%	0.3%	0.1%	0.1%	0.0%	
<i>Ireland 1994</i>	<i>Net</i>	20.7%	9.7%	0.7%	3.2%	0.4%	6.1%	0.3%	0.2%	0.0%	0.0%	
Ireland 1987	Gross	18.9%	6.0%	1.2%	2.2%		2.2%			7.2%	0.0%	19.9%
Israel 2012	Gross	14.8%	10.3%		1.8%		0.5%		0.5%	1.8%	0.0%	16.4%
Israel 2010	Gross	15.2%	10.3%		1.7%		0.7%		0.5%	2.0%	0.0%	16.9%
Israel 2007	Gross	15.6%	10.7%		1.8%		0.5%		0.7%	1.9%	0.0%	19.0%
Israel 2005	Gross	16.5%	11.2%		1.8%	0.3%	0.4%		0.9%	1.9%	0.0%	19.2%
Israel 2001	Gross	17.9%	10.0%		3.3%	0.3%	1.1%		1.2%	2.1%	0.0%	23.8%
Israel 1997	Gross	16.0%	8.8%		3.3%		0.9%		0.7%	2.2%	0.0%	23.6%
Israel 1992	Gross	15.5%	8.5%	1.0%	2.2%		0.9%			2.9%	0.0%	19.6%
Israel 1986	Gross	14.6%	8.6%		3.7%		0.3%			1.9%	0.0%	22.8%
Israel 1979	Gross	11.0%	5.6%		3.7%					1.6%	0.0%	29.1%
<i>Italy 2014</i>	<i>Net</i>	30.0%	29.0%			0.1%	0.8%		0.0%	0.2%	-0.1%	33.1%
<i>Italy 2010</i>	<i>Net</i>	28.1%	27.3%			0.1%	0.6%		0.0%	0.1%	-0.1%	32.5%
<i>Italy 2008</i>	<i>Net</i>	27.3%	26.9%			0.1%	0.3%		0.0%	0.1%	-0.1%	31.1%
<i>Italy 2004</i>	<i>Net</i>	25.6%	25.1%			0.1%	0.4%		0.0%	0.1%	-0.1%	32.0%
<i>Italy 2000</i>	<i>Net</i>	24.7%	24.1%			0.1%	0.4%		0.0%	0.2%	-0.1%	
<i>Italy 1998</i>	<i>Net</i>	24.8%	24.4%			0.1%	0.3%		0.0%	0.1%	-0.1%	
<i>Italy 1995</i>	<i>Net</i>	25.4%	24.6%			0.1%	0.5%		0.0%	0.2%	-0.1%	
<i>Italy 1993</i>	<i>Net</i>	22.7%	22.0%			0.0%			0.4%	0.2%	0.0%	
<i>Italy 1991</i>	<i>Net</i>	20.7%	20.2%			0.0%			0.2%	0.2%	0.0%	
<i>Italy 1989</i>	<i>Net</i>	19.0%	18.6%			0.0%			0.2%	0.2%	0.0%	
<i>Italy 1987</i>	<i>Net</i>	18.3%	17.8%			0.0%			0.3%	0.2%	0.0%	
<i>Italy 1986</i>	<i>Net</i>	20.2%	17.6%							2.7%	0.0%	
Japan 2008	Gross	14.9%	3.9%		0.4%				0.1%	10.5%	0.0%	15.5%
Luxembourg 2013	Gross	26.0%	19.3%	0.2%	4.4%	0.1%	0.9%	0.1%	0.6%	0.3%	0.0%	22.7%
Luxembourg 2010	Gross	25.3%	18.2%	0.2%	4.9%	0.1%	0.9%	0.1%	0.5%	0.4%	0.0%	21.0%
Luxembourg 2007	Gross	22.1%	16.1%	0.2%	4.3%	0.2%	0.6%	0.0%	0.3%	0.4%	0.0%	21.0%
Luxembourg 2004	Gross	23.3%	16.5%	0.1%	5.0%	0.1%	1.1%	0.1%		0.4%	0.0%	19.4%
<i>Luxembourg 2000</i>	<i>Net</i>	25.3%	18.2%	0.3%	5.7%	0.0%	0.3%		0.5%	0.3%	0.0%	
<i>Luxembourg 1997</i>	<i>Net</i>	26.2%	19.0%	0.3%	5.3%	0.0%	0.4%		0.5%	0.7%	0.0%	
<i>Luxembourg 1994</i>	<i>Net</i>	25.0%	18.3%	0.6%	4.1%	0.1%	0.3%		0.4%	1.2%	0.0%	
<i>Luxembourg 1991</i>	<i>Net</i>	23.1%	18.0%	0.5%	3.3%		0.1%			1.2%	0.0%	
<i>Luxembourg 1985</i>	<i>Net</i>	22.4%	17.4%	0.3%	3.7%	0.1%	0.3%			0.6%	0.0%	

LIS Dataset	Gross / net	All social benefits	Old-age/ Disability/ Survivor	Sickness	Family/ Children	Education	Unemployment	Housing	General/food/ medical assistance	Other transfers	Residual	Taxes
<i>Mexico 2012</i>	<i>Net</i>	11.3%	7.4%	0.0%		0.3%	0.3%		0.0%	3.3%	0.0%	
<i>Mexico 2010</i>	<i>Net</i>	10.3%	6.4%	0.0%		0.2%	0.4%		0.0%	3.2%	0.0%	
<i>Mexico 2008</i>	<i>Net</i>	9.1%	5.3%	0.1%		0.2%	0.3%			3.1%	0.0%	
<i>Mexico 2004</i>	<i>Net</i>	5.9%	4.5%			0.2%				1.3%	0.0%	
<i>Mexico 2002</i>	<i>Net</i>	5.4%	3.9%			0.4%				1.1%	0.0%	
<i>Mexico 2000</i>	<i>Net</i>	4.4%	4.1%							0.2%	0.0%	
<i>Mexico 1998</i>	<i>Net</i>	3.7%	3.5%							0.2%	0.0%	
<i>Mexico 1996</i>	<i>Net</i>	3.3%	2.6%			0.2%				0.5%	0.0%	
<i>Mexico 1994</i>	<i>Net</i>	3.4%	2.5%			0.1%				0.8%	0.0%	
<i>Mexico 1992</i>	<i>Net</i>	2.4%	2.2%			0.1%				0.0%	0.0%	
<i>Mexico 1989</i>	<i>Net</i>	2.2%	2.1%			0.1%				0.0%	0.0%	
<i>Mexico 1984</i>	<i>Net</i>	1.9%	1.8%			0.1%				0.0%	0.0%	
Netherlands 2013	Gross	22.2%	16.4%	0.4%	1.3%	0.5%	1.7%	0.5%	1.0%	0.5%	0.0%	32.6%
Netherlands 2010	Gross	21.3%	15.7%	0.3%	1.4%	0.6%	1.4%	0.5%	0.9%	0.6%	0.0%	34.4%
Netherlands 2007	Gross	19.3%	14.6%	0.2%	1.2%	0.6%	0.9%	0.4%	0.7%	0.6%	0.0%	32.2%
Netherlands 2004	Gross	21.1%	15.3%	0.3%	1.4%	0.5%	1.5%	0.5%		1.8%	0.0%	32.3%
Netherlands 1999	Gross	21.2%	16.6%	0.3%	2.0%	0.3%	1.1%	0.2%	0.7%	0.0%	0.0%	25.8%
Netherlands 1993	Gross	23.3%	16.2%	0.3%	2.4%	0.5%	2.7%	0.3%	0.8%	0.1%	0.0%	32.2%
Netherlands 1990	Gross	24.1%	17.2%	0.7%	2.1%		1.0%			3.0%	0.0%	25.9%
Netherlands 1987	Gross	29.4%	13.2%		2.1%	7.1%	1.9%			5.2%	0.0%	34.1%
Netherlands 1983	Gross	29.0%	14.1%		3.1%	7.1%	2.4%			2.4%	0.0%	31.5%
Norway 2013	Gross	23.2%	16.3%	2.3%	2.6%	0.4%	0.6%	0.1%	0.3%	0.6%	0.0%	25.8%
Norway 2010	Gross	23.3%	15.2%	2.5%	2.9%	0.5%	0.8%	0.2%	0.3%	1.0%	0.0%	25.8%
Norway 2007	Gross	22.4%	13.5%	2.4%	3.1%	0.5%	0.4%	0.2%	0.3%	2.1%	0.0%	25.3%
Norway 2004	Gross	22.7%	12.7%	4.2%	3.6%	0.6%	1.1%	0.1%	0.5%	0.0%	0.0%	24.4%
Norway 2000	Gross	18.4%	12.5%	1.0%	3.1%	0.6%	0.7%	0.1%	0.4%	0.0%	0.0%	25.0%
Norway 1995	Gross	19.3%	13.3%		2.7%	0.5%	1.7%	0.1%	0.6%	0.3%	0.0%	24.4%
Norway 1991	Gross	17.2%	13.3%		2.5%					1.4%	0.0%	22.7%
Norway 1986	Gross	14.0%	1.1%		2.0%		0.4%			10.5%	0.0%	24.2%
Norway 1979	Gross	12.7%	0.9%		1.6%					10.2%	0.0%	25.6%
Panama 2013	Gross	11.6%	9.4%		0.3%	1.5%		0.0%	0.4%	0.0%	0.0%	8.9%
Panama 2010	Gross	12.5%	10.2%		1.0%	0.6%		0.1%	0.6%	0.0%	0.0%	7.2%
Panama 2007	Gross	12.7%	11.0%			0.4%		0.1%	1.1%	0.2%	0.0%	6.8%
<i>Paraguay 2013</i>	<i>Net</i>	3.9%	3.7%							0.2%	0.0%	
<i>Paraguay 2010</i>	<i>Net</i>	4.2%	4.0%							0.2%	0.0%	
Peru 2013	Gross	7.3%	4.0%		0.4%	0.2%		0.0%	2.6%	0.0%	0.0%	4.9%
Peru 2010	Gross	8.1%	4.5%		0.4%	0.2%		0.0%	3.0%	0.0%	0.0%	4.4%
Peru 2007	Gross	8.9%	5.4%		0.4%	0.2%		0.0%	2.8%	0.0%	0.0%	3.9%
Peru 2004	Gross	8.8%	5.7%			0.0%		0.0%	3.1%	0.0%	0.0%	3.8%
Poland 2013	Gross	25.5%	22.5%		1.2%	0.1%	0.4%	0.1%	0.8%	0.3%	0.0%	2.4%
Poland 2010	Gross	25.2%	22.2%		1.3%	0.1%	0.5%	0.1%	0.7%	0.3%	0.0%	3.4%
Poland 2007	Gross	27.7%	24.0%		1.7%	0.2%	0.4%	0.1%	0.9%	0.3%	0.0%	5.2%
Poland 2004	Gross	32.9%	28.6%	0.3%	1.9%	0.1%	0.8%	0.4%	0.6%	0.2%	0.0%	6.9%
Poland 1999	Gross	30.4%	26.0%	0.3%	1.7%		1.6%	0.2%	0.4%	0.2%	0.0%	10.8%
Poland 1995	Mix	36.0%	28.4%		2.9%		2.8%			1.8%	0.0%	15.7%
<i>Poland 1992</i>	<i>Net</i>	22.3%	13.4%		5.0%		3.9%			0.0%	0.0%	
<i>Poland 1986</i>	<i>Net</i>	15.2%	11.6%		0.4%					3.2%	0.0%	
Romania 1997	Gross	15.3%	11.2%	0.1%	2.9%	0.1%	0.8%			0.1%	0.0%	11.5%
Romania 1995	Gross	14.1%	10.8%	0.2%	1.6%	0.1%	1.2%			0.3%	0.0%	12.7%
<i>Russia 2013</i>	<i>Net</i>	22.2%	20.5%		1.0%		0.0%	0.1%		0.7%	0.0%	
<i>Russia 2010</i>	<i>Net</i>	21.0%	19.4%		1.1%		0.1%	0.1%		0.3%	0.0%	
<i>Russia 2007</i>	<i>Net</i>	16.7%	15.4%		0.7%		0.0%	0.1%		0.4%	0.0%	
<i>Russia 2004</i>	<i>Net</i>	17.3%	15.8%		0.7%		0.0%	0.1%		0.7%	0.0%	
<i>Russia 2000</i>	<i>Net</i>	16.3%	12.9%		0.9%	0.3%	0.1%	0.7%		1.4%	0.0%	

LIS Dataset	Gross / net	All social benefits	Old-age/ Disability/ Survivor	Sickness	Family/ Children	Education	Unemployment	Housing	General/food/ medical assistance	Other transfers	Residual	Taxes
<i>Serbia 2013</i>	<i>Net</i>	33.6%	31.4%		0.6%		0.4%			1.3%	0.0%	
<i>Serbia 2010</i>	<i>Net</i>	34.3%	32.4%		0.5%		0.6%			0.8%	0.0%	
<i>Serbia 2006</i>	<i>Net</i>	27.5%	25.5%		0.6%		0.6%			0.8%	0.0%	
Slovakia 2013	Gross	20.9%	16.6%	0.2%	2.8%	0.1%	0.3%			0.8%	0.0%	12.6%
Slovakia 2010	Gross	22.2%	17.7%	0.3%	2.7%	0.2%	0.6%			0.8%	0.0%	10.6%
Slovakia 2007	Gross	20.1%	16.0%	0.2%	2.2%	0.2%	0.2%			0.7%	0.6%	14.2%
Slovakia 2004	Gross	21.8%	16.0%	0.3%	3.1%	0.1%	0.7%			1.5%	0.1%	16.0%
<i>Slovakia 1996</i>	<i>Net</i>	26.5%	18.2%	0.6%	5.7%		1.9%			0.1%	0.0%	
Slovakia 1992	Gross	29.0%	14.4%	0.9%	6.5%		1.1%			6.1%	0.0%	12.9%
<i>Slovenia 2012</i>	<i>Net</i>	28.2%			2.3%	1.0%	1.1%			23.8%	0.0%	
<i>Slovenia 2010</i>	<i>Net</i>	26.1%			3.1%	0.7%	0.8%	0.0%	0.4%	21.1%	0.0%	
<i>Slovenia 2007</i>	<i>Net</i>	25.8%			3.1%	0.8%	0.6%	0.0%	0.4%	21.0%	0.0%	
<i>Slovenia 2004</i>	<i>Net</i>	26.7%			3.2%	0.9%	0.7%	0.0%	0.5%	21.4%	0.0%	
<i>Slovenia 1999</i>	<i>Net</i>	26.1%			2.7%	1.0%	1.4%	0.0%	0.2%	20.8%	0.0%	
<i>Slovenia 1997</i>	<i>Net</i>	26.1%			3.0%	1.0%	1.3%	0.0%	0.2%	20.6%	0.0%	
South Africa 2012	Gross	10.6%	6.0%		4.0%					0.2%	0.4%	18.8%
South Africa 2010	Gross	14.1%	9.4%		3.6%					0.1%	0.9%	19.8%
South Africa 2008	Gross	10.9%	7.3%		2.8%					0.5%	0.2%	15.2%
South Korea 2012	Gross	4.6%	2.5%							2.1%	0.0%	8.6%
South Korea 2010	Gross	4.6%	2.4%							2.1%	0.0%	8.2%
South Korea 2008	Gross	4.0%	1.9%							2.1%	0.0%	7.7%
South Korea 2006	Gross	3.2%	1.4%							1.7%	0.0%	7.3%
Spain 2013	Gross	26.3%	19.2%	0.4%	0.2%	0.2%	5.8%	0.0%		0.5%	0.0%	16.1%
Spain 2010	Gross	23.4%	17.5%	0.3%	0.4%	0.3%	3.9%	0.1%		0.4%	0.5%	13.5%
Spain 2007	Gross	17.9%	14.6%	0.4%	0.3%	0.2%	1.6%	0.1%		0.6%	0.2%	14.6%
<i>Spain 2004</i>	<i>Net</i>	20.4%	17.1%	0.6%	0.3%	0.2%	2.0%	0.1%	0.1%	0.0%	0.0%	
<i>Spain 2000</i>	<i>Net</i>	20.3%	18.0%	0.3%	0.3%	0.2%	1.6%	0.0%	0.0%	0.0%	0.0%	
<i>Spain 1995</i>	<i>Net</i>	22.1%	18.1%	0.5%	0.3%	0.3%	2.7%	0.1%	0.1%	0.1%	0.0%	
<i>Spain 1990</i>	<i>Net</i>	21.0%	17.2%				2.5%			1.4%	0.0%	
<i>Spain 1985</i>	<i>Net</i>	20.3%					2.8%			17.5%	0.0%	
<i>Spain 1980</i>	<i>Net</i>	15.1%										
Sweden 2005	Gross	28.1%	0.0%	2.3%	3.4%	2.0%	2.5%	0.7%	0.5%	16.6%	0.0%	28.1%
Sweden 2000	Gross	26.2%	15.3%	2.8%	3.1%	1.0%	2.7%	0.9%	0.6%	0.6%	-0.7%	30.2%
Sweden 1995	Gross	33.1%	17.2%	1.7%	5.7%	1.3%	4.5%	1.5%	0.9%	0.3%	0.0%	28.6%
Sweden 1992	Gross	30.7%	16.7%	2.5%	4.4%		3.5%			3.5%	0.0%	25.1%
Sweden 1987	Gross	27.6%	15.9%	4.0%	3.6%	1.0%	1.6%			1.6%	0.0%	32.5%
Sweden 1981	Gross	26.8%	15.0%	3.4%	3.0%		0.9%			4.4%	0.0%	29.8%
Sweden 1975	Gross	19.4%	9.8%	3.3%	2.6%		0.4%			3.3%	0.0%	30.7%
Sweden 1967	Gross	11.9%	6.3%	2.4%	2.6%		0.4%			0.3%	0.0%	28.8%
Switzerland 2013	Gross	17.2%	12.9%	0.0%	2.0%		0.9%	0.0%		1.3%	0.0%	28.1%
Switzerland 2010	Gross	16.1%	12.4%	0.0%	1.6%		1.2%	0.1%		0.8%	0.0%	27.4%
Switzerland 2007	Gross	15.5%	12.7%	0.0%	1.2%		0.7%			0.9%	0.0%	27.3%
Switzerland 2004	Gross	17.4%	13.4%	0.4%	1.6%		1.2%	0.0%	0.2%	0.5%	0.0%	26.1%
Switzerland 2002	Gross	16.0%	12.8%	0.5%	1.6%		0.7%	0.0%	0.1%	0.4%	0.0%	25.1%
Switzerland 2000	Gross	15.3%	12.3%	0.4%	1.6%		0.5%	0.0%	0.1%	0.4%	0.0%	24.5%
Switzerland 1992	Gross	12.2%	11.2%	0.2%			0.6%	0.0%	0.2%	0.1%	0.0%	16.9%
Switzerland 1982	Gross	8.1%	7.4%				0.1%			0.6%	0.0%	18.0%

LIS Dataset	Gross / net	All social benefits	Old-age/ Disability/ Survivor	Sickness	Family/ Children	Education	Unemployment	Housing	General/food/ medical assistance	Other transfers	Residual	Taxes
Taiwan 2013	Gross	9.9%	1.1%						0.1%	8.6%	0.0%	13.3%
Taiwan 2010	Gross	8.1%	1.2%						0.1%	6.8%	0.0%	12.3%
Taiwan 2007	Gross	8.1%	1.1%						0.1%	7.0%	0.0%	10.3%
Taiwan 2005	Gross	8.9%	0.9%						0.1%	8.0%	0.0%	4.8%
Taiwan 2000	Gross	5.9%	0.5%						0.1%	5.3%	0.0%	4.4%
Taiwan 1997	Gross	4.6%	0.4%						0.0%	4.2%	0.0%	4.4%
Taiwan 1995	Gross											
Taiwan 1991	Gross	1.3%	0.4%							0.9%	0.0%	1.4%
Taiwan 1986	Gross	0.5%	0.1%							0.4%	0.0%	1.4%
Taiwan 1981	Gross	0.4%	0.0%							0.4%	0.0%	1.0%
United Kingdom 2013	Gross	21.7%	13.8%	0.0%	3.4%	0.0%	0.4%	2.0%	0.9%	1.1%	0.0%	16.7%
United Kingdom 2010	Gross	21.4%	12.9%	0.0%	3.6%	0.1%	0.4%	2.0%	1.1%	1.2%	0.0%	17.8%
United Kingdom 2007	Gross	18.9%	11.6%	0.0%	3.0%	0.1%	0.2%	1.6%	1.2%	1.1%	0.0%	17.8%
United Kingdom 2004	Gross	19.6%	12.5%	0.0%	2.9%	0.2%	0.3%	1.8%	1.2%	0.7%	0.0%	20.5%
United Kingdom 1999	Gross	19.6%	12.4%	0.1%	2.3%	0.1%	0.7%	1.9%	1.7%	0.4%	0.0%	21.2%
United Kingdom 1995	Gross	20.6%	12.5%	0.2%	2.0%	0.3%	0.2%	1.7%	2.7%	1.0%	0.0%	22.1%
United Kingdom 1994	Gross	21.1%	13.0%	0.1%	1.8%	0.3%	0.4%	1.9%	2.7%	0.9%	0.0%	20.9%
United Kingdom 1991	Gross	17.2%	10.8%	0.2%	1.7%		0.3%			4.2%	0.0%	23.5%
United Kingdom 1986	Gross	21.9%	11.1%	0.6%	2.9%		1.4%			5.9%	0.0%	21.9%
United Kingdom 1979	Gross	17.2%	8.4%	0.7%	3.2%		1.5%		0.5%	2.9%	0.0%	19.5%
United Kingdom 1974	Gross	9.7%	7.9%	0.2%	1.0%		0.3%			0.4%	0.0%	14.2%
United Kingdom 1969	Gross	10.2%	6.6%	0.7%	1.8%		0.3%			0.8%	0.0%	12.6%
United States 2013	Gross	13.8%	11.0%	0.1%	1.3%	0.7%	0.4%	0.1%	0.7%	0.1%	-0.6%	19.6%
United States 2010	Gross	14.8%	10.5%	0.1%	1.4%	0.8%	1.2%	0.1%	0.7%	0.7%	-0.5%	19.6%
United States 2007	Gross	11.5%	9.3%	0.1%	1.2%	0.5%	0.3%	0.1%	0.4%	0.0%	-0.4%	20.1%
United States 2004	Gross	12.0%	9.4%	0.2%	1.4%	0.6%	0.4%	0.1%	0.4%	0.1%	-0.5%	19.8%
United States 2000	Gross	10.2%	8.7%	0.2%	0.5%	0.5%	0.2%	0.1%	0.3%	0.1%	-0.4%	22.4%
United States 1997	Gross	11.2%	9.2%	0.2%	0.7%	0.5%	0.3%	0.1%	0.5%	0.0%	-0.4%	21.5%
United States 1994	Gross	12.1%	9.5%	0.3%	0.9%	0.6%	0.5%	0.1%	0.7%	0.0%	-0.4%	20.5%
United States 1991	Gross	12.0%	9.3%	0.4%	0.7%	0.6%	0.6%	0.1%	0.6%	0.0%	-0.4%	20.0%
United States 1986	Gross	10.9%	8.5%	0.3%	0.6%		0.4%	0.1%	0.5%	0.4%	0.0%	21.1%
United States 1979	Gross	10.4%	7.7%	0.2%	0.7%		0.4%	0.0%	0.6%	0.7%	0.0%	20.4%
United States 1974	Gross	8.5%	6.1%				0.4%			2.0%	0.0%	18.3%
<i>Uruguay 2013</i>	<i>Net</i>	<i>20.2%</i>	<i>17.3%</i>		<i>0.9%</i>		<i>0.5%</i>		<i>0.9%</i>	<i>0.5%</i>	<i>0.0%</i>	
<i>Uruguay 2010</i>	<i>Net</i>	<i>19.9%</i>	<i>17.3%</i>		<i>1.0%</i>		<i>0.4%</i>		<i>0.7%</i>	<i>0.4%</i>	<i>0.0%</i>	
<i>Uruguay 2007</i>	<i>Net</i>	<i>20.2%</i>	<i>16.9%</i>		<i>0.9%</i>		<i>0.3%</i>		<i>1.8%</i>	<i>0.3%</i>	<i>0.0%</i>	
<i>Uruguay 2004</i>	<i>Net</i>	<i>25.2%</i>			<i>0.4%</i>		<i>0.4%</i>			<i>24.5%</i>	<i>0.0%</i>	
Mean		18.5%	11.2%	0.5%	2.3%	0.4%	1.2%	0.3%	0.5%	1.9%	0.1%	19.1%
Observations		290	280	141	223	162	226	134	165	289	289	210

Notes

- Results for Hungary 2012, 2009 and 2007 should be treated with caution. We miss over 20% of the observations when we move from disposable income to primary income.
- For Norway (2013, 2010, 2007) and Spain (1985) private transfers are not available.
- Gross income data for most countries and years, while income data net of income taxes for other countries and years (marked *italic*).

Source: Database Wang & Caminada (2017) based on LIS, and own calculations

Annex B2 Redistributive effect of social programs for a selected group of countries and waves (total population)

LIS Dataset	Gross / net	Gini Coefficient			Fiscal Redistribution		Shares of Fiscal Redistribution via Programs									
		Primary income (a)	Gross income (b)	Disposable income (c)	Absolute (a-c)	Relative (a-c)/a*100	Old-age/ Disability/ Survivor	Sickness	Family/ Children	Education	Unemployment	Housing	General/food/ medical assistance	Other transfers	Income taxes	Residual
Australia 2010	Gross	0.477	0.368	0.330	0.147	31%	40%	0%	19%	0%	5%	1%	0%	7%	26%	0%
Australia 2008	Gross	0.475	0.376	0.333	0.142	30%	39%	0%	20%	0%	4%	1%	0%	5%	30%	0%
Australia 2003	Gross	0.475	0.360	0.312	0.163	34%	40%	0%	19%		7%		0%	4%	29%	0%
Australia 2001	Gross	0.488	0.366	0.317	0.171	35%	40%	0%	20%		7%		0%	4%	29%	0%
Australia 1995	Gross	0.474	0.357	0.308	0.166	35%	39%	1%	16%	2%	10%		0%	3%	29%	0%
Australia 1989	Gross	0.435	0.353	0.302	0.132	30%	38%	1%	12%	1%	7%			2%	38%	0%
Australia 1985	Gross	0.434	0.346	0.292	0.143	33%	41%	1%	4%	1%	8%			7%	38%	0%
Australia 1981	Gross	0.402	0.327	0.281	0.122	30%	41%	2%	5%	1%	7%			7%	38%	0%
Austria 2013	Gross	0.493	0.322	0.279	0.215	44%	62%	1%	8%	1%	6%	1%	2%	0%	20%	0%
Austria 2010	Gross	0.491	0.325	0.279	0.212	43%	59%	1%	10%	0%	6%	1%	1%	0%	22%	0%
Austria 2007	Gross	0.485	0.329	0.284	0.201	41%	61%	1%	10%	0%	5%	1%	1%	0%	22%	0%
Austria 2004	Gross	0.458	0.303	0.269	0.190	41%	64%	0%	11%	1%	5%	1%	1%	0%	18%	0%
Austria 2000	Net	0.427	0.257	0.257	0.170	40%	78%	0%	15%	1%	4%	1%	0%	0%		0%
Austria 1997	Net	0.427	0.266	0.266	0.161	38%	75%	0%	16%	1%	7%	1%	0%	0%		0%
Austria 1995	Mix			0.277												
Austria 1994	Net	0.439	0.280	0.280	0.158	36%	76%	0%	17%	1%	5%	1%	1%	0%		0%
Austria 1987	Mix			0.227												
Belgium 2000	Net	0.474	0.279	0.279	0.195	41%	78%	2%	7%	0%	13%	0%	1%	0%		-1%
Belgium 1997	Gross	0.482	0.324	0.250	0.231	48%	46%		6%	0%	9%	0%	1%	6%	32%	0%
Belgium 1995	Net	0.467	0.266	0.266	0.200	43%	72%	0%	11%	0%	15%	0%	1%	0%		1%
Belgium 1992	Gross	0.450	0.285	0.222	0.227	51%	53%		8%	0%	10%			1%	28%	0%
Belgium 1988	Net	0.421	0.232	0.232	0.189	45%	61%	7%	13%		17%			2%		0%
Belgium 1985	Net	0.414	0.227	0.227	0.188	45%	60%	7%	15%		16%			3%		0%
Brazil 2013	Gross	0.542	0.468	0.450	0.093	17%	61%				4%		15%	2%	20%	-1%
Brazil 2011	Gross	0.544	0.476	0.460	0.084	15%	63%				3%		13%	2%	19%	0%
Brazil 2009	Gross	0.546	0.483	0.467	0.079	14%	59%				4%		15%	3%	20%	0%
Brazil 2006	Gross	0.558	0.500	0.487	0.071	13%	62%				4%		11%	5%	19%	-1%

LIS Dataset	Gross / net	Gini Coefficient			Fiscal Redistribution		Shares of Fiscal Redistribution via Programs									
		Primary income (a)	Gross income (b)	Disposable income (c)	Absolute (a-c)	Relative (a-c)/a*100	Old-age/ Disability/ Survivor	Sickness	Family/ Children	Education	Unemployment	Housing	General/food/ medical assistance	Other transfers	Income taxes	Residual
Canada 2010	Gross	0.481	0.356	0.317	0.164	34%	48%		1%				7%	21%	24%	0%
Canada 2007	Gross	0.471	0.355	0.315	0.156	33%	34%		9%				6%	26%	26%	0%
Canada 2004	Gross	0.475	0.358	0.318	0.156	33%	35%						7%	33%	25%	0%
Canada 2000	Gross	0.465	0.356	0.315	0.151	32%	32%						9%	32%	27%	0%
Canada 1998	Gross	0.475	0.354	0.311	0.164	35%	28%						12%	33%	26%	0%
Canada 1997	Gross	0.450	0.336	0.291	0.158	35%	27%						10%	34%	28%	0%
Canada 1994	Gross	0.448	0.329	0.284	0.164	37%	24%						13%	35%	28%	0%
Canada 1991	Gross	0.426	0.325	0.281	0.145	34%	36%		3%		12%			20%	30%	0%
Canada 1987	Gross	0.407	0.320	0.283	0.124	30%	39%		3%		10%			18%	30%	0%
Canada 1981	Gross	0.381	0.315	0.284	0.097	26%	35%		5%		9%			19%	32%	0%
Canada 1975	Gross	0.385	0.320	0.289	0.096	25%	32%		10%		11%			15%	32%	0%
Canada 1971	Gross	0.404	0.349	0.316	0.087	22%	32%		8%		4%			19%	38%	0%
China 2002	Mix	0.561	0.557	0.505	0.056	10%	2%				-1%		0%	5%	94%	0%
Colombia 2013	Mix	0.517	0.509	0.491	0.026	5%	3%							28%	69%	0%
Colombia 2010	Mix	0.497	0.499	0.482	0.014	3%	-12%							-6%	117%	0%
Colombia 2007	Mix	0.533	0.536	0.523	0.010	2%	-20%							-7%	127%	0%
Colombia 2004	Gross	0.506	0.508	0.506	0.000	0%	-3019%							0%	3119%	0%
Czech Republic 2013	Gross	0.457	0.293	0.258	0.199	44%	69%		5%		1%	2%	2%	3%	18%	0%
Czech Republic 2010	Gross	0.447	0.291	0.256	0.191	43%	69%		7%		1%	1%	1%	4%	18%	0%
Czech Republic 2007	Gross	0.446	0.293	0.251	0.195	44%	63%		9%		1%	1%	1%	4%	21%	0%
Czech Republic 2004	Gross	0.466	0.304	0.266	0.200	43%	62%		9%		2%	1%	3%	3%	19%	0%
Czech Republic 2002	Gross	0.464	0.296	0.255	0.208	45%	60%		9%		2%	1%	5%	2%	19%	0%
Czech Republic 1996	Gross	0.431	0.293	0.256	0.175	41%	61%		5%		1%	0%	3%	8%	21%	0%
Czech Republic 1992	Gross	0.400	0.232	0.205	0.195	49%	63%		6%		1%			17%	14%	0%
Denmark 2013	Gross	0.476	0.291	0.249	0.226	48%	58%		2%	5%	4%	4%	8%	2%	18%	-1%
Denmark 2010	Gross	0.465	0.289	0.248	0.217	47%	58%		3%	4%	5%	4%	7%	2%	19%	-1%
Denmark 2007	Gross	0.438	0.285	0.238	0.200	46%	56%		3%	3%	3%	4%	7%	2%	24%	-1%
Denmark 2004	Gross	0.447	0.271	0.228	0.219	49%	52%	3%	4%	3%	6%	4%	7%	1%	19%	0%
Denmark 2000	Gross	0.438	0.272	0.225	0.213	49%	51%	3%	4%	3%	6%	4%	7%	0%	22%	0%
Denmark 1995	Gross	0.444	0.261	0.218	0.227	51%	49%	3%	5%	2%	12%	4%	7%	0%	19%	0%
Denmark 1992	Gross	0.447	0.286	0.238	0.210	47%	3%	3%	3%		12%			56%	23%	-1%
Denmark 1987	Gross	0.416	0.283	0.255	0.161	39%	3%	4%	3%		11%			62%	18%	0%

LIS Dataset	Gross / net	Gini Coefficient			Fiscal Redistribution		Shares of Fiscal Redistribution via Programs									
		Primary income (a)	Gross income (b)	Disposable income (c)	Absolute (a-c)	Relative (a-c)/a*100	Old-age/ Disability/ Survivor	Sickness	Family/ Children	Education	Unemployment	Housing	General/food/ medical assistance	Other transfers	Income taxes	Residual
Dominican Rep. 2007	Gross	0.498	0.494	0.490	0.008	2%	28%							26%	45%	0%
Estonia 2013	Gross	0.540	0.429	0.352	0.188	35%	53%	0%	4%	0%	1%		0%	0%	41%	0%
Estonia 2010	Gross	0.516	0.394	0.319	0.197	38%	54%	0%	5%	0%	2%		1%	0%	38%	0%
Estonia 2007	Gross	0.493	0.400	0.312	0.181	37%	47%	0%	4%	0%	0%		0%	0%	48%	0%
Estonia 2004	Gross	0.496	0.379	0.347	0.149	30%	66%	0%	10%	0%	0%		1%	1%	22%	0%
Estonia 2000	Mix	0.499	0.362	0.361	0.138	28%		0%		1%	2%			96%	1%	0%
Finland 2013	Gross	0.487	0.347	0.259	0.228	47%	54%	0%	4%	2%	9%	3%	2%	-4%	39%	-9%
Finland 2010	Gross	0.478	0.337	0.261	0.217	45%	54%	0%	5%	2%	10%	3%	2%	-3%	35%	-8%
Finland 2007	Gross	0.469	0.350	0.264	0.205	44%	51%	0%	5%	2%	11%	3%	2%	-5%	42%	-11%
Finland 2004	Gross	0.472	0.349	0.257	0.214	45%	51%	0%	6%	2%	10%	3%	2%	-5%	43%	-12%
Finland 2000	Gross	0.468	0.325	0.252	0.216	46%	49%	0%	7%	2%	10%	4%	2%	-2%	34%	-7%
Finland 1995	Gross	0.475	0.271	0.216	0.259	54%	44%		8%	2%	16%	3%	2%	5%	21%	0%
Finland 1991	Gross	0.406	0.258	0.209	0.197	49%	51%	1%	9%		4%			10%	25%	0%
Finland 1987	Gross	0.388	0.259	0.207	0.181	47%	50%	1%	7%		2%			12%	29%	0%
France 2010	Mix	0.494	0.307	0.289	0.204	41%	65%		9%	0%	7%	6%		4%	9%	0%
France 2005	Mix	0.478	0.295	0.280	0.198	41%	62%	2%	10%	1%	7%	7%	3%	0%	8%	0%
France 2000	Mix	0.483	0.300	0.278	0.205	42%	59%	1%	12%	1%	6%	7%	2%	0%	11%	0%
France 1994	Mix	0.486	0.306	0.288	0.197	41%	62%	1%	10%	2%	7%	7%	2%	1%	9%	0%
France 1989	Mix	0.478	0.309	0.287	0.191	40%	55%		12%		10%			11%	12%	0%
France 1984	Mix	0.496	0.351	0.338	0.158	32%	59%		13%		10%			10%	8%	0%
France 1978	Mix	0.611	0.553	0.312	0.299	49%	17%		1%	0%	1%			0%	81%	0%
Georgia 2013	Net	0.481	0.394	0.394	0.086	18%	77%		17%	0%				2%		4%
Georgia 2010	Net	0.526	0.437	0.437	0.089	17%	86%		16%	0%				2%		-5%
Germany 2013	Gross	0.520	0.344	0.291	0.229	44%	61%		6%	1%	9%	1%	0%	0%	23%	0%
Germany 2010	Gross	0.514	0.338	0.285	0.229	45%	61%		6%	1%	9%	1%	1%	0%	23%	0%
Germany 2007	Gross	0.512	0.343	0.289	0.223	44%	59%		5%	0%	9%	1%	1%	1%	24%	0%
Germany 2004	Gross	0.498	0.331	0.278	0.220	44%	58%		6%	1%	8%	1%	1%	1%	24%	0%
Germany 2000	Gross	0.473	0.318	0.266	0.207	44%	59%		6%	1%	6%	1%	1%	1%	25%	0%
Germany 1994	Gross	0.458	0.314	0.270	0.188	41%	60%		4%	1%	8%	1%	2%	1%	24%	0%
Germany 1989	Gross	0.438	0.305	0.258	0.180	41%	63%		4%	0%	3%	1%	1%	1%	26%	0%
Germany 1984	Gross	0.442	0.307	0.265	0.177	40%	65%		4%	1%	4%	1%	1%	0%	24%	0%
Germany 1983	Gross	0.415	0.284	0.260	0.154	37%	69%		3%		3%			9%	16%	0%

LIS Dataset	Gross / net	Gini Coefficient			Fiscal Redistribution		Shares of Fiscal Redistribution via Programs									
		Primary income (a)	Gross income (b)	Disposable income (c)	Absolute (a-c)	Relative (a-c)/a*100	Old-age/ Disability/ Survivor	Sickness	Family/ Children	Education	Unemployment	Housing	General/food/ medical assistance	Other transfers	Income taxes	Residual
Germany 1981	Gross	0.405	0.273	0.244	0.161	40%	61%		5%		1%			15%	18%	0%
Germany 1978	Gross	0.415	0.289	0.263	0.152	37%	72%		4%		2%			5%	18%	0%
Germany 1973	Gross	0.377	0.287	0.271	0.106	28%	21%							64%	15%	0%
Greece 2013	Gross	0.567	0.410	0.332	0.235	41%	61%	0%	2%	0%	2%	0%		1%	33%	0%
Greece 2010	Gross	0.564	0.445	0.324	0.240	43%	47%	0%	1%	0%	2%	0%		0%	50%	0%
Greece 2007	Gross	0.515	0.409	0.320	0.195	38%	52%	0%	1%	0%	1%	0%		0%	46%	0%
Greece 2004	Net	0.458	0.327	0.327	0.131	29%	89%	0%	2%	0%	3%	0%	2%	0%		3%
Greece 2000	Net	0.465	0.333	0.333	0.132	28%	92%	1%	2%	0%	1%	0%	0%	1%		2%
Greece 1995	Net	0.462	0.349	0.349	0.113	24%	94%	1%	3%	0%	0%	0%	1%	1%		0%
Guatemala 2014	Gross	0.427	0.424	0.394	0.034	8%	-3%			1%			8%	6%	89%	0%
Guatemala 2011	Gross	0.493	0.492	0.481	0.012	3%	3%			1%			4%	4%	88%	0%
Guatemala 2006	Gross	0.490	0.485	0.472	0.018	4%	-4%			12%		2%	21%	1%	69%	0%
Hungary 2012	Net	0.586	0.289	0.289	0.297	51%	22%	45%	3%		45%	0%		46%		-61%
Hungary 2009	Net	0.558	0.278	0.278	0.280	50%	28%	45%	3%		45%	0%		47%		-66%
Hungary 2007	Net	0.543	0.274	0.274	0.268	49%	23%	46%	3%		46%	0%		47%		-66%
Hungary 2005	Net	0.530	0.289	0.289	0.241	45%	74%	0%	14%		4%	0%		8%		0%
Hungary 1999	Net	0.513	0.292	0.292	0.220	43%	78%	1%	15%		4%			1%		1%
Hungary 1994	Net	0.543	0.319	0.319	0.224	41%	67%	2%	17%		5%			7%		2%
Hungary 1991	Net	0.468	0.283	0.283	0.185	40%	67%	1%	20%		7%			4%		0%
Iceland 2010	Gross	0.393	0.287	0.245	0.149	38%	48%	0%	8%	0%	9%	5%	1%	0%	29%	0%
Iceland 2007	Gross	0.375	0.302	0.276	0.099	26%	56%	0%	12%	0%	1%	4%	1%	0%	26%	0%
Iceland 2004	Gross	0.367	0.286	0.255	0.112	31%	54%	0%	10%	0%	3%	5%	1%	0%	28%	0%
India 2011	Net	0.492	0.479	0.479	0.013	3%	27%		2%		0%	9%	61%	2%		-1%
India 2004	Net	0.479	0.472	0.472	0.007	1%	0%		0%		1%	32%	67%	0%		0%
Ireland 2010	Gross	0.564	0.366	0.294	0.270	48%	29%	3%	15%	0%	19%	3%	1%	2%	26%	0%
Ireland 2007	Gross	0.501	0.348	0.297	0.204	41%	36%	3%	17%	0%	11%	2%	1%	4%	25%	0%
Ireland 2004	Gross	0.496	0.362	0.317	0.179	36%	39%	3%	18%	0%	9%	3%	1%	3%	25%	0%
Ireland 2000	Net	0.440	0.313	0.313	0.127	29%	56%	3%	18%	1%	13%	1%		4%		4%
Ireland 1996	Net	0.481	0.325	0.325	0.156	32%	48%	3%	16%	1%	30%	2%	1%	0%		0%
Ireland 1995	Net	0.490	0.336	0.336	0.154	31%	48%	3%	16%	1%	29%	2%	1%	0%		-1%
Ireland 1994	Net	0.500	0.333	0.333	0.167	33%	46%	3%	13%	1%	34%	2%	1%	0%		0%
Ireland 1987	Gross	0.510	0.373	0.328	0.181	36%	21%	5%	7%		9%			34%	24%	0%

LIS Dataset	Gross / net	Gini Coefficient			Fiscal Redistribution		Shares of Fiscal Redistribution via Programs									
		Primary income (a)	Gross income (b)	Disposable income (c)	Absolute (a-c)	Relative (a-c)/a*100	Old-age/ Disability/ Survivor	Sickness	Family/ Children	Education	Unemployment	Housing	General/food/ medical assistance	Other transfers	Income taxes	Residual
Israel 2012	Gross	0.494	0.410	0.371	0.123	25%	45%		9%		2%		4%	9%	32%	0%
Israel 2010	Gross	0.506	0.417	0.377	0.129	25%	43%		8%		4%		4%	9%	31%	0%
Israel 2007	Gross	0.512	0.417	0.369	0.143	28%	42%		8%		2%		6%	9%	34%	0%
Israel 2005	Gross	0.517	0.416	0.370	0.146	28%	43%		8%	0%	2%		7%	9%	31%	0%
Israel 2001	Gross	0.530	0.410	0.347	0.183	35%	33%		12%	0%	4%		8%	9%	34%	0%
Israel 1997	Gross	0.495	0.393	0.336	0.159	32%	32%		13%		4%		5%	10%	36%	0%
Israel 1992	Gross	0.467	0.363	0.305	0.161	35%	32%	3%	10%		4%			16%	35%	0%
Israel 1986	Gross	0.473	0.373	0.309	0.165	35%	36%		14%		2%			9%	39%	0%
Israel 1979	Gross	0.427	0.358	0.303	0.124	29%	33%		14%					8%	45%	0%
Italy 2014	Net	0.489	0.319	0.319	0.170	35%	96%			0%	3%			1%		0%
Italy 2010	Net	0.482	0.320	0.320	0.162	34%	96%			0%	3%			1%		0%
Italy 2008	Net	0.470	0.319	0.319	0.151	32%	98%			0%	1%			0%		0%
Italy 2004	Net	0.486	0.329	0.329	0.158	32%	98%		0%	0%	2%	0%	0%	0%		0%
Italy 2000	Net	0.467	0.328	0.328	0.140	30%	97%			0%	2%	0%	0%	1%		0%
Italy 1998	Net	0.474	0.340	0.340	0.134	28%	98%			0%	2%	0%	0%	0%		0%
Italy 1995	Net	0.470	0.336	0.336	0.134	29%	96%			0%	3%	0%	0%	1%		0%
Italy 1993	Net	0.472	0.339	0.339	0.132	28%	97%			0%		2%	0%	1%		0%
Italy 1991	Net	0.415	0.291	0.291	0.124	30%	98%			0%		2%	0%	1%		0%
Italy 1989	Net	0.428	0.304	0.304	0.124	29%	98%			0%		1%	0%	0%		0%
Italy 1987	Net	0.452	0.332	0.332	0.120	27%	97%			0%		2%	0%	1%		0%
Italy 1986	Net	0.424	0.306	0.306	0.118	28%	95%							5%		0%
Japan 2008	Gross	0.382	0.321	0.302	0.080	21%	-6%		3%				1%	78%	24%	0%
Luxembourg 2013	Gross	0.475	0.317	0.283	0.192	40%	60%	0%	12%	0%	4%	1%	4%	1%	18%	0%
Luxembourg 2010	Gross	0.462	0.304	0.271	0.191	41%	60%	1%	12%	0%	4%	1%	4%	1%	18%	0%
Luxembourg 2007	Gross	0.456	0.309	0.276	0.180	39%	64%	1%	11%	0%	2%	0%	2%	1%	19%	0%
Luxembourg 2004	Gross	0.454	0.307	0.269	0.184	41%	61%	0%	11%	0%	4%	1%		2%	20%	0%
Luxembourg 2000	Net	0.428	0.262	0.262	0.166	39%	79%	1%	15%	0%	1%		4%	0%		0%
Luxembourg 1997	Net	0.432	0.261	0.261	0.171	40%	78%	1%	14%	0%	2%		3%	2%		0%
Luxembourg 1994	Net	0.388	0.235	0.235	0.153	39%	80%	1%	11%	0%	1%		3%	4%		0%
Luxembourg 1991	Net	0.372	0.239	0.239	0.134	36%	83%	1%	10%		0%			6%		0%
Luxembourg 1985	Net	0.375	0.236	0.236	0.139	37%	85%	0%	11%	0%	1%			3%		-1%

LIS Dataset	Gross / net	Gini Coefficient			Fiscal Redistribution		Shares of Fiscal Redistribution via Programs									
		Primary income (a)	Gross income (b)	Disposable income (c)	Absolute (a-c)	Relative (a-c)/a*100	Old-age/ Disability/ Survivor	Sickness	Family/ Children	Education	Unemployment	Housing	General/food/ medical assistance	Other transfers	Income taxes	Residual
Mexico 2012	Net	0.486	0.459	0.459	0.027	6%	16%	0%		2%	-1%		1%	64%		18%
Mexico 2010	Net	0.487	0.455	0.455	0.031	6%	23%	0%		2%	0%		1%	55%		20%
Mexico 2008	Net	0.497	0.469	0.469	0.028	6%	18%	-1%		2%	0%			56%		25%
Mexico 2004	Net	0.473	0.457	0.457	0.016	3%	40%			2%				57%		1%
Mexico 2002	Net	0.484	0.468	0.468	0.016	3%	37%			7%				57%		-1%
Mexico 2000	Net	0.491	0.486	0.486	0.006	1%	68%							30%		2%
Mexico 1998	Net	0.494	0.486	0.486	0.007	1%	78%							20%		1%
Mexico 1996	Net	0.478	0.470	0.470	0.009	2%	57%			8%				33%		2%
Mexico 1994	Net	0.495	0.485	0.485	0.011	2%	51%			8%				43%		-1%
Mexico 1992	Net	0.483	0.475	0.475	0.008	2%	96%			4%				0%		0%
Mexico 1989	Net	0.457	0.452	0.452	0.005	1%	104%			-4%				0%		0%
Mexico 1984	Net	0.431	0.430	0.430	0.001	0%	97%			3%				0%		0%
Netherlands 2013	Gross	0.475	0.323	0.264	0.212	45%	56%	1%	3%	2%	4%	3%	6%	0%	28%	-2%
Netherlands 2010	Gross	0.461	0.318	0.257	0.205	44%	56%	1%	3%	2%	3%	3%	5%	-1%	30%	-3%
Netherlands 2007	Gross	0.468	0.331	0.274	0.194	41%	56%	1%	2%	2%	3%	2%	4%	1%	29%	-2%
Netherlands 2004	Gross	0.461	0.309	0.266	0.195	42%	57%	1%	3%	2%	4%	3%		9%	22%	-1%
Netherlands 1999	Gross	0.426	0.274	0.231	0.196	46%	64%	1%	4%	1%	3%	1%	4%	0%	22%	0%
Netherlands 1993	Gross	0.460	0.300	0.257	0.203	44%	58%	1%	5%	2%	8%	1%	5%	0%	21%	0%
Netherlands 1990	Gross	0.451	0.287	0.266	0.185	41%	65%	2%	5%		2%			14%	12%	0%
Netherlands 1987	Gross	0.475	0.287	0.236	0.240	50%	45%		4%	9%	5%			15%	22%	0%
Netherlands 1983	Gross	0.483	0.296	0.252	0.231	48%	46%		4%	12%	8%			10%	19%	0%
Norway 2013	Gross	0.446	0.293	0.248	0.198	44%	60%	4%	6%	1%	2%	1%	2%	2%	22%	0%
Norway 2010	Gross	0.447	0.287	0.243	0.204	46%	58%	4%	6%	2%	3%	1%	2%	4%	22%	0%
Norway 2007	Gross	0.439	0.286	0.244	0.195	44%	55%	4%	7%	2%	1%	1%	2%	7%	22%	0%
Norway 2004	Gross	0.456	0.293	0.256	0.201	44%	53%	11%	9%	2%	3%	1%	3%	0%	18%	0%
Norway 2000	Gross	0.428	0.291	0.250	0.178	42%	58%	4%	9%	1%	2%	1%	2%	0%	23%	0%
Norway 1995	Gross	0.422	0.279	0.239	0.183	43%	60%		6%	1%	5%	1%	4%	1%	22%	0%
Norway 1991	Gross	0.392	0.271	0.231	0.160	41%	62%		7%					6%	25%	0%
Norway 1986	Gross	0.362	0.262	0.234	0.128	35%	5%		6%		1%			66%	22%	0%
Norway 1979	Gross	0.372	0.273	0.224	0.148	40%	4%		4%					58%	34%	0%

LIS Dataset	Gross / net	Gini Coefficient			Fiscal Redistribution		Shares of Fiscal Redistribution via Programs									
		Primary income (a)	Gross income (b)	Disposable income (c)	Absolute (a-c)	Relative (a-c)/a*100	Old-age/ Disability/ Survivor	Sickness	Family/ Children	Education	Unemployment	Housing	General/food/ medical assistance	Other transfers	Income taxes	Residual
Panama 2013	Gross	0.514	0.482	0.467	0.048	9%	33%		8%	21%		0%	8%	0%	31%	0%
Panama 2010	Gross	0.512	0.482	0.471	0.041	8%	28%		24%	8%		0%	12%	0%	27%	1%
Panama 2007	Gross	0.516	0.494	0.481	0.035	7%	28%			6%		0%	24%	4%	38%	0%
Paraguay 2013	Net	0.472	0.463	0.463	0.008	2%	62%							18%		20%
Paraguay 2010	Net	0.471	0.469	0.469	0.002	0%	-52%							97%		54%
Peru 2013	Gross	0.483	0.465	0.455	0.028	6%	21%		16%	3%		0%	23%	0%	37%	0%
Peru 2010	Gross	0.496	0.479	0.470	0.026	5%	24%		16%	5%		0%	23%	0%	32%	0%
Peru 2007	Gross	0.524	0.508	0.500	0.024	5%	23%		15%	5%		0%	26%	0%	31%	0%
Peru 2004	Gross	0.536	0.526	0.519	0.017	3%	33%			1%		0%	27%	0%	39%	0%
Poland 2013	Gross	0.484	0.317	0.316	0.168	35%	86%		6%	0%	2%	1%	4%	1%	0%	0%
Poland 2010	Gross	0.477	0.311	0.310	0.167	35%	86%		6%	0%	2%	0%	3%	2%	1%	0%
Poland 2007	Gross	0.490	0.313	0.310	0.180	37%	84%		7%	0%	1%	1%	3%	1%	2%	0%
Poland 2004	Gross	0.526	0.323	0.315	0.210	40%	81%	0%	7%	0%	3%	2%	3%	1%	4%	0%
Poland 1999	Gross	0.475	0.293	0.286	0.188	40%	81%	0%	6%		5%	1%	2%	1%	4%	0%
Poland 1995	Mix	0.534	0.325	0.318	0.217	41%	76%		8%		9%			5%	3%	0%
Poland 1992	Net	0.403	0.262	0.262	0.141	35%	68%		14%		18%			0%		-1%
Poland 1986	Net	0.366	0.271	0.271	0.095	26%	80%		2%					17%		1%
Romania 1997	Gross	0.375	0.296	0.280	0.095	25%	66%	0%	12%	0%	4%			1%	16%	0%
Romania 1995	Gross	0.376	0.298	0.279	0.097	26%	65%	0%	6%	0%	7%			2%	20%	0%
Russia 2013	Net	0.457	0.331	0.331	0.126	28%	94%		3%		0%	0%		2%		1%
Russia 2010	Net	0.450	0.338	0.338	0.112	25%	92%		4%		0%	0%		2%		1%
Russia 2007	Net	0.446	0.350	0.350	0.096	22%	93%		3%		0%	1%		3%		0%
Russia 2004	Net	0.492	0.388	0.388	0.104	21%	95%		2%		0%	0%		2%		0%
Russia 2000	Net	0.507	0.408	0.408	0.099	19%	87%		4%	1%	1%	3%		5%		0%
Serbia 2013	Net	0.518	0.332	0.332	0.187	36%	88%		3%		2%			5%		3%
Serbia 2010	Net	0.513	0.324	0.324	0.189	37%	89%		3%		2%			4%		2%
Serbia 2006	Net	0.472	0.343	0.343	0.129	27%	91%		4%		3%			3%		-1%
Slovakia 2013	Gross	0.425	0.287	0.268	0.157	37%	73%	0%	9%	0%	1%			5%	12%	0%
Slovakia 2010	Gross	0.429	0.280	0.262	0.167	39%	74%	1%	7%	1%	2%			4%	11%	0%
Slovakia 2007	Gross	0.503	0.389	0.248	0.255	51%	39%	0%	3%	0%	0%			2%	55%	0%
Slovakia 2004	Gross	0.474	0.332	0.269	0.205	43%	55%	0%	5%	0%	2%			6%	31%	0%
Slovakia 1996	Net	0.430	0.250	0.250	0.180	42%	73%	1%	19%		7%			0%		0%

LIS Dataset	Gross / net	Gini Coefficient			Fiscal Redistribution		Shares of Fiscal Redistribution via Programs									
		Primary income (a)	Gross income (b)	Disposable income (c)	Absolute (a-c)	Relative (a-c)/a*100	Old-age/ Disability/ Survivor	Sickness	Family/ Children	Education	Unemployment	Housing	General/food/ medical assistance	Other transfers	Income taxes	Residual
Slovakia 1992	Gross	0.401	0.216	0.189	0.212	53%	53%	2%	14%		3%			17%	12%	-1%
<i>Slovenia 2012</i>	<i>Net</i>	<i>0.449</i>	<i>0.271</i>	<i>0.271</i>	<i>0.178</i>	<i>40%</i>			6%	2%	4%			88%		0%
<i>Slovenia 2010</i>	<i>Net</i>	<i>0.415</i>	<i>0.252</i>	<i>0.252</i>	<i>0.163</i>	<i>39%</i>			7%	2%	3%	0%	2%	86%		0%
<i>Slovenia 2007</i>	<i>Net</i>	<i>0.395</i>	<i>0.230</i>	<i>0.230</i>	<i>0.165</i>	<i>42%</i>			8%	2%	2%	0%	2%	86%		0%
<i>Slovenia 2004</i>	<i>Net</i>	<i>0.396</i>	<i>0.231</i>	<i>0.231</i>	<i>0.165</i>	<i>42%</i>			10%	2%	3%	0%	3%	83%		0%
<i>Slovenia 1999</i>	<i>Net</i>	<i>0.372</i>	<i>0.232</i>	<i>0.232</i>	<i>0.140</i>	<i>38%</i>			8%	2%	6%	0%	2%	82%		0%
<i>Slovenia 1997</i>	<i>Net</i>	<i>0.366</i>	<i>0.229</i>	<i>0.229</i>	<i>0.137</i>	<i>37%</i>			8%	2%	6%	0%	1%	83%		0%
South Africa 2012	Gross	0.664	0.625	0.572	0.093	14%	24%		17%					-1%	58%	1%
South Africa 2010	Gross	0.665	0.639	0.585	0.080	12%	19%		12%					-2%	68%	3%
South Africa 2008	Gross	0.661	0.621	0.596	0.065	10%	41%		21%					1%	38%	-1%
South Korea 2012	Gross	0.337	0.314	0.306	0.031	9%	43%							32%	25%	0%
South Korea 2010	Gross	0.341	0.316	0.309	0.032	9%	40%							36%	24%	0%
South Korea 2008	Gross	0.344	0.323	0.314	0.030	9%	29%							40%	30%	0%
South Korea 2006	Gross	0.330	0.313	0.305	0.025	7%	26%							42%	31%	0%
Spain 2013	Gross	0.520	0.379	0.343	0.177	34%	59%	1%	1%	1%	17%	0%		2%	20%	0%
Spain 2010	Gross	0.547	0.426	0.333	0.214	39%	45%	0%	0%	0%	10%	0%		1%	43%	0%
Spain 2007	Gross	0.475	0.368	0.307	0.168	35%	55%	1%	0%	0%	5%	0%		1%	37%	0%
<i>Spain 2004</i>	<i>Net</i>	<i>0.446</i>	<i>0.316</i>	<i>0.316</i>	<i>0.131</i>	<i>29%</i>	<i>85%</i>	<i>2%</i>	<i>0%</i>	<i>1%</i>	<i>8%</i>	<i>0%</i>	<i>0%</i>	<i>0%</i>		<i>5%</i>
<i>Spain 2000</i>	<i>Net</i>	<i>0.476</i>	<i>0.336</i>	<i>0.336</i>	<i>0.140</i>	<i>29%</i>	<i>88%</i>	<i>1%</i>	<i>1%</i>	<i>1%</i>	<i>7%</i>	<i>0%</i>	<i>0%</i>	<i>0%</i>		<i>3%</i>
<i>Spain 1995</i>	<i>Net</i>	<i>0.503</i>	<i>0.353</i>	<i>0.353</i>	<i>0.150</i>	<i>30%</i>	<i>82%</i>	<i>2%</i>	<i>1%</i>	<i>1%</i>	<i>11%</i>	<i>0%</i>	<i>0%</i>	<i>0%</i>		<i>1%</i>
<i>Spain 1990</i>	<i>Net</i>	<i>0.419</i>	<i>0.302</i>	<i>0.302</i>	<i>0.117</i>	<i>28%</i>	<i>82%</i>				<i>13%</i>			<i>5%</i>		<i>0%</i>
<i>Spain 1985</i>	<i>Net</i>	<i>0.433</i>	<i>0.314</i>	<i>0.314</i>	<i>0.119</i>	<i>27%</i>					<i>16%</i>			<i>83%</i>		<i>0%</i>
<i>Spain 1980</i>	<i>Net</i>	<i>0.415</i>	<i>0.318</i>	<i>0.318</i>	<i>0.097</i>	<i>23%</i>										
Sweden 2005	Gross	0.466	0.274	0.237	0.229	49%	0%	5%	7%	5%	7%	4%	3%	54%	16%	0%
Sweden 2000	Gross	0.470	0.289	0.252	0.218	46%	52%	6%	6%	3%	8%	5%	3%	0%	17%	0%
Sweden 1995	Gross	0.490	0.263	0.221	0.268	55%	45%	3%	12%	4%	11%	6%	4%	0%	15%	-1%
Sweden 1992	Gross	0.461	0.260	0.229	0.232	50%	51%	4%	8%		10%			13%	13%	0%
Sweden 1987	Gross	0.429	0.253	0.212	0.218	51%	56%	5%	6%	3%	4%			6%	19%	0%
Sweden 1981	Gross	0.411	0.241	0.197	0.214	52%	53%	4%	5%		3%			15%	20%	0%
Sweden 1975	Gross	0.400	0.274	0.215	0.185	46%	45%	5%	4%		1%			13%	32%	0%
Sweden 1967	Gross	0.391	0.316	0.260	0.130	33%	40%	7%	8%		2%			1%	43%	0%

LIS Dataset	Gross / net	Gini Coefficient			Fiscal Redistribution		Shares of Fiscal Redistribution via Programs									
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Switzerland 2013	Gross	0.425	0.300	0.295	0.130	31%	77%	0%	6%		4%	0%		9%	4%	0%
Switzerland 2010	Gross	0.411	0.294	0.294	0.117	28%	84%	0%	5%		6%	0%		6%	0%	0%
Switzerland 2007	Gross	0.410	0.307	0.311	0.099	24%	91%	0%	5%		4%			6%	-5%	0%
Switzerland 2004	Gross	0.394	0.265	0.268	0.127	32%	82%	2%	4%		8%	0%	2%	3%	-2%	0%
Switzerland 2002	Gross	0.391	0.276	0.273	0.118	30%	82%	3%	5%		4%	0%	1%	3%	2%	0%
Switzerland 2000	Gross	0.385	0.278	0.280	0.105	27%	87%	2%	5%		4%	0%	1%	3%	-2%	0%
Switzerland 1992	Gross	0.401	0.322	0.307	0.094	23%	77%	1%			3%	0%	2%	0%	16%	0%
Switzerland 1982	Gross	0.398	0.330	0.309	0.089	22%	71%				1%			4%	24%	0%
Taiwan 2013	Gross	0.333	0.304	0.308	0.025	8%	39%						6%	70%	-15%	0%
Taiwan 2010	Gross	0.329	0.307	0.317	0.012	4%	84%						10%	81%	-75%	0%
Taiwan 2007	Gross	0.329	0.304	0.307	0.022	7%	47%						4%	60%	-11%	0%
Taiwan 2005	Gross	0.324	0.309	0.305	0.018	6%	49%						5%	25%	21%	0%
Taiwan 2000	Gross	0.306	0.292	0.289	0.017	6%	31%						4%	47%	18%	0%
Taiwan 1997	Gross	0.300	0.289	0.287	0.012	4%	34%						5%	48%	14%	0%
Taiwan 1995	Gross	0.313		0.284	0.029	9%										
Taiwan 1991	Gross	0.281	0.277	0.271	0.010	4%	16%							31%	53%	0%
Taiwan 1986	Gross	0.275	0.274	0.269	0.007	2%	4%							16%	80%	0%
Taiwan 1981	Gross	0.272	0.271	0.267	0.005	2%	4%							13%	84%	0%
United Kingdom 2013	Gross	0.537	0.364	0.330	0.207	39%	47%	0%	14%	0%	2%	11%	4%	5%	17%	0%
United Kingdom 2010	Gross	0.542	0.370	0.334	0.208	38%	46%	0%	12%	0%	2%	11%	5%	5%	17%	0%
United Kingdom 2007	Gross	0.524	0.372	0.339	0.186	35%	47%	0%	11%	0%	1%	10%	7%	5%	18%	0%
United Kingdom 2004	Gross	0.527	0.367	0.344	0.183	35%	52%	0%	10%	1%	1%	11%	8%	3%	13%	0%
United Kingdom 1999	Gross	0.530	0.373	0.346	0.184	35%	50%	0%	8%	1%	3%	12%	10%	2%	15%	0%
United Kingdom 1995	Gross	0.538	0.380	0.344	0.194	36%	44%	1%	6%	1%	1%	10%	15%	4%	18%	0%
United Kingdom 1994	Gross	0.535	0.368	0.339	0.196	37%	47%	0%	5%	1%	1%	11%	15%	4%	15%	0%
United Kingdom 1991	Gross	0.501	0.368	0.336	0.165	33%	47%	1%	5%		1%			27%	19%	0%
United Kingdom 1986	Gross	0.500	0.340	0.303	0.196	39%	41%	1%	8%		4%			28%	19%	0%
United Kingdom 1979	Gross	0.410	0.295	0.267	0.143	35%	48%	0%	10%		4%		2%	16%	20%	0%
United Kingdom 1974	Gross	0.374	0.307	0.268	0.106	28%	54%	1%	5%		2%			2%	37%	0%
United Kingdom 1969	Gross	0.360	0.295	0.267	0.093	26%	45%	4%	11%		4%			6%	30%	0%

LIS Dataset	Gross / net	Gini Coefficient			Fiscal Redistribution		Shares of Fiscal Redistribution via Programs									
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United States 2013	Gross	0.509	0.418	0.377	0.132	26%	53%	0%	8%	2%	2%	1%	5%	-1%	31%	0%
United States 2010	Gross	0.507	0.411	0.367	0.140	28%	47%	0%	8%	2%	5%	1%	5%	0%	32%	0%
United States 2007	Gross	0.483	0.409	0.371	0.111	23%	51%	1%	8%	1%	1%	1%	4%	-1%	34%	0%
United States 2004	Gross	0.487	0.409	0.364	0.124	25%	49%	1%	8%	1%	1%	1%	3%	-1%	37%	0%
United States 2000	Gross	0.477	0.409	0.357	0.120	25%	46%	1%	5%	1%	1%	1%	3%	-1%	44%	0%
United States 1997	Gross	0.483	0.407	0.360	0.123	25%	47%	1%	7%	1%	1%	1%	4%	0%	38%	0%
United States 1994	Gross	0.487	0.406	0.361	0.126	26%	46%	1%	8%	2%	2%	1%	6%	0%	35%	0%
United States 1991	Gross	0.467	0.388	0.346	0.121	26%	47%	2%	7%	1%	2%	1%	6%	0%	35%	0%
United States 1986	Gross	0.459	0.386	0.340	0.118	26%	44%	1%	6%		2%	1%	5%	3%	39%	0%
United States 1979	Gross	0.428	0.356	0.310	0.118	28%	42%	1%	7%		1%	0%	5%	4%	39%	0%
United States 1974	Gross	0.412	0.352	0.316	0.096	23%	43%				2%			17%	38%	0%
Uruguay 2013	Net	0.466	0.372	0.372	0.094	20%	76%		9%		3%		9%	2%		1%
Uruguay 2010	Net	0.498	0.405	0.405	0.093	19%	78%		9%		2%		7%	2%		1%
Uruguay 2007	Net	0.521	0.423	0.423	0.099	19%	69%		8%		2%		20%	1%		1%
Uruguay 2004	Net	0.529	0.424	0.424	0.105	20%			3%		2%			95%		0%
Observations		291	290	293	291	291	280	141	223	162	226	134	165	289	206	289
Mean (rescaling)		0.461	0.345	0.318	0.142	31%	47%	3%	8%	1%	6%	2%	3%	8%	22%	-1%

Notes

– See notes below Annex B1

– **Mean (rescaling)**: the sum of all partial redistributive effects amount (a little) over 100 percent due to missing observations. We rescaled the redistributive effects of each social program by applying an adjustment factor, which is defined as the overall redistribution (100%) divided by sum of all partial redistributive effects of all programs (over 100%), in order to correct for an over-estimated effect.

Source: Database Wang & Caminada (2017) based on LIS, and own calculations