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Income redistribution through taxes and transfers across OECD countries

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INCOME REDISTRIBUTION THROUGH TAXES AND TRANSFERS ACROSS OECD COUNTRIES

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By Orsetta Causa and Mikkel Hermansen

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ABSTRACT/RESUMÉ

Income Redistribution Through Taxes and Transfers across OECD Countries

This paper produces a comprehensive assessment of income redistribution to the working-age population, covering OECD countries over the last two decades. Redistribution is quantified as the relative reduction in market income inequality achieved by personal income taxes, employees' social security contributions and cash transfers, based on household-level micro data. A detailed decomposition analysis uncovers the respective roles of size, tax progressivity and transfer targeting for overall redistribution, the respective role of various categories of transfers for transfer redistribution; as well as redistribution for various income groups. The paper shows a widespread decline in redistribution across the OECD, both on average and in the majority of countries for which data going back to the mid-1990s are available. This was primarily associated with a decline in cash transfer redistribution while personal income taxes played a less important and more heterogeneous role across countries. In turn, the decline in the redistributive effect of cash transfers reflected a decline in their size and in particular by less redistributive insurance transfers. In some countries, this was mitigated by more redistributive assistance transfers but the resulting increase in the targeting of total transfers was not sufficient to prevent transfer redistribution from declining.

JEL codes: D31, H23, H53, I38.

Keywords: income inequality, redistribution, taxes, transfers, progressivity.

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La redistribution des revenus par les impôts et les transferts dans les pays de l'OCDE

Ce document présente une étude générale de la redistribution des revenus dans la population d'âge actif des pays de l'OCDE au cours des vingt dernières années. Mesurée à partir de microdonnées collectées au niveau des ménages, la redistribution correspond à la contribution cumulée des impôts sur le revenu, des cotisations salariales de sécurité sociale et des transferts monétaires à la réduction relative des inégalités de revenu marchand. Une décomposition détaillée permet de déterminer la part respective du montant des prélèvements et des transferts, de la progressivité du régime fiscal et du ciblage des prestations sociales dans l'ensemble de la redistribution, le rôle de différentes catégories de prestations dans la redistribution opérée par les transferts ainsi que le degré de redistribution dont bénéficient divers groupes de revenu. Les calculs font ressortir un recul général de la redistribution dans la zone OCDE, à la fois en moyenne et dans la majorité des pays pour lesquels on dispose de données depuis le milieu des années 1990. Les transferts monétaires sont les principaux responsables de cette évolution, les impôts sur le revenu ayant un effet moins important et plus hétérogène d'un pays à l'autre. Le moindre effet redistributif des transferts s'explique quant à lui par une diminution de leur montant et, surtout, par la contribution négative des prestations d'assurance. Dans certains pays, les prestations d'assistance ont atténué cette évolution, mais, au total, l'accroissement de la redistribution dû au ciblage de l'ensemble des prestations n'a pas été suffisant pour empêcher les transferts de devenir moins redistributifs.

Codes JEL : D31, H23, H53, I38.

Mots clés : inégalités de revenu, redistribution, taxes, transferts, progressivité.

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INCOME REDISTRIBUTION THROUGH TAXES AND TRANSFERS ACROSS OECD COUNTRIES

By Orsetta Causa and Mikkel Hermansen[1]

1. Introduction and main findings

1. Over the past decades, household incomes have become more unequally distributed in most OECD countries.[2] Rising income inequality has not only been driven by soaring top income shares, but also in number of cases by a tendency for lower incomes to fall increasingly behind relative to the rest of the population (OECD, 2015a). While the extent, timing and characteristics of rising inequalities vary across OECD countries, one common feature is rising wage dispersion and in a number of countries increasing job polarisation. These forces are unlikely to disappear considering the pace of technological change and the (still uncertain) impact of digitalisation. This challenges governments' fiscal redistribution through tax and transfer systems, all the more in a context where new forms of work are calling into question the effectiveness of traditional social safety nets and population ageing is putting pressure on the redistributive capacity of governments' budgets. Yet, the tax and transfer system is a fundamental pillar of an inclusive growth policy agenda that aims at sharing the benefits of growth more equally and securing decent living standards for those in most need.

2. In order to deliver evidence-based policy recommendations in this area, there is a need to first document and take stock of the extent to which tax and transfer systems mitigate market income inequality among the working-age population today, and how this has changed over the last decades. This is the objective of this paper.

3. Income redistribution is clearly not the only objective of tax and transfer systems and fiscal policy in general: supporting growth by providing incentives to *e.g.* education, innovation and risk-taking, for instance through the provision of education and public investment as well as ensuring macroeconomic stabilisation are also primary objectives of fiscal instruments. Such multiple objectives need not be conflicting as redistributive taxes and transfers are a prerequisite for automatic stabilisers to effectively work out over the economic cycle, while tax-financed public education may be viewed as a form of "active" redistribution since it is likely to reduce income inequality before taxes and transfers. Policy makers have been recently encouraged, including by the OECD, to use fiscal levers selectively to revive growth and make it more inclusive, especially in a context of low interest rates (OECD, Chapter 2, 2016b).[3] More broadly, evidence-based policy analysis is needed to better help countries to design their tax and transfer systems so as to conciliate equity and efficiency objectives, taking into account country-specific context and social preferences.

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2. OECD (2016a; 2015a; 2011).

3. See also Furman (2016).

4. The redistributive effect of taxes and transfers is quantified by comparing household income inequality before and after taxes and transfers, with inequality being measured by the Gini coefficient. This is done on the basis of micro data which allows for gauging the inequality-reduction achieved by cash transfers, personal income taxes and employee's social security contributions. Data limitations do not allow for adopting a lifecycle perspective, which is why the analysis is centred on interpersonal redistribution among the working-age population. This allows for largely excluding retired households relying on pension transfers.

5. By comparing observed household income data and income inequality before and after taxes and transfers, the assessment captures the combined impact of: i) discretionary policy changes; ii) changes induced by structural forces such as demography and household composition as well as globalisation, technology and the nature of work: for example, under unchanged policy rules, globalisation may imply increasing tax incidence on less mobile factors such as labour relative to capital which is likely to affect the inequality-reducing effect of personal income taxes and; iii) changes in economic conditions, in particular in the extent of unemployment. In this respect, it should be made clear that the assessment delivered in this paper is not about the cost-effectiveness of income redistribution through taxes and transfers, as the latter would require disentangling discretionary policy changes from cyclical effects in fiscal deployment. That said, the paper does shed some light on this issue. It does so not only by providing a broad overview of macro-based changes in levels and composition of social spending and tax revenues, but more importantly by using detailed micro-based analysis to decompose changes in redistribution into changes in average tax and transfer rates ("size" of taxes and transfers) versus changes in progressivity of taxes and targeting of transfers.

6. The paper builds on previous OECD analysis of international trends in the redistributive effect of taxes and transfers.[4] In particular, this paper builds on Immervoll and Richardson (2011), which is updated and extended across various dimensions: i) by covering a larger sample of OECD countries and a longer period of time, including the crisis and recovery period, ii) by exploring in more depth the respective roles of size, tax progressivity and transfer targeting, iii) by decomposing transfer redistribution across various categories of transfers (i.e. insurance, universal and assistance transfers); and iv) by assessing redistribution and inequality reduction for various income groups.

7. The paper delivers the following main findings:

- Cash transfers, personal income taxes and social security contributions mitigate slightly more than one quarter of market income inequality among the working-age population, on average across the OECD. Yet this average figure masks a great deal of heterogeneity even among advanced economies: from around 40 per cent of market income inequality reduction in Ireland to around 5 per cent in Chile.

- In all OECD countries, cash transfers account for the largest proportion of redistribution. Personal income taxes play a relatively large role in reducing income inequality in countries that achieve comparatively little redistribution overall like Japan, Korea, Israel and the United States. Social security contributions have a weak yet non-negligible disequalising effect in a number of countries.

4. See also OECD (2015a; 2008), Joumard et al. (2012), Fournier and Johannsen (2016). Ongoing projects in this area include work within CTPA (see Brys et al., 2016) and, within ECO, complementary to the current project, work by the Public Economics workstream on the effects of the tax mix on growth and inequality (Akgun et al., 2017, ECO/CPE/WP1(2017)20).

- The redistributive effect of transfers is strongly associated with their size and less so with their targeting. Insurance transfers play the largest role in reducing overall inequality because of their large size. Assistance transfers are usually targeted and smaller in size by design, so that their impact on overall inequality is limited in most countries. Still, such transfers can play a key role in ensuring income adequacy and securing minimum living standards among vulnerable groups.

- Across OECD countries over the last two decades, redistribution through taxes and transfers has gone down both on average and in the majority of countries for which data going back to the mid-1990s are available. The bulk of the decline took place from the mid-1990s to the mid-2000s. The initial phase of the 2008-09 crisis halted this declining trend, reflecting the cushioning impact of automatic stabilisers and fiscal discretionary measures to address the labour market and social crisis.

- The widespread decline in overall redistribution since the mid-1990s has been primarily associated with a decline in cash transfers redistribution while personal income taxes played a less important and more heterogeneous role across countries. However, extending the transfer coverage to include in-kind transfers may imply a lesser decline in redistribution insofar as part of the rise in public spending on in-kind support, foremost on healthcare, has accrued to working-age households.

- The decline in the redistributive effect of cash transfers results from a decline in their size and in particular by less redistributive insurance transfers. In some countries, this was mitigated by more redistributive assistance transfers but the resulting increase in the targeting of total transfers was not sufficient to prevent transfer redistribution from declining.

- Declines in the redistributive effect of personal income taxes have also been driven by declines in their size; however this was partly compensated by an increase in their progressivity. The latter was brought about by an increase in progressivity at the bottom end of the distribution while progressivity at the upper end tended to decline slightly.

- Income support provided by social transfers to workless households in the bottom 40% has declined substantially, largely driven by declining insurance transfers and only partially mitigated by increasing assistance transfers in a number of countries.

- By contrast with workless households, income support provided by taxes and transfers to working households (i.e. households with at least one member in work) in the bottom 40% has tended to increase, largely driven by declines in income taxes and social security contributions which only partly mitigated widespread declines in market incomes and in social transfers.

- The analysis in this paper does not try to formally disentangle between policy and non-policy drivers of such declines in redistribution, but the detailed review of trends does point to a number of non-mutually exclusive potential explanations, involving both policy and non-policy drivers, along with their interaction: i) policy reforms to boost work incentives among target groups and to shift from passive to active support for the unemployed, for instance implying a tightening of unemployment and disability transfers, ii) changes in the nature of work associated with rising non-standard and precarious work resulting in declining coverage of traditional social insurance and iii) changes in the age composition of the working-age population and in particular rising employment rates among seniors, implying a decline in the reliance on early retirement or other transfer schemes available before age 65.

8. The rest of this paper is structured as follows. Section 2 delivers a broad overview of the size of the redistribution system from a macro perspective, that is, from government tax and spending data. Section 3 introduces and elaborates on the empirical approach used in this paper to define and measure redistribution through taxes and transfers, building on micro-based household data. Based on this analytical framework, Section 4 assesses levels and trends in redistribution in the tax and transfer system as a whole. Section 5 decomposes overall redistribution to identify the role of taxes relative to transfers, and, in turn, the role of "size" (i.e. defined based on micro data as the pre-transfer/pre-tax income share of transfer/tax, averaged across all households) relative to progressivity of taxes/ targeting of transfers. Section 6 focuses on less well-off households by assessing redistribution trends based on changes in the level and composition of cash transfers for various socioeconomic groups within "the bottom 40%". Section 7 wraps up and concludes with some policy implications.

2. The broad picture: the size of the redistribution system from a macro perspective

9. Tracking aggregate tax revenues and public social expenditures is a useful macro-based entry point to assess the size of the redistribution system even though it obviously needs to be complemented with the more detailed distributional analysis presented in the core sections of this paper. This section delivers a broad indication of the levels and changes in the overall size and composition of resources reallocated to households as a whole via the tax and transfer system. One advantage of such macro-series is that they cover all elements of the system, including in-kind transfers (e.g. healthcare and childcare services) and consumption taxes which are generally not available in micro-based household income series (see Section 3).

10. In theory, all forms of public spending may influence households' material living standards, whether directly or indirectly, and can thus be considered as part of the redistribution system.[5] In practice, empirical applications focus on public spending with a distinct social purpose and exclude elements such as public investment and general public services. Based on the OECD Social Expenditure Database, public social spending on the working-age population is measured by total social spending less spending for old-age and survivors.[6] This includes health spending which largely accrues to the elderly but, at the same time, excludes most spending on education which partly accrues to the working-age population. Based on this proxy metric, OECD countries on average allocate 12% of GDP to public social spending for the working-age population (Figure 1, Panel A), varying from around 5% in Turkey to 19% in Denmark.[7] On average, only around one third of this is received by households in the form of cash benefits (e.g. unemployment benefits and assistance, sickness and disability pensions, maternity and other leave schemes). The remaining two thirds influence households' incomes indirectly by lowering the need to fund

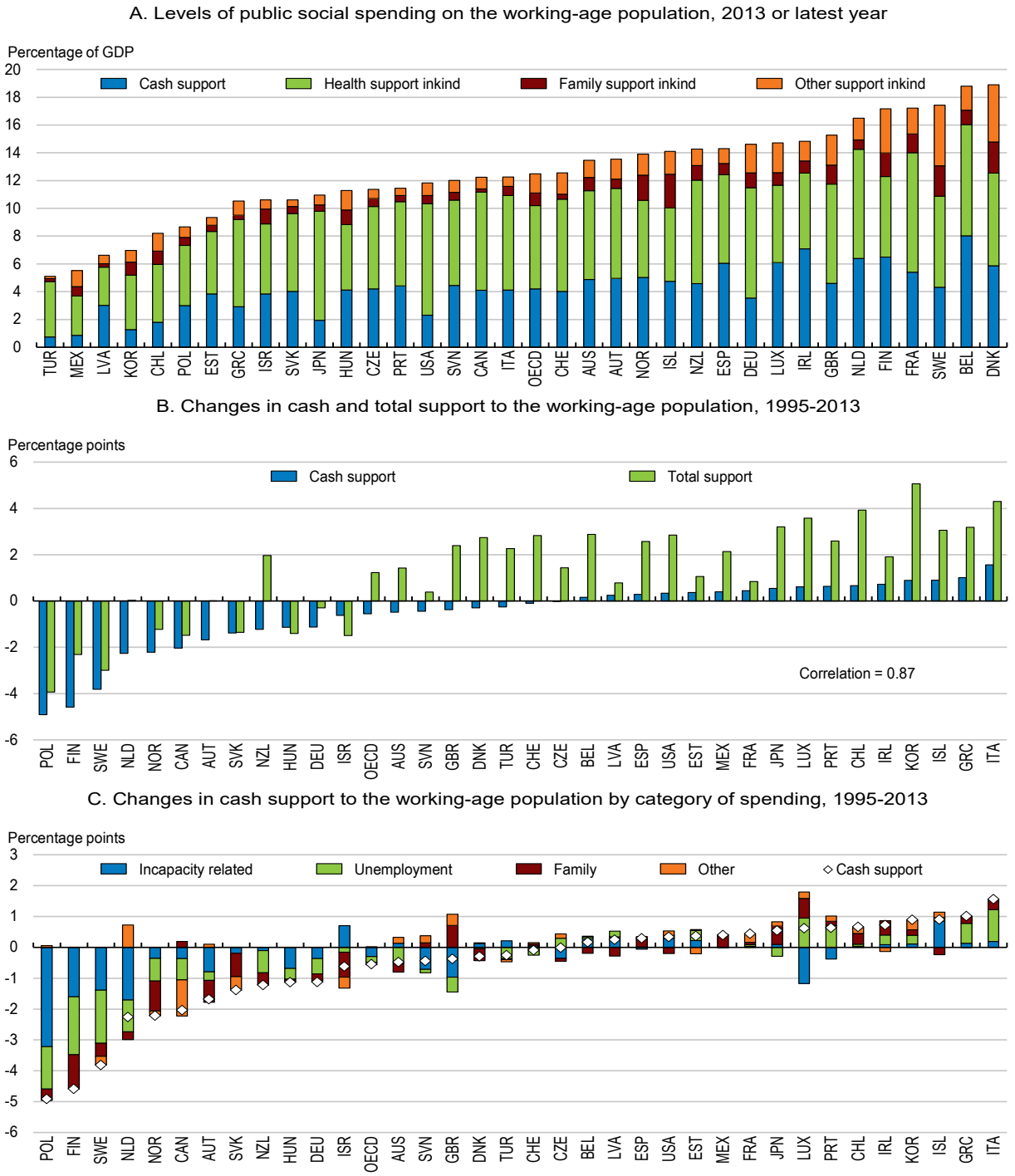
5. See Johansson and Fournier (2016).

6. A detailed breakdown of public social spending by age is not available. Old-age and survivors spending amount to 8.7% of GDP on average across OECD countries and parts of it accrue to individuals below age 65. See http://www.oecd.org/social/expenditure.htm.

7. The reported series are gross public spending levels. Accounting for differences in taxation of e.g. cash transfers and the prevalence of (voluntary and mandatory) private social spending reduce cross-country differences (OECD, 2016c). For instance, public social spending on the total population declines by more than 5 percentage points in Austria, Denmark, Finland and Sweden when accounting for taxation of transfers, but has little impact on spending levels in Australia, Korea and Mexico. Gross public social expenditures are reported since net measures are not available by category of spending. Private social expenditure mostly refers to pensions, which also has an element of redistribution through the pooling of contributions and risk sharing in terms of health and longevity. For the purpose of this paper, focusing on redistribution among the working-age population, private social expenditure is unlikely to play a significant role for redistribution.

from their own pocket expenditures, hence by increasing consumption possibilities (see Section 3 for evidence on the distributional impact of in-kind transfers).

Figure 1. Public social spending on cash support to the working-age population has tended to decline relative to in-kind support in most OECD countries



Note: In percentage of GDP. Public spending for the working-age population is defined as total public spending less public spending for old-age and survivors. Data for 1995 refer to 1996 for Slovenia; 1997 for Latvia; 1999 for Estonia and Hungary. For 2013 data refer to 2011 for Mexico; 2012 for Greece and Poland; 2014 for Australia, Canada, Korea and New Zealand; 2015 for Chile and Israel.

Source: OECD Social Expenditure Database.

11. Over the last two decades, public social spending on cash support to the working-age population relative to GDP has tended to decline across OECD countries (on average from 4.7 to 4.2% of GDP), whereas in-kind spending, foremost on healthcare, has tended to increase, implying an average rise in total support from 11.3 to 12.5% of GDP. In particular, in 26 out of 35 OECD countries, total support to the working-age population increased, while at the same time cash support to the working-age population decreased in 19 out of 35 OECD countries (Figure 1, Panel B). Because a substantial part of cash support is conditional on being out of work, such aggregate measures are strongly influenced by both trends and cyclical fluctuations in the labour market. For instance, among the countries with the largest rise in cash support, are the ones that experienced a strong and prolonged rise in unemployment over the crisis period, such as Greece, Ireland, Italy and Portugal. The breakdown of the change in cash support to the working-age population confirms that most of the rise in cash support to the working-age population was indeed driven by unemployment-related transfers (Figure 1, Panel C). Likewise, Finland, Poland and Sweden experienced the largest declines in spending on cash support to the working-age population and such decline was largely driven by improving labour market performance, as these countries suffered from relatively high structural unemployment in 1995 compared to 2013. Drawing firm conclusions on the structural change in government's spending on unemployment transfers is thus not possible but latest data indicate that, on average across OECD countries, both the unemployment rate and spending on cash support to the unemployed are about the same level in 2013 as they were in 1995.

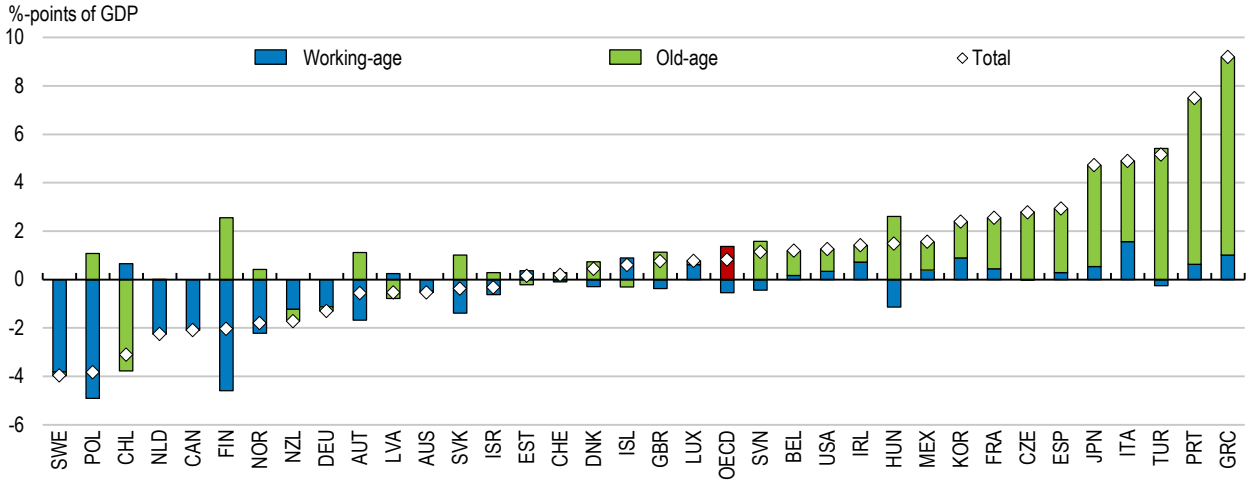
12. OECD countries experienced heterogeneous changes in the spending mix of cash support to the working-age population (Figure 1, Panel C). Incapacity-related spending (i.e. due to sickness, disability and occupational injury) declined substantially in Finland, the Netherlands, Poland and Sweden. Family-related spending (i.e. child-related cash transfers and income support during parental leave and for sole parents) declined by almost 1 percentage point of GDP in Norway, the Slovak Republic and Israel, but increased by a similar proportion in Japan, Luxembourg and the United Kingdom. Although partly affected by differences in the cyclical positions at the start and the end of the period, there seems to be a robust negative association between the initial level of cash support to the working-age population and its change from 1995 to 2013.[8] Social spending declined the most in mature economies with well-developed welfare systems like most of the Nordic countries; while it increased the most in countries starting with less well-developed welfare systems like Chile, Korea and Southern European countries.

13. Population ageing tends to constrain public resources for redistribution to the working-age population. Spending on old-age cash support, mainly on pensions, increased in the vast majority of OECD countries from 1995 to 2013 (Figure 2, Panel A), in parallel to the stagnating or declining cash support to the working-age population. As a result, the share of total cash support allocated to the old-age population has increased by more than 7 percentage points on average across OECD countries (Figure 2, Panel B). Almost all OECD countries have experienced a concomitant rise in old-age dependency ratios and in old-age shares of cash public social expenditure, yet to a different extent. This reflects cross-country differences in demography but also in the design and institutional settings of pension systems, in particular the relative weight of public as opposed to privately-funded pension systems, along with the nature and timing of reforms in this area.

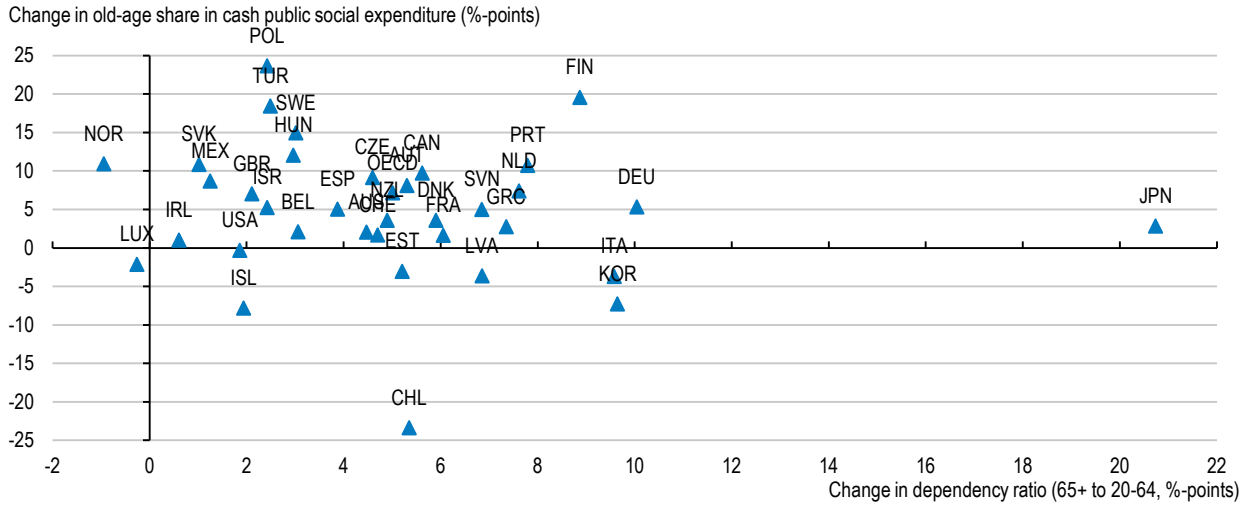
8. The simple correlation coefficient between public cash support spending in 1995 and the change from 1995 to 2013 is -0.7.

Figure 2. Ageing tends to squeeze public expenditure on working-age population

A. Change in cash public social expenditure, mid-1990s to 2013 or latest available year



B. Change in old-age dependency ratio and old-age share of cash public social expenditure, mid-1990s to 2013 or latest available year



Note: A detailed breakdown of public social spending by age is not available. The measure for the old-age population is defined as the spending categories for old-age and survivors, while the remaining is allocated to the working-age population. See note to Figure 1 for country-year coverage.

Source: OECD Social Expenditure Database; United Nations, World Population Prospects: The 2015 Revision.

14. Macroeconomic tax revenue statistics can be considered in a similar way as spending statistics to provide a complementary entry point to redistribution in terms of resource reallocation between the government and households. For the purpose of this exercise, some limitations are worth considering. The most important limitation pertains to the issue of tax incidence. Tax revenue statistics do not allow for assessing the burden of taxation which ultimately falls on households. For instance, corporate income taxes are paid by corporate entities but the cost can be borne by households in the form of lower returns to capital owners, lower compensation to workers and higher prices to consumers.[9] Likewise, payroll taxes are paid by employers but the burden is more likely to be ultimately borne by households in the form of

9. See Brys et al. (2016) for further discussion of tax incidence and the distributional impact of taxes.

lower compensation to workers and higher consumption prices. While different tax incidence assumptions would be likely to affect tax-based redistribution, any assumption would be somewhat questionable and such analysis is well beyond the scope of this paper. Therefore it is assumed, as is standard in the literature, that total taxes "paid" by households include direct taxes levied on households (personal income taxes, employees' social security contributions and property taxes) along with all taxes levied on goods and services.

15. Another limitation of macroeconomic tax revenue statistics is that they do not allow for isolating the working-age population and thus include tax revenues raised from all households, including the elderly. This could mask a decline in the tax revenue obtained from the working-age population since the elderly is becoming more numerous relative to the working-age population because of ageing in almost all OECD countries, although this should be partly accounted for by measuring revenue relative to GDP. Still, pensioners may receive a larger proportion of their income from sources subject to personal income taxation than previously as both public and private pension systems have been expanded over time or are in a process of maturing.

16. Cross-country comparisons of tax revenue statistics show that most OECD countries collect between 20 and 30 per cent of GDP from household taxation (Figure 3, Panel A), but this is achieved with a variety of tax instruments. Nordic and English-speaking countries tend to raise almost half of the revenue through personal income taxes, while social security contributions play an important role in countries such as Germany, Japan, the Netherlands and Slovenia. Together, PIT and SSC generally account for just around half of total tax revenue raised from households. Yet these are the only instruments covered in the micro database available for the type of distributional analysis produced in this paper. This is a clear limitation since the remaining half of the revenue raised, through property taxes and taxes on goods and services, is not distribution-neutral (see Section 3).

17. Total tax revenue raised from households relative to GDP has not changed substantially, on average across OECD countries from 1995 to 2015, increasing slightly from 24.1 to 24.7% of GDP (Figure 3, Panel B).[10] This was mostly driven by social security contributions and property taxes, but sizeable departures from this average prevent any crude generalisation. Personal income tax revenues, the most important component for redistribution, remained unchanged on average, but declined by more than 1 percentage point of GDP in 9 out of 35 OECD countries and increased by more than 1 percentage point in 8 out of 35 OECD countries. The revenue from taxes on goods and services as a whole remained unchanged and only changed substantially in a few countries. Yet, within this category, revenues from general taxes on goods and services, most importantly value-added taxes, tended to increase on average across OECD countries whereas revenues from specific taxes on goods and services, such as excises and taxes on exports and investment goods, tended to decline (OECD, 2016d).[11]

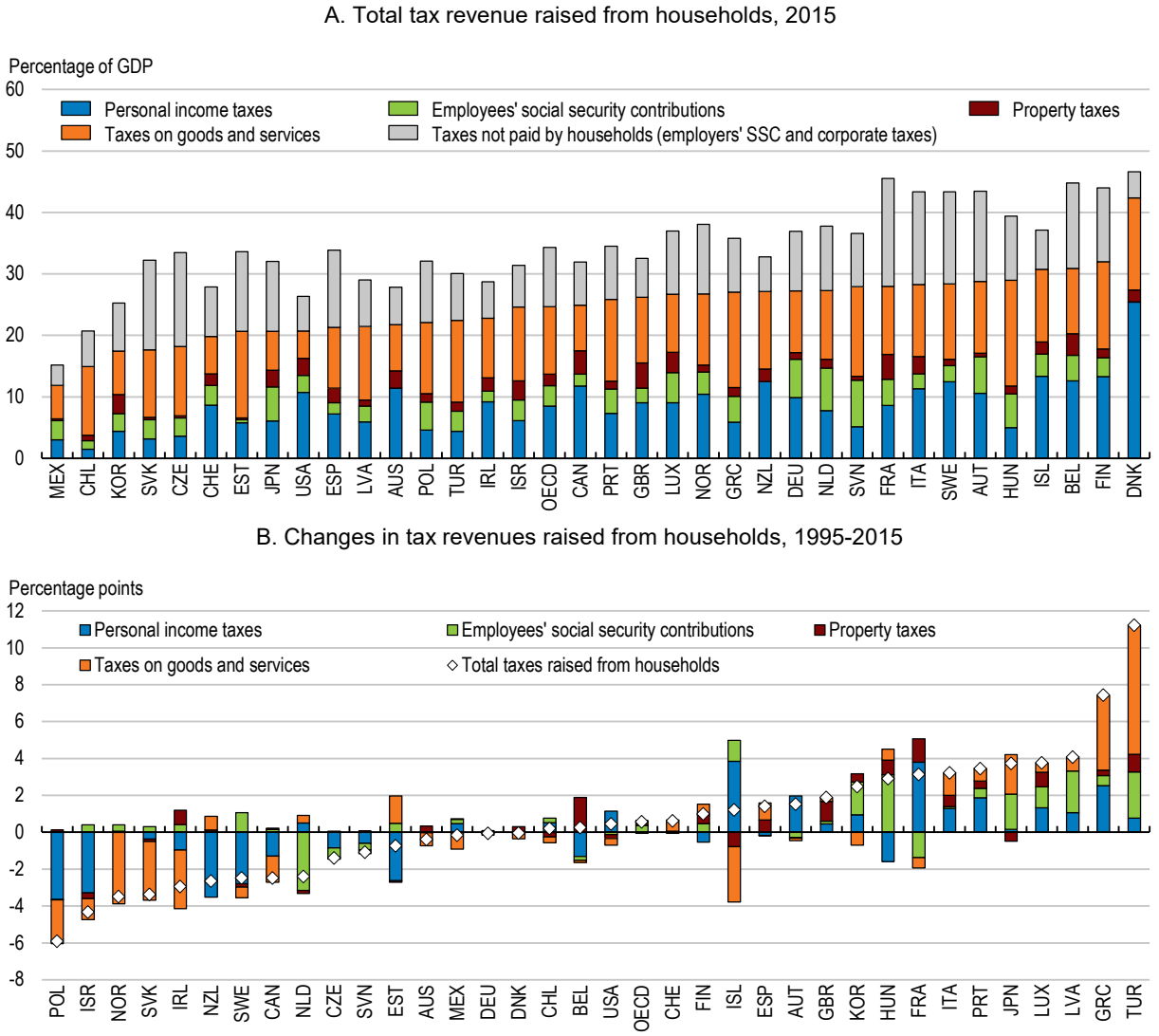
18. The big picture of aggregate tax revenues and public social expenditure points to a general pattern of unchanged or slightly increased resources collected by the government and redistributed to the household sector, with ambiguous implications for income redistribution. For instance, the most comprehensive measure of public social expenditure has increased in more than two-thirds of OECD countries, reflecting notably increases in healthcare spending (OECD, 2016c). Yet, expenditure on cash transfers to the working-age population, which is a key equalising instrument, has declined in more than half of OECD countries. A more complete assessment of trends in income redistribution requires moving from income redistribution to the household sector as whole to income redistribution within the household

10. See OECD (2016d) for an overview of recent tax revenue developments and tax reforms.

11. As in the case of public spending, changes in tax revenues over the period are likely influenced by differences in the business cycle position, but such cyclical components cannot be easily separated out.

sector, that is, between households at different points of the distribution, as is done in the following sections.

Figure 3. OECD countries exhibit great variation in the mix and trends of tax revenues raised from households



Note: In percentage of GDP. For Iceland and Mexico employees' social security contributions also include employer's part (item 2000). Data for 1995 refer to 2002 for Mexico; and data for 2015 refer to 2014 for Australia, Greece, Ireland, Japan, Mexico and Poland.

Source: OECD Tax Revenue Statistics.

3. Assessing redistribution from a micro-based household perspective

3.1. Data sources

19. The micro-based analyses of redistribution in this paper are based on two main data sources to cover as many OECD countries as possible from the mid-1990s to the latest available year:

- *OECD Income Distribution Database (IDD)*: Provides summary measures of income inequality and semi-aggregate statistics for household income components by disposable income deciles. The database covers all 35 OECD countries with 2014 as the latest available year for most countries in the version applied for this paper.[12] The country coverage is however incomplete over time; 16 countries are available from the mid-1990s and 31 countries from the mid-2000s. The IDD is used to assess the overall level and development of redistribution across OECD countries (Section 4.1), but the semi-aggregate nature of the database prevents a more detailed analysis of redistribution for which the actual micro-data are needed.

- *Luxembourg Income Study Database (LIS)*: Contains micro-based datasets at the household level with detailed information on the components of personal income taxes and cash transfers. This dataset is by far the most widely-used by experts and scholars to analyse income distribution and redistribution through taxes and transfers (e.g. Immervoll and Richardson, 2011). Comprehensive data covering both income taxes and transfers are available for 25 OECD countries, while less comprehensive data covering transfers but not income taxes are available for 5 OECD countries.[13] The latest available year is 2013 for most countries in the LIS version applied in this paper.[14] The LIS is collected in waves, generally at three-year intervals, but with much variation, especially before the mid-2000s. The development of both taxes and transfers over time can be assessed for 13 OECD countries since the mid-1990s and for 23 OECD countries since the mid-2000s. The LIS data is used to assess redistribution across different income and socioeconomic groups and to decompose the redistributive effect into that of taxes and transfers as well as the importance of size and progressivity (Section 4.2 to 6).

20. The use of two different data sources broadens the scope for analysis, but also comes with the risk of inconsistent or even conflicting results when data for the same country are available from both sources. Indeed, the IDD and LIS do differ on the direction and magnitude of the redistribution trend for some countries. The most severe cases are flagged below, taking into account that differences in micro-based household income data between alternative sources are quite common and occur for a number of analytical and technical reasons.[15]

3.2. A first look at the data: transfers received and taxes paid across the distribution

21. Computing differences between the share of cash transfers received net of personal income taxes and social security contributions paid by households at different points of the income distribution delivers a first basic assessment of income redistribution (Figure 4; Figure A1.1. for country profiles). This picture should be taken with some caution, principally due to the absence from the data of social security contributions paid by employers along with cross-country institutional differences in the design and

12. OECD Income Distribution Database, version 2016-17 of 13 July 2017.

13. In these cases (Belgium, Hungary, Mexico, Poland and the Slovak Republic) household incomes have been reported net of taxes in the household surveys, ruling out assessment of the redistributive effect of taxes.

14. Luxembourg Income Database, datasets available as of 15 March 2017.

15. For instance because of differences: i) in the household income definition, including the classification of certain taxes and transfer programmes; ii) in the standardisation procedure to achieve cross-country comparison; iii) whether historical data have been revised or not; iv) selection of working-age population based on individuals' age (IDD) or the age of the household head (LIS); and v) in the use of top and bottom coding. See Causa et al. (2016b) for a thorough review of the differences between OECD and national sources in the case of Denmark.

funding of social security systems (see Section 2).[16] This exercise shows that on average across OECD countries, while households in the bottom decile receive cash transfers worth more than half their disposable income, they also pay a relatively high share in taxes, amounting to almost 20 per cent of their disposable income. But tax payments at the bottom of the income distribution vary substantially across countries, which mostly reflect cross-country differences in the extent to which cash transfers are taxed. For instance, the first decile receives transfers net of taxes corresponding to 50 per cent of disposable incomes in both Denmark and Germany, but in Denmark transfers amount to 75 per cent and taxes 25 per cent of disposable incomes while the corresponding shares are 60 per cent and 10 per cent in Germany.

Figure 4. Transfers are an important source of income support among low-income households

Transfers received and personal income taxes paid across deciles, OECD average
Working-age population, 2014 or latest available year

Note: Based on average equivalised household disposable income components by decile. The working-age population include individuals aged 18-65. The average is computed across 32 OECD countries, excluding Hungary, Mexico and Turkey for which information on personal income taxes are not available.
Source: OECD Income Distribution Database.

22. Although not a formal measure of redistribution (see below), the steepness of the slope of net transfers in Figure 4 provides a rough indication of the extent of income redistribution, which broadly reflects the degree of progressivity of personal income taxes and of targeting of cash transfers.[17] In some countries such as Belgium, Denmark and Ireland, this is strongly downward-sloping, suggesting relatively effective redistribution compared to others like Chile, Korea and Switzerland, where this slope is almost flat. Focusing on bottom 40% households, the slope of net transfers is basically flat in Italy and even upward-sloping in Greece, suggesting low progressivity of personal income taxes, and, even more so, poor targeting of cash transfers.

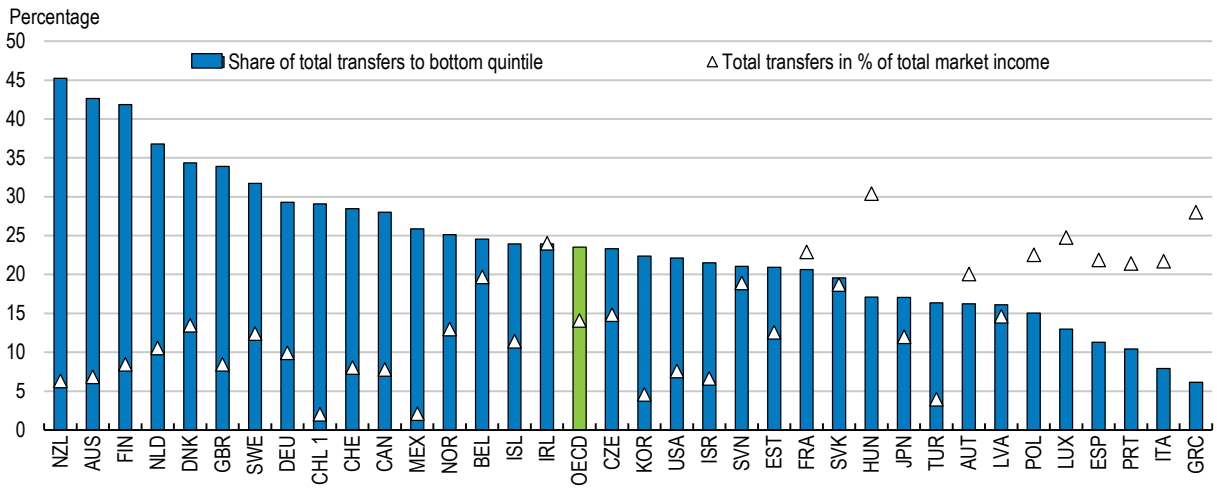
16. For instance, in Spain all households in the first to seventh decile are net transfer recipients. This is likely to reflect the fact that employers' social security contributions are large and finance a sizeable share of cash transfers. By contrast, in Switzerland households in all deciles are net contributors, a likely result of sizeable compulsory pension contributions recorded as employees' contributions and occupational pensions not recorded as transfers (insofar as part of the latter can accrue to individuals in the working-age population).

17. Note that this simple comparison ignores differences in income inequality between countries in the first place, i.e. variation in the denominator, average household disposable incomes, across deciles.

23. Tracking the share of total transfers going to bottom quintile households provides an intuitive metric of the degree of transfer targeting (before turning to a more formal treatment in Section 5). Figure 5 shows that some countries feature highly targeted transfer systems: in Australia, Finland and New Zealand, more than 40 per cent of total spending on cash transfers accrues to the bottom quintile. At the same time, total transfers only represent around 7 per cent of total market income, significantly below the OECD average. At the other side of the spectrum, in Greece, Italy, Portugal and Spain, 10 per cent of total transfers or less accrues to bottom quintile households, half of what they would receive had transfers been equally distributed among all households. Then again, total transfers represent more than 20 per cent of total market income, well above the OECD average. This suggests that transfers are poorly targeted in those countries.[18] Section 5 will address more formally the issue of size versus targeting in tax and transfer design. But at this stage it is important to acknowledge that cross-country differences in the size and targeting of transfers also reflect differences in the relative reliance on transfer programmes that differ over their fundamental objectives; and, reflecting this, accrue differentially to low-income households, as tentatively illustrated below.

Figure 5. Targeting of cash transfers to low-income households differs across OECD countries

Working-age population, 2014 or latest available year



1. Armed forces pension and older pension system not included. Data specially provided by Chilean statistical sources.

Note: Data refer to 2012 for Japan; 2015 for Chile, Finland, Israel, Korea, the Netherlands, the United Kingdom and the United States; and 2014 for the rest.

Source: OECD Income Distribution Database.

24. Social transfer systems are designed to achieve several objectives. One major objective at the very core of this paper is income redistribution towards those individuals or households that are poorer at a given point in time, which typically materialises through targeted social transfers. Another objective is to redistribute across the lifecycle. This is achieved by i) providing income maintenance or insurance in the face of adverse risks (unemployment, disability, sickness), which typically materialises through employment-related insurance transfers; ii) providing income support in periods when individuals have greater needs (for example, when there are children in the household) or would otherwise have lower

18. The high share of transfers in market income is also the reflection of the still high unemployment rates, which increases the size of the transfer system, all else equal.

incomes (such as in retirement, see Box 2 below), which typically materialises through pension transfers.[19] Social transfers are also often designed to spur incentives, e.g. to invest in various forms of capital and move up the income ladder. This latter objective is likely to also impact income inequality, but primarily market income inequality, that is, inequality before taxes and transfers.

25. In practice, social protection systems in all OECD countries involve a mix of redistribution between rich and poor and risk insurance or lifecycle redistribution, but the balance between these various motives differs between countries. In turn, the extent to which social support accrues to low-income households depends primarily on the prevailing mix of insurance-type and assistance-type transfers. As a way to tentatively shed light on the balance between these two types of redistribution, Figure 6 presents the overall composition of cash transfers and that of income taxes relative to social security contributions across deciles of the household income distribution, while country-profiles are available in Annex A1 (Figure A1.2):[20]

- Assistance transfers (i.e. social, unemployment, family and education assistance, often subject to income or assets tests), are most directly targeted to low-income households and are therefore major instruments of income redistribution to poorer households insofar as they secure minimum living standards.[21] Indeed, on average across OECD countries, they represent around 24 per cent of disposable income at the bottom, being negligible in the upper-half and broadly absent at the top of the distribution.

- Insurance transfers (i.e. unemployment insurance, sickness, maternity leave, work-injury benefits) are by definition best suited to provide income support in the face of adverse events. In contrast to assistance transfers, the share of work-related insurance transfers in disposable income declines mildly across the distribution, from 14 per cent in the bottom decile, to 11 per cent in the fifth decile and 5 per cent in the top decile.

- Universal transfers (i.e. disability, family, education-related transfers covering the whole population or part of the population on the basis of criteria other than income or previous employment) contribute most to the objective of redistribution across the lifecycle. Since their eligibility is based on conditions other than income, they accrue to all income groups but their share in disposable income declines sharply across the income distribution, being 1 per cent at the top and 17 per cent at the bottom.

26. The relative reliance on insurance, universal, or assistance-transfers varies substantially across countries. To a good extent, this reflects different emphasis put on the respective redistribution objectives as well as different funding mechanisms historically embedded in different welfare state models. Southern European countries rely disproportionately on insurance-based transfers and, to a much lesser-extent, on last-tier assistance transfers, while universal transfers are broadly inexistent. By contrast, universal

19. Hoynes and Luttmer (2011) estimate the value individuals derive from the US state tax and transfer program and decompose it into a redistributive (predictable changes in income) and an insurance (unexpected shocks to income) value. They show that the redistributive value declines sharply with income, while the insurance value is positive across the income distribution and increases with income. The total value of the state tax and transfer program is found to be positive for three quarters of the population and to decline much less sharply with income than the redistributive value. They interpret the insurance value as an important element to ensure support for the system, even though households may not currently benefit from it.

20. Work-related, universal and assistance pension transfers are also included in the respective categories to the extent that there are recipients among the working-age population receive any.

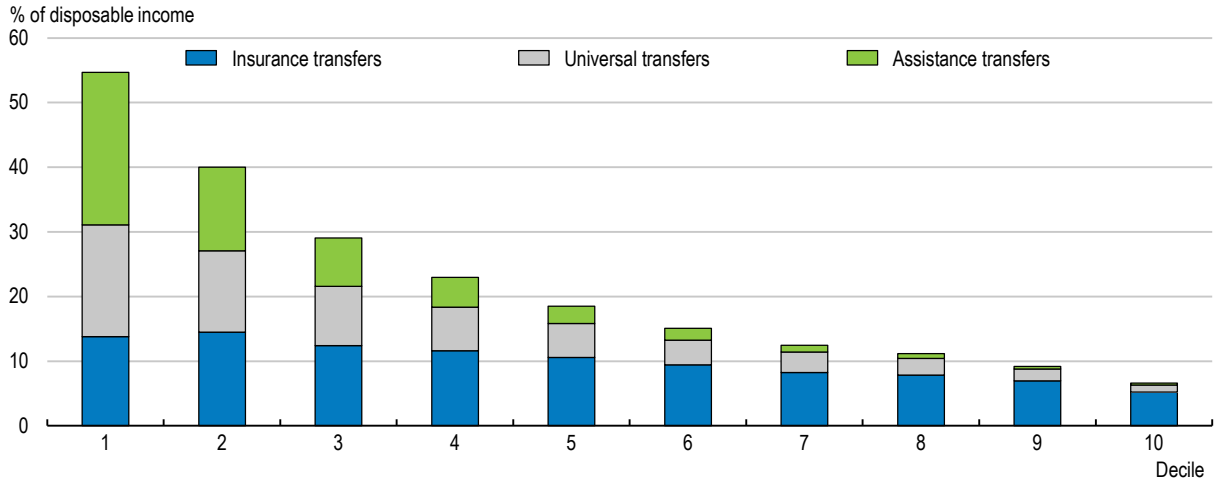
21. See e.g. OECD (2014a).

transfers are an important instrument of redistribution in high-spending Nordic countries, but also, though to a lesser extent, in some Continental and Eastern European countries. Assistance transfers are an important social safety net for low-income households in virtually all OECD countries irrespective of spending levels; but English-speaking countries, especially the United States, rely relatively disproportionately on such transfers, being highly-concentrated and associated with relatively low spending levels (Section 2).

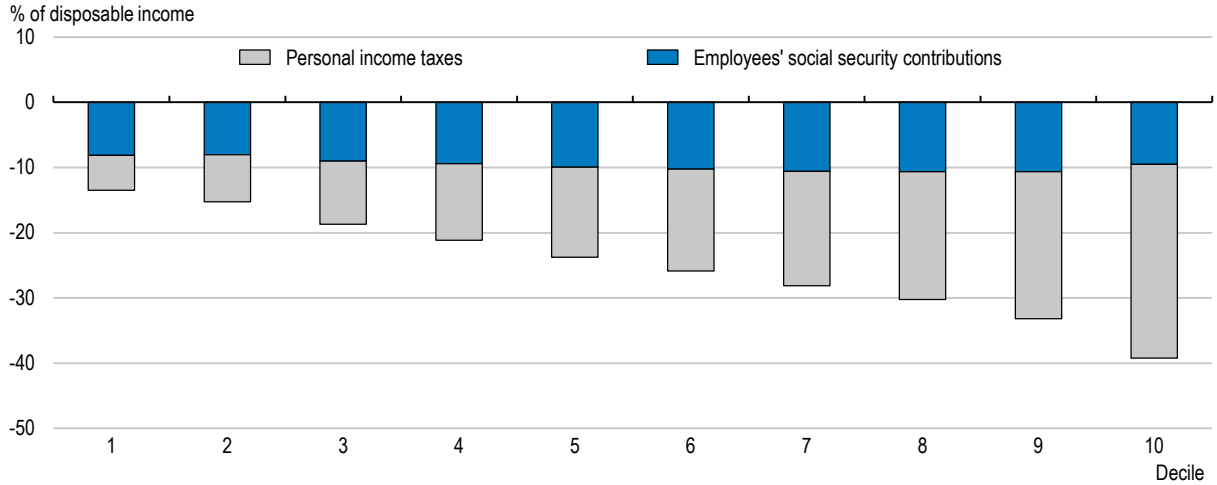
Figure 6. The distributional incidence varies greatly across transfer types, personal income taxes and social security contributions

Working-age population, 2013 or latest available year

A. Average composition of transfers by decile, average across 22 OECD countries



B. Average composition of personal income taxes and social security contributions, average across 14 OECD countries



Note: Transfers are classified according to the LIS database. Countries included in Panel A: Australia, Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Luxembourg, Mexico, the Netherlands, Poland, Slovak Republic, Spain, Switzerland, United Kingdom and the United States. Countries included in Panel B: Canada, Czech Republic, Finland, Germany, Ireland, Israel, Japan, Korea, Sweden, Switzerland, United Kingdom and the United States.

Source: OECD staff calculations based on Luxembourg Income Study.

27. On the tax side, the share of personal income taxes in disposable incomes varies from 5 per cent at the bottom to 30 per cent at the top, on average across OECD countries (Figure 6, Panel B); which reflects the progressivity embedded in personal income tax systems.[22] However, compared to transfers, tax payments vary much less across income groups: the share of personal income taxes in disposable incomes is around 20-30 percentage points higher at the top relative to the bottom in most countries, slightly higher in Ireland and Germany and lower in Czech Republic, Japan, Korea and Switzerland. This is consistent with the fact that most redistribution is achieved by transfers and that the redistributive effect of taxes varies much less across countries relative to that of transfers (see Section 5).

28. Social security contributions directly paid by employees tend to be paid proportionally to earnings but are often capped at an upper bound. It is therefore not surprising to observe little variation in the share of SSC in disposable incomes across deciles (Figure 6, Panel B). As a result, these schemes have little redistributive effect and are in some cases regressive. The relative weight of employees' SSC varies substantially across OECD countries, again partly reflecting different redistribution motives and funding mechanisms: SSC paid by employees represent close to, or more than half of total PIT and SSC payments in Germany, Japan, Korea and Switzerland, while Australia and Denmark do not rely on social security contributions because insurance-related transfers are paid out of general tax revenues.[23]

3.3 Missing pieces: the distributional incidence of social transfers in-kind and consumption taxes

29. Households receive not only cash but also in-kind social transfers, that is, public services provided for free or at reduced rates by central or local governments, in particular in the area of education and health; so called social transfers in-kind (STiK). Micro-based data sources such as the ones used in this paper and presented in Section 3.2 do not include an imputation of the income value of such in-kind transfers for each household across the distribution. By contrast, macro-based data sources include social spending on in-kind transfers based on the national accounts, but the value of these transfers is given for households as a whole, as presented in Section 2. Past OECD work has provided key early insights on the distributional impact of in-kind transfers, as summarised in OECD (2011). Ongoing experimental work is being undertaken at the OECD, in collaboration with National Statistical offices, to construct Distributional National Accounts, that is, to bridge micro- and macro-based household income data and uncover distributional aspects in the most high-quality and harmonised System of National Accounts. This work allows for a first tentative assessment of the distributional effects of in-kind social transfers, which is presented here based on the methodology summarised in Box 1.[24]

Box 1. Compiling distributional estimates of social transfers in-kind within the System of National Accounts

Social transfers in-kind are goods and services that are provided to households by government and non-profit institutions either free of charge or at subsidised rates. Health care and education are the most well-known examples of social transfers in-kind, but the latter also cover housing, child care and elderly care. Whereas information on these transfers is available from the system of national accounts at an aggregate level (i.e. for the household sector as a whole), these transfers are usually not covered in household survey data and as a consequence not included in related distributional analyses. However, as transfers in-kind can be regarded as a direct alternative to providing households with cash transfers to purchase associated goods and services themselves, their inclusion in income distribution

22. PIT and SSC are presented as a share of disposable incomes for consistency with the illustration of transfers. One caveat is that this tends to overestimate the degree of progressivity since tax payments are subtracted in the denominator. See Immervoll and Richardson (2011) for an alternative presentation expressing taxes and transfers as a share of market incomes.

23. The LIS data only provides the total amount of PIT and SSC paid for some countries and some years.

24. See also Piketty et al. (2016) for a related project, but focusing on long-run historical series for the United States.

analysis would lead to a more comprehensive assessment of income inequality and of the impact of redistribution policies.

In 2011 the OECD and Eurostat launched a joint Expert Group on Disparities in National Accounts (EG DNA) – followed up by an OECD Expert Group in 2014 – to develop a methodology for the compilation of distributional measures of household income, consumption and saving within the framework of national accounts, which includes social transfers in-kind. In the compilation process, national accounts data are taken as a starting point, while micro information from surveys and administrative data are used for breaking down the information into income quintiles and other socio-demographic groups. For items for which no direct micro data are available, such as social transfers in-kind, imputations are applied on the basis of auxiliary information to arrive at the appropriate breakdowns. So far, the Expert Group has engaged in two exercises (in 2012 and 2015) and first countries have started to publish distributional results according to the developed methodology. More information on the work of the Expert Group can be found in Zwijnenburg et al. (2017).

The methodology used by the Expert Group to distribute social transfers in-kind across household groups relies on two alternative approaches. The first approach is based on actual use (or consumption) of in-kind transfers by different household groups. It allocates the value of the goods and services to the household groups that directly benefit from them. Whereas this approach may be appropriate for the allocation of education or housing services, it is often considered less appropriate for the allocation of health care services, as this would imply that people who receive such services are better off than healthy people with the same disposable income. The second approach is based on the insurance value and often used for the allocation of in-kind health care services. According to this approach, the amounts are allocated to households across the distribution by deriving an equivalent of the insurance premium that they would have had to pay on the market (usually estimated on the basis of socio-demographic characteristics). In this latter approach, every individual is assumed to receive a public benefit determined by the average public spending of his/her group, irrespective of whether or not they have actually used these services.

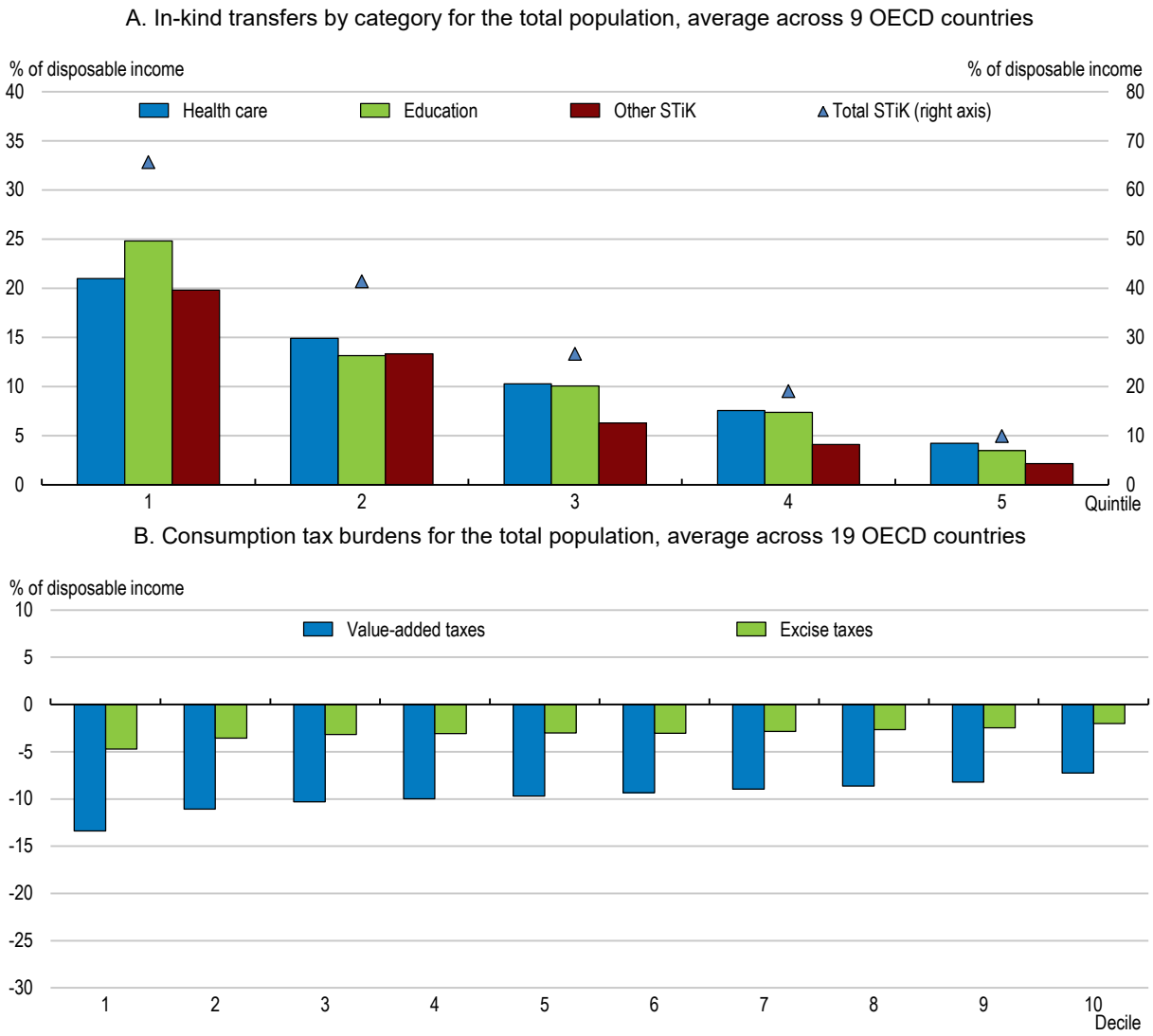
30. While still experimental, distributional national account estimates suggest that social transfers in kind are sizeable. Taking such transfers into account would raise total household income by 22 per cent, on average across the 9 OECD countries included in the analysis. The primary purpose of in-kind transfers is not income redistribution from most to least affluent households, but rather to ensure access to good education, healthcare and decent living standards for all. Indeed, the allocation of in-kind transfers across income deciles is relatively even and the targeting to low-income households is thus generally lower than that of cash transfers. That said, the substantive size of in-kind transfers and their declining share, and hence progressive incidence, across the income distribution implies a strong equalising effect (Figure 7, Panel A). Adjusting disposable income for health (education)-related in-kind transfers would boost incomes from around 21 (25) per cent in the bottom quintile to around 4 (3.5) per cent in the top. This analysis implies that the social transfers in-kind may be no less important than cash transfers for reducing inequality in material living standards.[25] These findings confirm and extend past OECD work in this area (OECD, 2011, Chapter 8). Still, estimating the value of in-kind transfers received by households across the income distribution is a very difficult task and the results presented here are still experimental. Further work is needed in this area, which would then allow for uncovering changes over time in the distributional incidence of in-kind transfers.

31. The tax side, like the transfer side, has missing pieces in the micro-based data sources: households pay not only personal income taxes and social security contributions, but also other taxes, in particular on consumption and property. Micro-based data sources such as the ones used in this paper and

25. Note that the reported shares of in-kind transfers cover the whole population; whereas the shares for cash transfers reported in Section 3.2 refer to the working-age population only. While healthcare services are likely to accrue disproportionately to elderly, the opposite holds for education services, meaning that the share of in-kind transfers among working-age households may be either lower or higher. OECD (2011, Chapter 8) found in-kind transfers to represent a higher share of disposable incomes than cash transfers among the whole population for most OECD countries. See also Verbist and Matsaganis (2013).

presented in Section 3.2 do not consistently cover property taxes and they do not cover the income value of consumption taxes paid by households across the distribution.

Figure 7. In-kind transfers are generally progressive, while consumption taxes are generally regressive on an income-basis



Note: In-kind transfers and consumption taxes are measured in percentage of household disposable income, defined in the usual way, i.e. not including STiK and not deducting consumption taxes. Panel A is based on 9 OECD countries (Australia, Austria, France, Israel, Mexico, the Netherlands, Slovenia, Sweden and the United States). See Box 1 for details on data and methodology. Panel B is based on micro-simulations across 19 OECD countries (Austria, Belgium, Chile, Czech Republic, Estonia, Germany, Greece, Hungary, Ireland, Korea, Luxembourg, the Netherlands, New Zealand, Poland, Slovak Republic, Slovenia, Spain, Turkey and the United Kingdom). Excise taxes cover alcohol, tobacco and transport fuels. See OECD/Korea Institute of Public Finance (2014) for details on the methodology.

Source: Zwijnenburg et al. (2017); OECD/Korea Institute of Public Finance (2014).

32. Consumption taxes are in the majority of cases the most important component missing from micro-based household income data. For instance, they account for around a third of total tax revenues raised from households, on average across the OECD. The share is more than half in Eastern European countries as well as in Chile and Turkey. Yet such taxes are likely to work in the opposite distributional direction of missing in-kind transfers, that is, they are likely to weaken the redistributive effect of taxes and

transfers. This is because consumption taxes represent a larger share of disposable income for low relative to high-income households since saving rates tend to increase with income. A similar argument can be made on environmental taxes, which are typically found to be regressive as e.g. fuel expenses make up a bigger share of consumption at the bottom of the income distribution (Akgun et al., 2017, ECO/CPE/WP1(2017)19).

33. One recent OECD study has attempted to quantify the distributional impact of value-added and excise taxes.[26] According to this study, the burden of value-added taxes declines as income rises, from 13 per cent of disposable incomes for the bottom decile to 7 per cent for the top decile, on average across 19 OECD countries (Figure 7, Panel B). For excise taxes, the burden is smaller and is estimated to vary from 5 to 2 per cent of disposable income across the distribution. Overall, across the countries included in the analysis, the distributional profile of consumption taxes is found to vary little: it is slightly more regressive in Chile, Estonia, Hungary, Ireland and Turkey; and less regressive in Czech Republic and Germany. Compared to the transfer side, the distributional impact of consumption taxes is thus smaller. And when considered over the lifetime the effect is close to neutral. The reason is that lifetime consumption relative to lifetime income varies much less across households than for a single cross-sectional year.

34. On balance therefore, the redistributive effects of taxes and transfers presented in this paper is likely to be underestimated for most OECD countries due to the absence of equalising in-kind transfers from micro-based sources, which is likely to more than offset the concomitant absence of disequalising consumption taxes. This assessment cannot be explicitly and consistently tested with the data at hand and should therefore be taken with care: the distributional effects of in-kind transfers relative to consumption taxes is likely to vary between countries depending on the specific design of each instrument, and on structural features such as the socio-demographic composition of households across the distribution.

3.4 Defining and measuring redistribution

35. This paper relies on the Reynolds-Smolensky (1977) approach to quantify income redistribution achieved by taxes and transfers, following common practice in the literature.[27] "Redistribution" is meant as a reduction in household income inequality, i.e. taxes and transfers are said to "redistribute" if they reduce income inequality regardless of the extent to which this is achieved by actually transferring resources from higher-income households to lower-income households. Table 1 illustrates the underlying (linear and static) accounting framework: the left column presents the household income concepts and their components applied at the household level data, while the second and third columns contain the corresponding inequality measures allowing for deriving an aggregate redistribution measure at the country level. Income inequality is quantified by the Gini coefficient, implying that the redistributive effect of taxes and transfers is defined as the difference between the Gini coefficient of household market incomes and the Gini coefficient of household disposable incomes. Unless otherwise stated in the paper, this is measured in relative terms, that is, in per cent of the market income Gini coefficient. This normalisation allows for taking into account cross-country differences in the initial level of market income inequality. The respective redistributive effect of the various instruments of the tax and transfer system, e.g. cash transfers and personal income taxes, is assessed analogously based on the same accounting framework (see Box 4).

26. See OECD/KIPF (2014). Excise taxes refer to alcohol, tobacco and transport fuels.

27. See e.g. Immervoll et al. (2006); Immervoll and Richardson (2011). The voluminous political science literature on redistribution does not usually rely on this approach but on aggregate social spending and welfare measures.

Table 1. The income inequality and redistribution accounting framework

Household income components	Income inequality and redistributive effect	
	Description	**Definition**
Gross wages and salaries + self-employment income + capital and property income + occupational and private pension benefits + other cash income **= Household market income**	Income inequality before taxes and transfers	G^m
+ Cash transfers received from public social security – Personal income taxes and employees' social security contributions	**Redistributive effect of taxes and transfers**	$R^{\text{absolute}} = G^m - G^d$ $R^{\text{relative}} = \frac{G^m - G^d}{G^m}$
= Household disposable income	Income inequality after transfers and taxes	G^d

36. This approach provides a simple and flexible method for assessing income redistribution and has been widely used in the literature. However, it also comes with limitations, most of which are data-driven. First of all it is static, focusing on inequality and redistribution at a given point in time and among individuals at different stages in life, as is common in comparative studies on inequality. Yet, as mentioned above, the main objective of some categories of transfers is to redistribute inter-temporally, that is, throughout individuals' lifecycle (Box 2) such as old-age pension transfers. This paper focuses on interpersonal redistribution; hence it leaves aside the lifecycle perspective and the issue of pension systems.[28] In practice then, the analysis only covers individuals in the working-age population (defined as 18-64 years old), hence largely excluding retired individuals. This avoids some major problems inherent in comparing incomes between people who are at very different stages of their lives.[29] This also improves cross-country comparison of redistribution since differences in the institutional settings governing the funding of pension systems, depending on the recording of income flows in capitalisation compared to pay-as-you-go systems, risk hampering redistributive analysis covering the elderly (Box 2).[30] Finally, an additional argument for focusing on the working-age population is the fact that rising inequalities over the last decades have been much more pronounced among the working-age population than among the total population, and poverty risk has increased among youth while it has declined among the elderly in most OECD countries (OECD, 2015a).

28. Work on the specific issue of pension systems and income distribution is already carried out in ELS (OECD, 2017b).

29. This is in line with Immervoll and Richardson (2011). By contrast, Joumard et al. (2012) cover the total population, but using a non-standard approach to redistribution, reflecting analytical and data constraints.

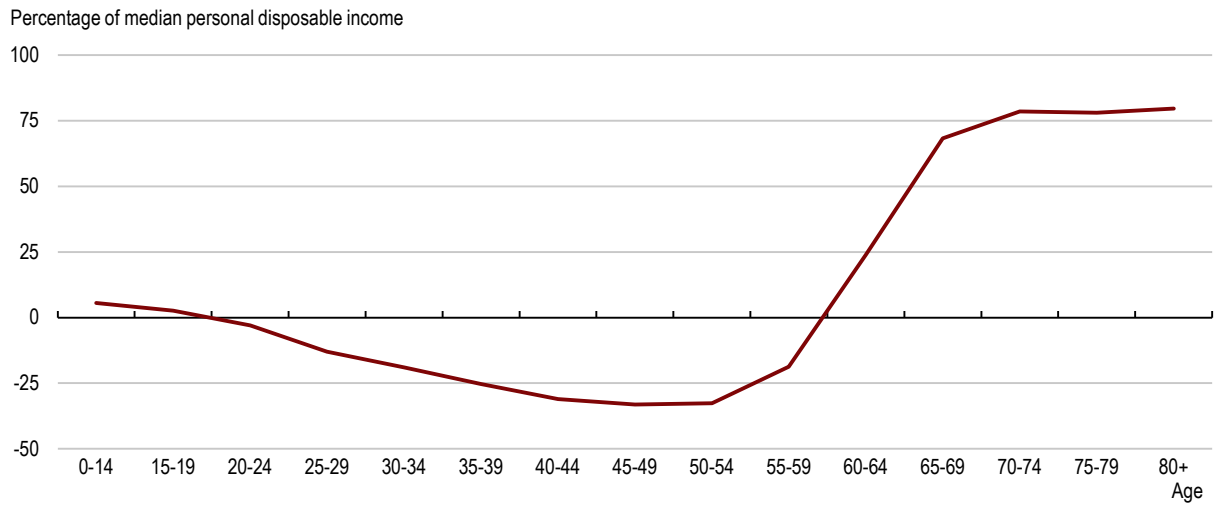
30. An alternative is to treat pensions as deferred income, i.e. to exclude pension contributions from tax and SSC payments and include pension benefits in market income (see e.g. Lustig, 2016). See Jesuit and Mahler (2010) for a comparison between redistribution measures obtained for the working-age population and redistribution measures obtained for the full population combined with a treatment of pensions as deferred income.

Box 2. Redistribution throughout the lifecycle

Tax and transfer systems aim at redistributing income both from higher- to lower-income households (interpersonal redistribution) but also to individuals across their lifecycle (intrapersonal redistribution) as individuals' needs change across the various phases of their lives. During childhood and youth, individuals are typically net transfer recipients as they receive in-kind transfers such as education and other publicly-financed or subsidised services, as well as some categories of targeted cash transfers in a number of countries. By entering the labour market and climbing the earnings ladder, working-age individuals become net contributors, before returning to be net transfer recipients as they retire and receive cash transfers from public pension schemes and in-kind transfers from health-related public services. Such intrapersonal redistribution may be considered as an implicit social contract across generations that can be justified in the presence of imperfect capital markets and incomplete insurance opportunities due to information problems (see e.g. Boadway and Keen, 2000). Figure 8 illustrates intrapersonal redistribution by showing average cash transfers received net of personal income taxes paid by different age groups.[1] This shows that an individual typically becomes a net tax payer in the mid-20s and makes the largest contributions around age 50, before becoming a net recipient in the mid-60s.

Figure 8. A large part of income redistribution takes place over the lifecycle

Transfers received net of personal income taxes, average across 9 OECD countries, 2013 or latest available year



Note: Based on personal income with no account for income sharing within households. Transfers received net of taxes include all public cash benefits received less all direct personal income taxes and social security contributions paid. The average within each age group is expressed in percentage of the population median personal disposable income. Countries included are: Australia and Canada (2010); Austria, Czech Republic, Denmark, Finland, Norway, United Kingdom and the United States (2013).

Source: OECD staff calculations based on the Luxembourg Income Study.

Some studies have sought to assess income redistribution from a lifecycle perspective by defining and measuring the respective roles of intrapersonal and interpersonal redistribution. In these studies, "total" income redistribution is defined as the sum of all cash transfers received over the lifetime and across all individuals. Against this background, intrapersonal redistribution measures the extent to which transfers received in some periods of life are self-financed by taxes paid in other periods of life, while lifetime interpersonal redistribution is assessed in terms of net lifetime transfers across individuals. Within this framework, available studies have found that at least half of total redistribution achieved by personal income taxes and cash transfer systems is intrapersonal: more than half in the United Kingdom (Levell et al., 2015) and as much as three quarters in Denmark (Bovenberg et al., 2008).

A high share of intrapersonal redistribution necessarily implies that taxes and transfers are less effective in reducing inequality in lifetime incomes. This reflects the fact that tax and transfer systems are largely dependent on current annual income, making them less progressive and less targeted over the lifecycle, which reduces their redistributive effect from a lifecycle perspective. At the same time, lifetime income inequality is usually found to be

much lower than cross-sectional income inequality (see e.g. Aaberge and Mogstad, 2015), reducing the need for lifetime interpersonal redistribution in the first place. For instance, Levell et al. (2015) finds that for the United Kingdom the Gini coefficient for lifetime incomes before taxes and transfers is reduced by 15 per cent after taxes and transfers, which is half of the cross-sectional effect of 31 per cent. In terms of progressivity (see Box 4), Bengtsson et al. (2016) find that the Swedish tax and transfer system is around half as progressive over the lifetime as it is in a single year, which is primarily driven by significant social insurance transfers to temporary low-income earners.

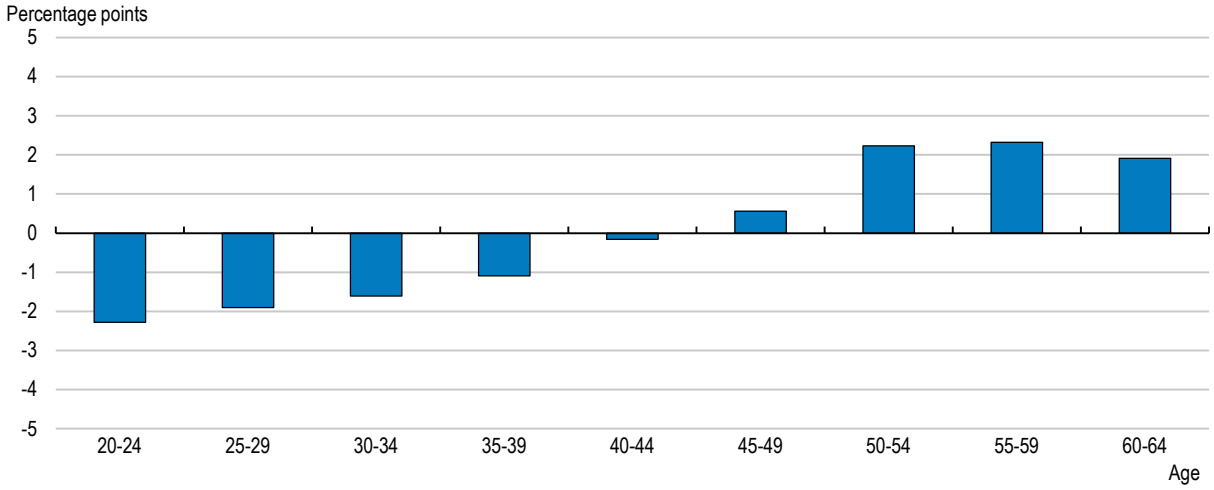
Structural trends affecting the lifecycle may also influence the cross-sectional redistribution measure

The focus of this paper is interpersonal redistribution in the cross-sectional perspective. For that and related reasons (see text), the focus is on the working-age population, which implies excluding individuals aged 65 or older. However, interactions between intra- and interpersonal redistribution are inescapable, which may have implications for the assessment of redistribution presented in this paper. Indeed, some major structural trends, primarily related to the lifecycle perspective, are likely to influence cross-sectional inequality and therefore measured redistribution:[2]

- *Ageing*: Across OECD countries people are living longer, fertility has been declining and baby boomers are approaching retirement. This may impact trends in measured redistribution in two opposing ways: i) statutory and average effective retirement ages have increased in many OECD countries (OECD, 2015b), which would tend to reduce measured redistribution as a result of higher employment rates among seniors within the working-age population, ii) the number of seniors relative to young and middle aged individuals in the working-age population has increased (Figure 9), which would tend to increase measured redistribution through a compositional effect since e.g. 55-64 year olds still work less and rely more on transfers relative to the average working-age person. Section 4.3 provides a short exploratory analysis on the impact of ageing among the working-age population on measured developments in redistribution.

Figure 9. Ageing is changing the demographic structure of the working-age population

Change in age composition across working-age populations, OECD average 1995-2015



Note: Average across 35 OECD countries.
Source: United Nations, World Population Prospects: The 2015 Revision.

- *Educational expansion*: Upskilling implies that today's youth spends more time in education and postpone labour market entry relative to previous generations. The implications for inequality and redistribution are likely to differ across countries, depending on housing arrangements and availability of student grants. If students live by or are regarded as part of their parents' household for a longer time (like in Southern European countries), measured redistribution is likely to decline. In contrast, if students tend to live by themselves and receive sizeable public transfers (like in the Nordic countries), measured redistribution is likely to increase.

- *Pension system reforms*: Over the past decades, most OECD countries have been reforming their pension systems to improve financial sustainability in light of current and future demographic changes (OECD, 2016d). Although this mainly affects pensioners, such reforms also have implications for working-age populations, hence for the cross-sectional redistributive effect of taxes and transfers. On the one hand, higher pension contributions, either via taxes or social security contributions, tend to increase measured redistribution. On the other hand, later retirement (see above) and lower replacement rates for working-age pension benefit recipients tend to reduce measured redistribution.[3]

In sum, a number of non-policy and policy-driven structural changes have important implications for redistribution over the lifecycle and this is likely to spill over to the measure of cross-sectional redistribution applied in this paper. The net effect on the presented redistributive trends of taxes and transfers is however ambiguous and is likely to differ across countries. A proper assessment of the role of such mega trends is beyond the scope of this paper and left for future work.

1. The value of in-kind transfers (in particular education and healthcare services) is not included due to data limitations (see main text). Moreover, the figure is not longitudinal, but based on cross-sections, i.e. it compares individuals of different age in a given year since panel data to follow the same individual from cradle to grave is not available for most countries.
2. See Robling and Pareliussen (2017) for a quantification of the influence of structural changes on income inequality in Sweden.
3. Note also that while tier 1 pension benefits are classified as transfers and included in the redistributive effect of taxes and transfers, benefits from tier 2 and 3 pension schemes are classified as market income and not included in the redistributive effect of taxes and transfers. As a result the redistributive effect of pension benefits mechanically declines as countries rely more on tier 2 relative to tier 1 schemes.

37. A second limitation of the redistribution measurement approach used in this paper is that it does not allow for assessing or separating the mechanical or accounting effect of tax and transfer schemes on household incomes from the effect induced by behavioural responses and changes in market prices. The approach treats the benchmark distribution of market income as independent from the operation of tax and transfer systems and thus does not allow for identifying and isolating behavioural responses. Yet behavioural responses can be particularly relevant in the cases of tax and transfer reforms motivated by the objective to springboard work incentives. Such is the case of tightening eligibility to or duration of unemployment-related transfers while enhancing counselling services and requalification measures for jobseekers. If successful, such reforms may reduce market income inequality by bringing unemployed or inactive people into employment. This second-round effect would tend to reduce measured redistribution, hence reinforcing the first-round effect of reduced cash transfers. Disentangling the mechanical effect of changes in tax and transfer systems from other factors is beyond the scope of this paper.[31] However, some of these issues will be addressed in a follow-up paper by using simulation- and regression-based techniques.[32]

31. See e.g. Bargain and Callan (2010) for a simulation-based approach to decompose the effect of tax-benefit changes into policy effects and other effects such as behavioural responses and changes in population structure.

32. Work by the Public Economics Workstream on the effects of taxes on inequality outcomes partly addresses this issue by identifying the combined effect of mechanical and behavioural responses (Akgun et al., 2017 ECO/CPE/WP1(2017)19). See also Causa et al. (2016a).

4. Redistribution in the tax-transfer system as a whole

4.1. An assessment of levels and changes in redistribution

38. OECD countries achieve very different levels of income redistribution through taxes and cash transfers (Figure 10, Panel A). Taxes and transfers mitigate slightly more than one quarter of market income inequality on average across the OECD, yet this average figure masks a great deal of heterogeneity: the inequality-reducing effect of taxes and transfers ranges from 40 per cent in Ireland to around 5 per cent in Chile. The level of redistribution is also highly variable in countries exhibiting similar levels of market income inequality: for example, market income inequality stands at around 38 Gini points in both Japan and Norway, but disposable income inequality stands at around 27 points in Norway compared to 32 points in Japan (Figure 10, Panel B). In other words, taxes and transfers reduce twice as much market-driven income inequalities in Norway relative to Japan (since the redistributive effect of taxes and transfer is around 15 per cent in Japan and more than 30 per cent in Norway). A similar qualitative conclusion emerges from the comparison between Spain and the United States, whereby similar levels of inequality before taxes and transfers translate into very different levels of inequality after taxes and transfers, reflecting stronger redistribution in Spain compared to the United States.[33] Measured redistribution for Hungary, Mexico and Turkey only captures the impact of cash transfers because of data limitations which makes the results less comparable to the other OECD countries.[34]

39. The redistributive effect of income taxes, social security contributions and cash transfers is strongly associated with the level of public social spending on cash support to the working-age population (Figure 11, Panel A)[35] as well as to the level of total tax revenues (Figure 11, Panel B) and, to a lesser extent, to the level of tax revenue raised from personal income taxes and social security contributions (Figure 11, Panel C). For example, Belgium, one of the most redistributive OECD countries, spends almost four-times more (in percentage of GDP) on cash support to the working-age population and it raises almost double tax revenue compared to Korea, one of the least redistributive OECD countries. These very simple bivariate correlations would suggest that achieving more redistribution requires spending more and that this requires raising revenues out of general taxation.[36] At the same time, as more formally addressed in Section 5, the size of the tax and transfer system is not enough to explain income redistribution, not least because it says little about the extent to which social spending accrues to least affluent households nor the extent to which tax revenue is raised from most affluent households. Simple illustrative country comparisons underscore this point. For example, Italy raises around the same tax revenue (in percentage of GDP) as Finland and more than 10 percentage points less than Spain (Figure 3), yet it achieves only two-thirds the level of redistribution achieved by Finland and around the same level of redistribution achieved by Spain (Figure 10).[37]

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33. To some extent, this reflects the relatively unfavourable labour market situation in Spain in 2014, whereby high unemployment tends to inflate the effectiveness of redistribution (see below).

34. Lustig et al. (2012) estimate the combined redistributive effect of taxes and transfers for Mexico to around 5%.

35. See also OECD (2016c).

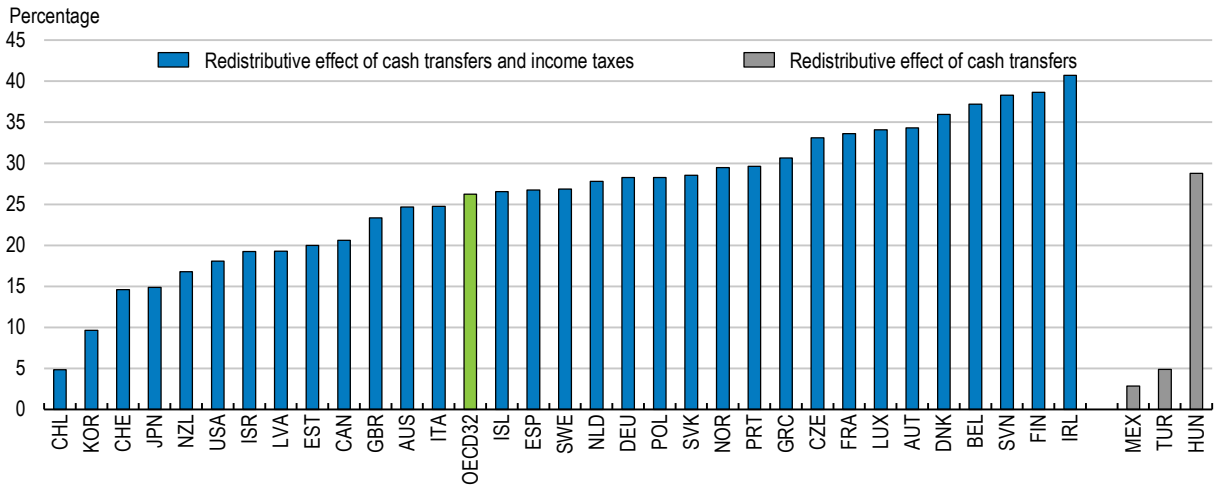
36. This then relates to the controversial link between size and targeting of social transfers, or the so-called "paradox of redistribution" (see Section 5.2).

37. This analysis is kept purposely simple and is purely illustrative. The link between the size of taxes and transfers as a percentage of GDP and income redistribution at a given point in time (as well over time) reflects a number of non-policy driven confounding factors such as cyclical conditions.

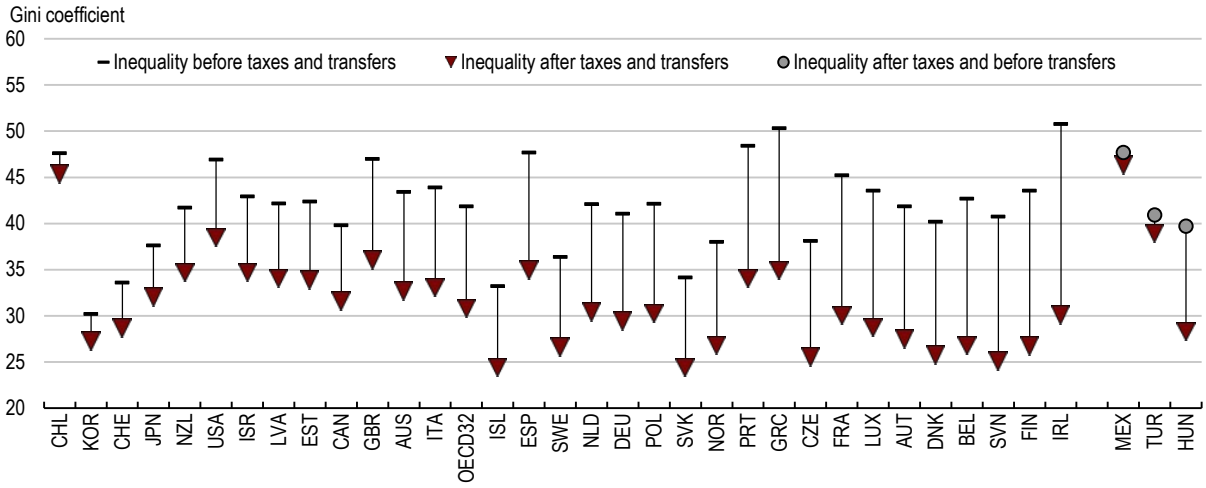
Figure 10. The equalising effect of taxes and transfers varies widely across OECD countries, even for similar levels of inequality before taxes and transfers

Working-age population, 2014 or latest available year

A. Redistribution



B. Gini coefficients

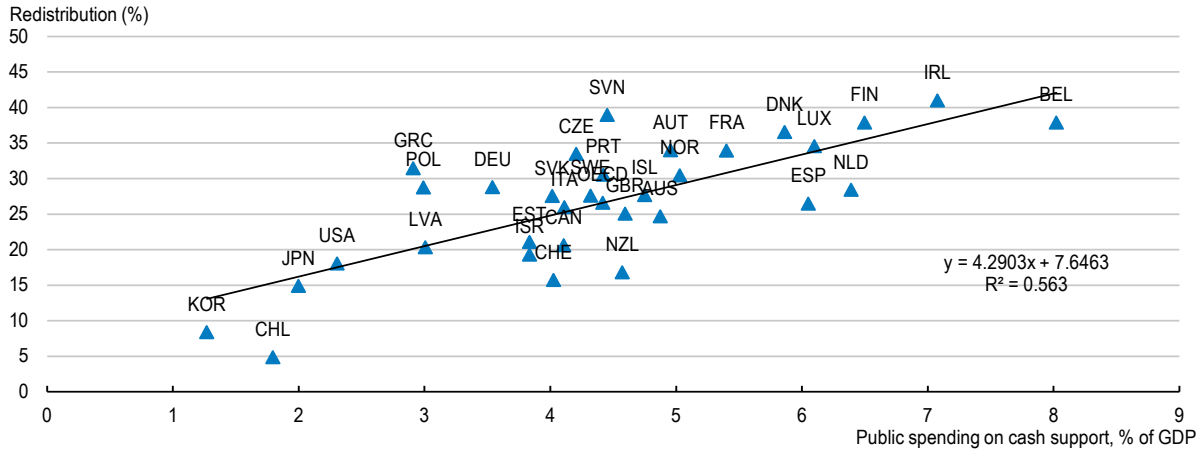


Note: The Gini index measures the extent to which the distribution of incomes among households deviates from perfect equal distribution. A value of zero represents perfect equality and a value of 100 extreme inequality. Redistribution is measured by the difference between the Gini coefficient before personal income taxes and transfers (market incomes) and the Gini coefficient after taxes and transfers (disposable incomes) in per cent of the Gini coefficient before taxes and transfers. For Hungary, Mexico and Turkey household incomes are only available net of personal income taxes, implying that inequality can only be measured after taxes and before transfers. The three countries are not included in the OECD average. Working-age populations include all individuals aged 18-65. Data refer to 2012 for Japan; 2015 for Chile, Finland, Israel, Korea, the Netherlands, the United Kingdom and the United States; and 2014 for the rest.

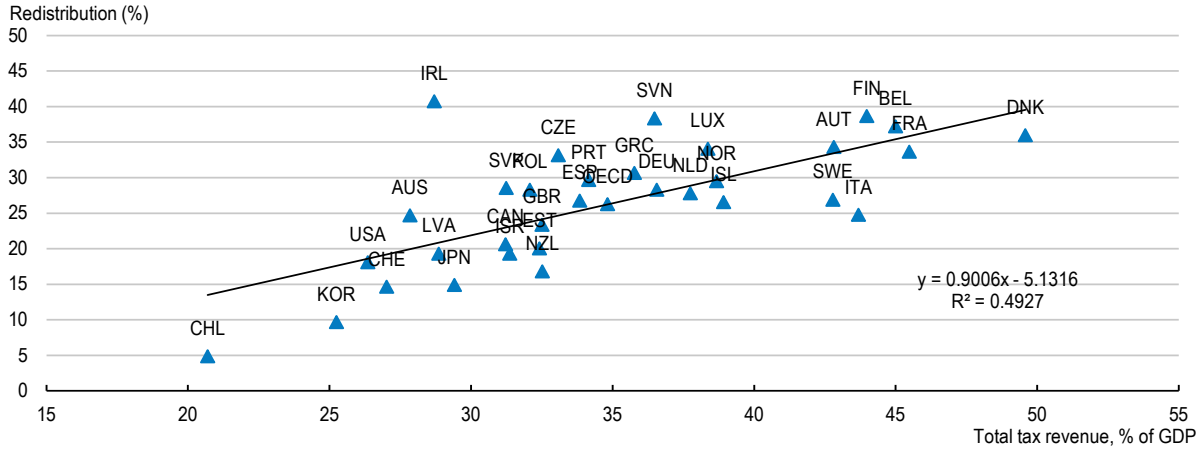
Source: OECD Income Distribution Database.

Figure 11. Countries that spend more on cash support to working-age households tend to achieve more redistribution

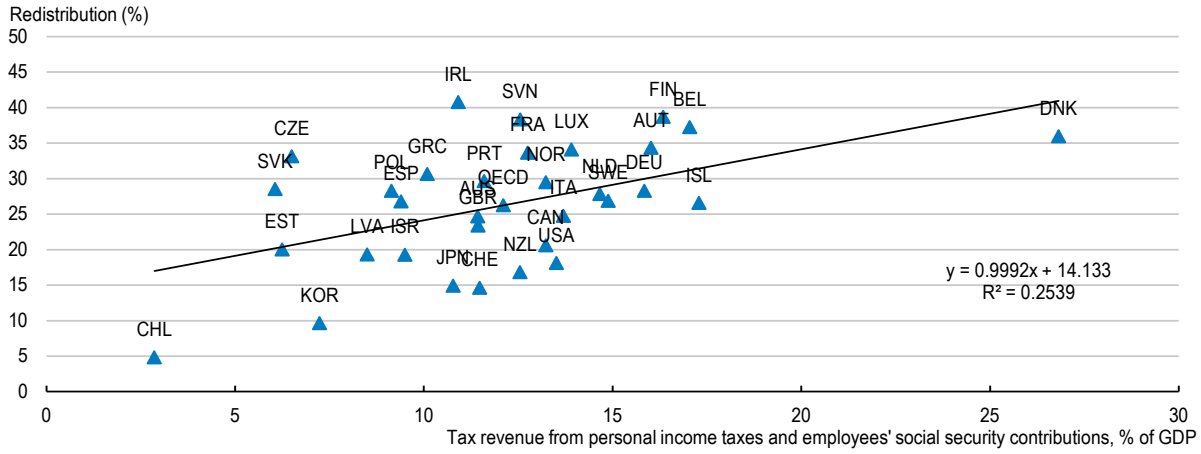
A. Cash support to the working-age population and redistribution, 2013 or latest available year



B. Total tax revenue and redistribution among the working-age population, 2014 or latest available year



C. Tax revenue (PIT and SSC) and redistribution among the working-age population, 2014 or latest available year



Note: Public social spending for working-age population is defined as total public social spending less spending to support old-age and survivors. Data refer to 2012 for Greece, Japan, New Zealand and Poland; 2014 for Austria, Israel and Korea; and 2013 for the rest. Hungary, Mexico and Turkey are not shown due to incomplete measures of redistribution.

Source: OECD Social Expenditure, Tax Revenue and Income Distribution Databases.

40. Across OECD countries over the last two decades, the redistributive effect of taxes and transfers has tended to decline on average and in the majority of countries for which data going back to the mid-1990s are available (Figures 12 and 13; see Figure A1.3 for detailed country profiles). The initial phase of the 2008-09 crisis halted this declining trend, reflecting the cushioning impact of automatic stabilisers and fiscal discretionary measures to address the labour market and social crisis. Between 2010 and 2014, redistribution declined again, albeit at a slower pace than previously. The current paper does not aim at disentangling policy from non-policy drivers but a recent microsimulation analysis based on the 2007-2013 period suggests that the decline in redistribution between 2007 and 2013 partly reflects fiscal consolidation programmes and the phasing-out of fiscal benefits granted to households over the initial phase of the crisis (Chapter 3 of OECD 2015a).[38] Overall, differences in developments in redistribution since 2010 are likely to reflect differences in speed of recovery from the crisis and in the distributional incidence of discretionary fiscal measures.

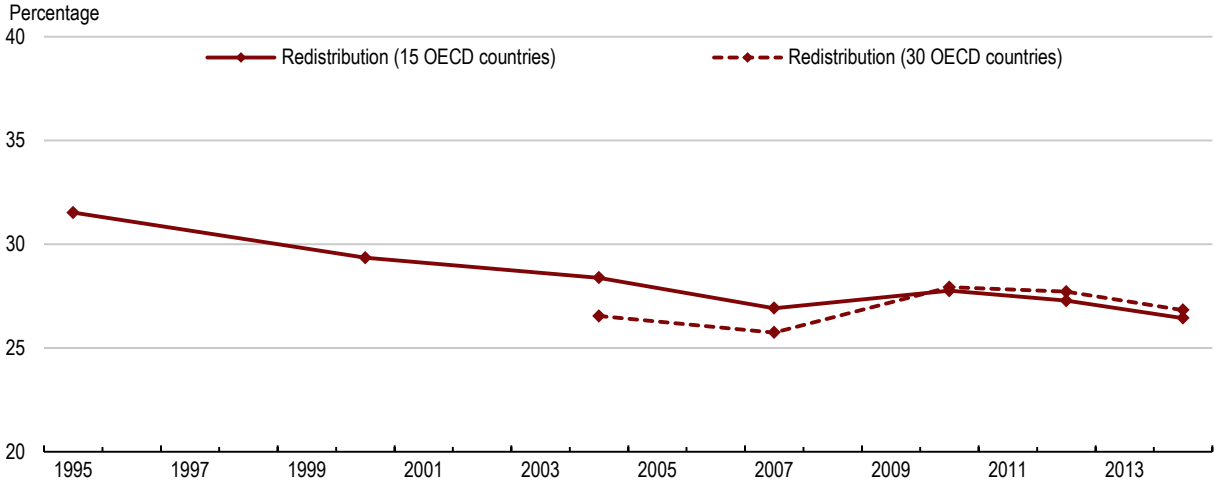
41. The decline in redistribution was particularly pronounced in some Nordic countries (Box 3). To some extent, this reflects strong declines in unemployment from high levels experienced over the 1990s financial crisis; as this boosts the level of redistribution at the beginning of the period under consideration.[39] While taxes and transfers reduced more than 40 per cent of market income inequality in 1995 in Sweden, such redistributive effect fell by 15 percentage points over the past two decades, down to a level approaching that of Australia and the United Kingdom. Still, the latter two countries display much higher levels of market income inequality relative to Sweden. The inequality-reducing effect of redistribution also declined in countries starting from low levels of redistribution, especially Israel, but also Australia and Canada.

38. See also OECD (2016a).

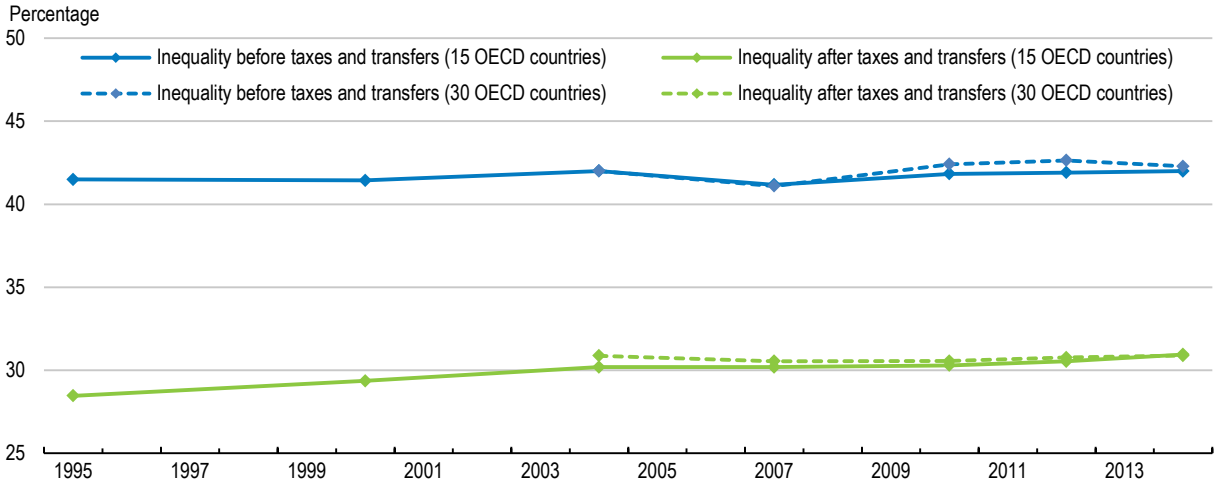
39. Redistribution increased substantially from the mid-1980s to the mid-1990s in Denmark, Finland, Norway and Sweden (see Figure 34 below). See also Pareliussen et al. (forthcoming) for a thorough discussion of trends in income inequality in the Nordics.

Figure 12. The redistributive effect of taxes and transfers has tended to decline across OECD countries

A. Redistribution, working-age population



B. Gini coefficients, working-age population



Note: Unweighted averages for 15 OECD countries with available data since mid-1990s (Australia, Canada, Czech Repulbic, Denmark, Finland, France, Germany, Israel, Italy, the Netherlands, New Zealand, Norway, Sweden, United Kingdom and the United States) and 30 OECD countries available since mid-2000s (the 35 OECD countries except Hungary, Japan, Mexico, Switzerland and Turkey). A change in the income definition implies a break in the series around 2011 for some countries and an estimated series correcting for the break have been used. Some data points use the value from the closest available year. See note to Figure 8 for further details on redistribution measure and working-age population.

Source: OECD Income Distribution Database.

Box 3. Welfare state regimes in political science

Cross-country differences in income redistribution and in the tax and transfer instruments used to achieve income redistribution are viewed as being historically linked to the development of different "welfare state regimes"; which is defined by the role that government plays in delivering welfare to citizens, relative to markets and to the family (Korpi and Palme, 1998; Prasad and Deng, 2009; Kammer et al., 2012). The focus is on the degree of social rights that permit people to make their living standards independent of the market (decommodification) and of the family (defamiliarisation of welfare obligations).

Accordingly, the classical typology of welfare states in political science refers to the Liberal, the Social Democratic and the Conservative model (Esping-Andersen, 1990), sometimes supplemented by a fourth Southern European model (Ferrera, 1996; Bonoli, 1997). While such classification is clearly a simplified vision of countries' realities, it still provides a useful background for understanding the deep cultural drivers of differences in income redistribution and welfare states. Against this background and with this caveat in mind, the four welfare state regimes can briefly be characterised in the following way (Figure 13):

- *Liberal*: The liberal model favours minimal public intervention and relies on the market for the provision of social insurance and welfare services, either by subsidising private welfare schemes or by maintaining a modest level of social benefits reserved for the needy only. The United States is an example: tax payments are relatively low; transfers are strongly concentrated at the bottom and dominated by means-tested assistance transfers, while universal transfers are absent or very small (Figure 13, Panel D).

- *Social Democratic*: The Social Democratic, also referred to as the Nordic, model is characterised by its emphasis on universal inclusion and its comprehensive definition of social entitlements which implies marginalising the role of private welfare markets. This is achieved by relying on tax-financed generous universal benefits, i.e. unconditional on income or on past individual contributions. Denmark is an example: tax payments and transfers are extensive; transfers are dominated by universal transfers, supplemented by assistance transfers for lower-income households (Figure 13, Panel A).

- *Conservative*: The Conservative, also referred to as the Continental or Corporatist, model builds on social insurance, which implies that entitlements depend on life-long employment, hence earnings-related insurance administered by employers. This model also emphasises the family as a key provider of citizens' welfare. Germany is an example: social security contributions are sizeable and universal transfers comprise a moderate share of total transfers (Figure 13, Panel B).

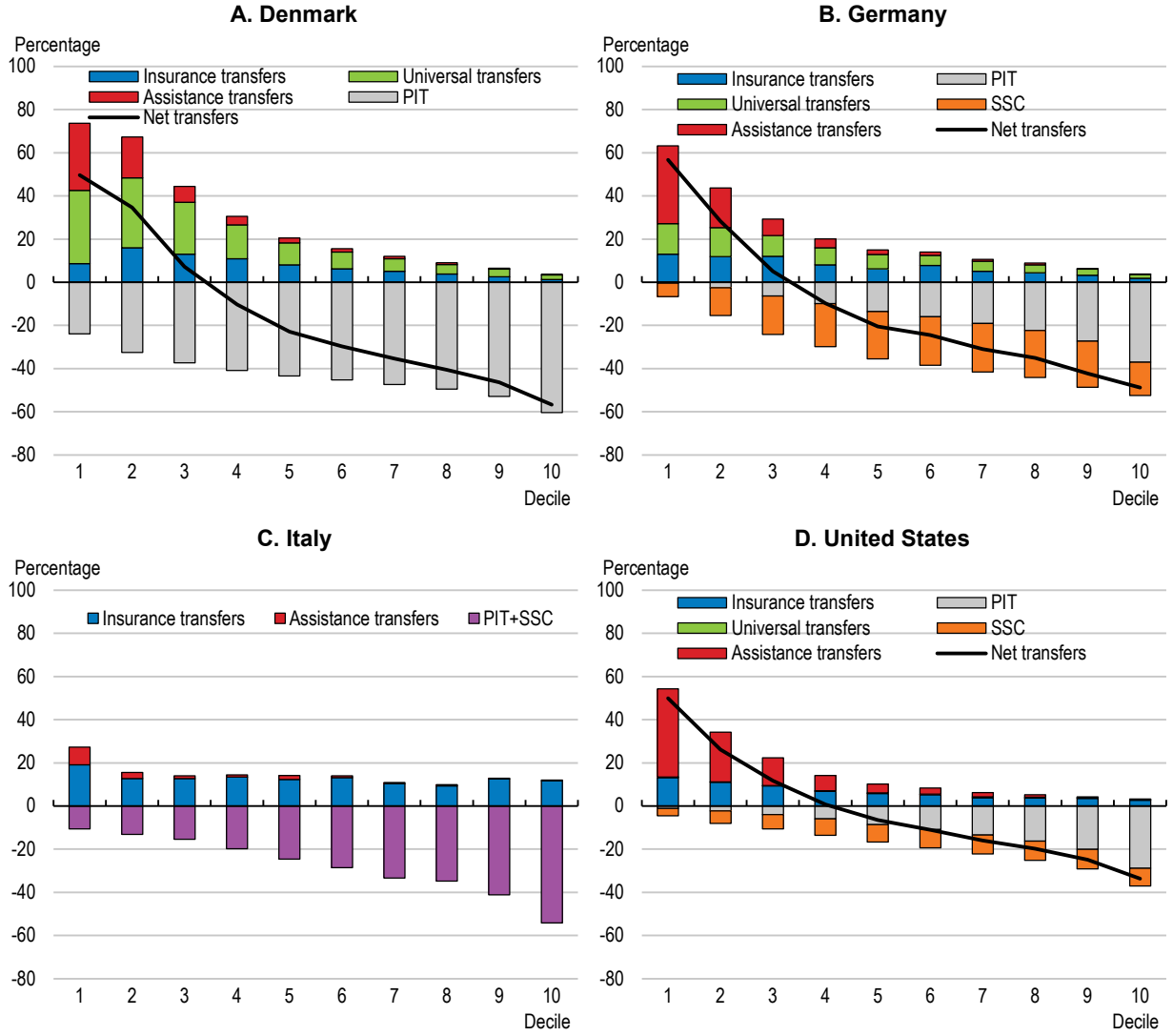
- *Southern European*: The Southern European model has been characterized as highly fragmented with little welfare state intervention, in particular in terms of providing minimum income for individuals in need. Welfare provision is influenced by a strong corporatist tradition with a focus on old-age relative to working-age transfers, alongside the importance of family. Italy is an example: most transfers are insurance-based; redistribution is relatively low especially compared to other European countries and dominated by assistance transfers to the lowest income groups (Figure 13, Panel C).[1]

While this typology has proven its analytical practicability and relative stability over time, it has been criticised for neglecting important dimensions of welfare policy and redistribution such as differences in labour market and in wage-setting institutions. Another objection is that this typology tends to focus prevalently on Western European countries. Political science researchers have then sought to extend the typology by establishing a Central and Eastern European model (e.g. Ferger, 2007), but this model remains relatively heterogeneous (Fuest et al., 2010).

Keeping in mind the above limitations, a tentative grouping of OECD countries according to the welfare state typology confirms the idea of substantive differences in the extent of income redistribution across welfare state models (Figure 14): countries with a Social Democratic model exhibits the highest level of redistribution, followed by countries with the Conservative model while countries with the Liberal model is the least redistributive on average.

Figure 13. Differences in the size and composition of taxes and transfers can reflect long-standing differences in welfare state models

Working-age population, 2013, percentage of household disposable income

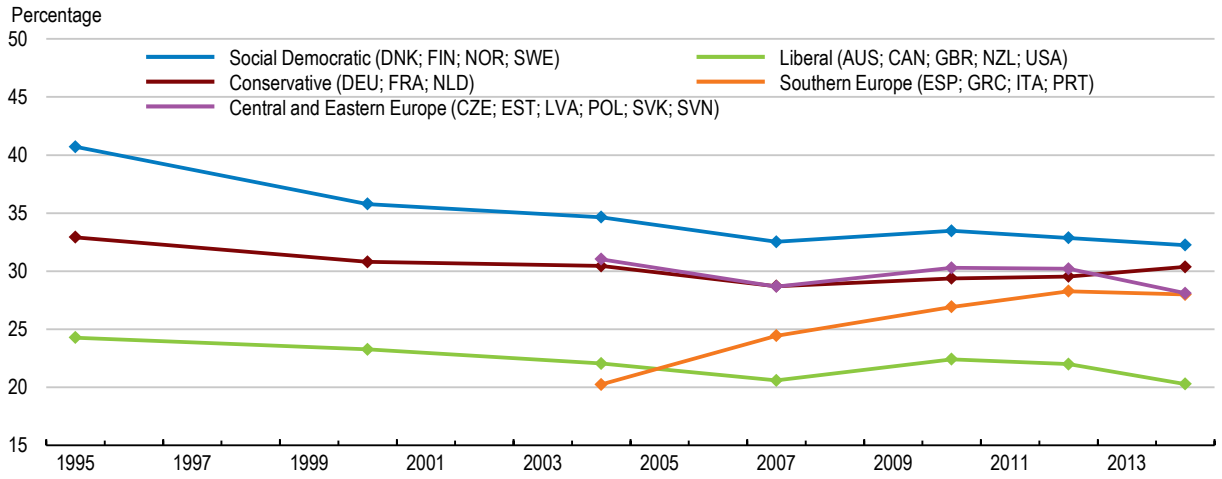


Note: See note to Figure 6. For Italy taxes and social security contributions are based on imputed values and transfers are reported net of PIT and SSC (see LIS documentation). Data refer to 2014 for Italy.

Source: OECD staff calculations based on Luxembourg Income Study.

Figure 14. The redistributive effect of taxes and transfers has declined the most in countries with a Social Democratic welfare model

Average redistribution trend by welfare models, working-age population



Note: Simple cross-country average by welfare state model. The classification of countries by welfare models follow Esping-Andersen (1990) and Ferrera (1996). Austria, Belgium, Iceland, Ireland and Luxembourg are not included because comparable data are not available from mid-1990s. Israel and Japan are excluded because they are difficult to place within the classical welfare typology. See note to Figure 10 for further details.

Source: OECD Income Distribution Database.

Countries classified in the different models also experienced substantive differences in redistribution trends (Figure 14): on average redistribution declined the most in countries with a Social Democratic welfare model since the mid-1990s (8.5 percentage points); to some extent driven by high initial unemployment rates reflecting the 1990s financial crisis in the Nordics; followed by countries with a Liberal welfare model (4 percentage points); while countries with a Continental welfare model experienced a recent increase during the great recession, implying only a minor decline over the whole period (2.5 percentage points). By contrast, the redistributive effect of taxes and transfers increased strongly in Southern European countries from the mid-2000s (8 percentage points); to a great extent driven by the cushioning effect of automatic stabilisers during the prolonged labour market crisis (OECD, 2015a, Chapter 3).

This analysis may suggest that differences in welfare models, and thus in the level of redistribution achieved by tax and transfer systems, have been declining over the last decades, which could reflect the impact of increased interconnectedness. However, this interpretation is tentative given the effects of confounding drivers of redistribution, in particular the impact of the great recession from 2008-09.

1. Note that for Italy taxes and social security contributions are based on imputed values and transfers are reported net of PIT and SSC (see LIS documentation). Cross-country comparisons should be taken with care in light of this issue. See also Greece and Spain in Figure A1.2.

42. Trends in redistribution were more heterogeneous over the most recent decade: it increased in around half of OECD countries (Figure 15, Panel B), in particular those hardest hit by the crisis (Greece, Ireland, Portugal and Spain). As a result, the measured rise in redistribution partly reflects the functioning of automatic stabilisers along with potential additional deployment of discretionary tax and transfer measures to cushion income hardship in the first phase of the crisis.[40] That said, redistribution did not increase in Italy, a country also hard hit by the crisis, likely reflecting weak automatic stabilisers in place to cushion the labour market downturn followed by fiscal consolidation measures. Overall, the broad finding of a widespread decline in redistribution since the mid-1990s confirms the results from Immervoll and

40. These findings confirm and extend those reported in OECD (2015a), Chapter 3.

Richardson (2011), and extends them to a larger number of countries as well as to a more recent period, including the post-2008 crisis period.

43. Simple scatterplot comparisons between changes in pre and post-tax and transfer inequality over sub-periods of the last two decades allow to further qualify developments in redistribution (Figure 16), including strong cyclical effects around the crisis. The 45-degree lines in these scatterplots represent a hypothetical scenario in which there is no change in redistribution and, as a result, changes in pre-tax and transfer inequality correspond perfectly to changes in post-tax and transfer inequality. Positions above the 45-degree indicate a larger rise in disposable income inequality relative to market income inequality, implying less redistribution, and vice versa below the 45-degree line:

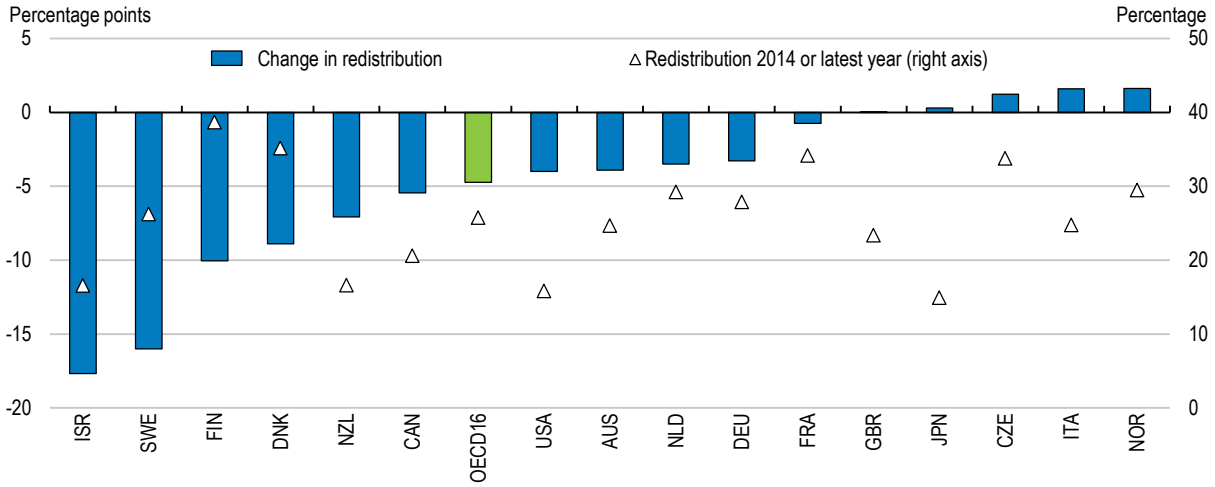
- Over the last two decades as a whole, the vast majority of OECD counties for which data are available lie above the 45-degree line, sometimes markedly so (Figure 16, Panel A): for example in Denmark, inequality in market incomes increased by around 3 Gini points while inequality in disposable incomes increased by around 5 Gini points. Some countries even experienced declines in market income inequalities amid increases in disposable income inequalities, such as Israel and Finland.

- The trend towards less redistribution was most pronounced over the pre-crisis period (1995-2004 and 2004-2007), and was temporarily reversed during the first period of the crisis (2007-2010), as most OECD countries lie below the 45-degree line (Figure 16, Panel E). In line with the previous analysis, most countries are concentrated near or slightly above the 45-degree line between 2010 and 2014 (Figure 16, Panel F).

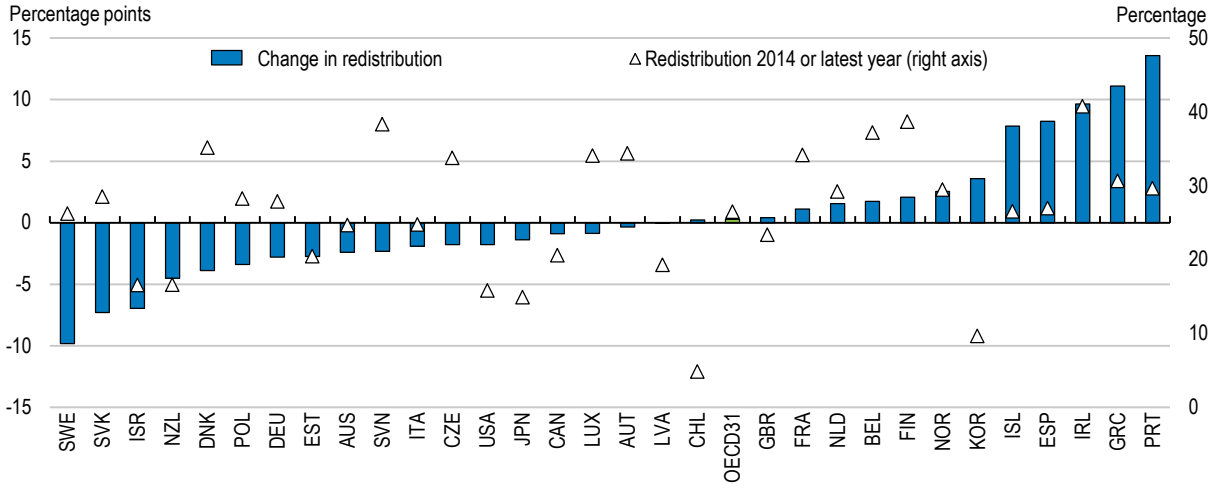
Figure 15. Redistribution has declined for almost all available OECD countries since the mid-1990s

Change in redistribution for the working-age population

A. Mid-1990s to 2014 or latest available year



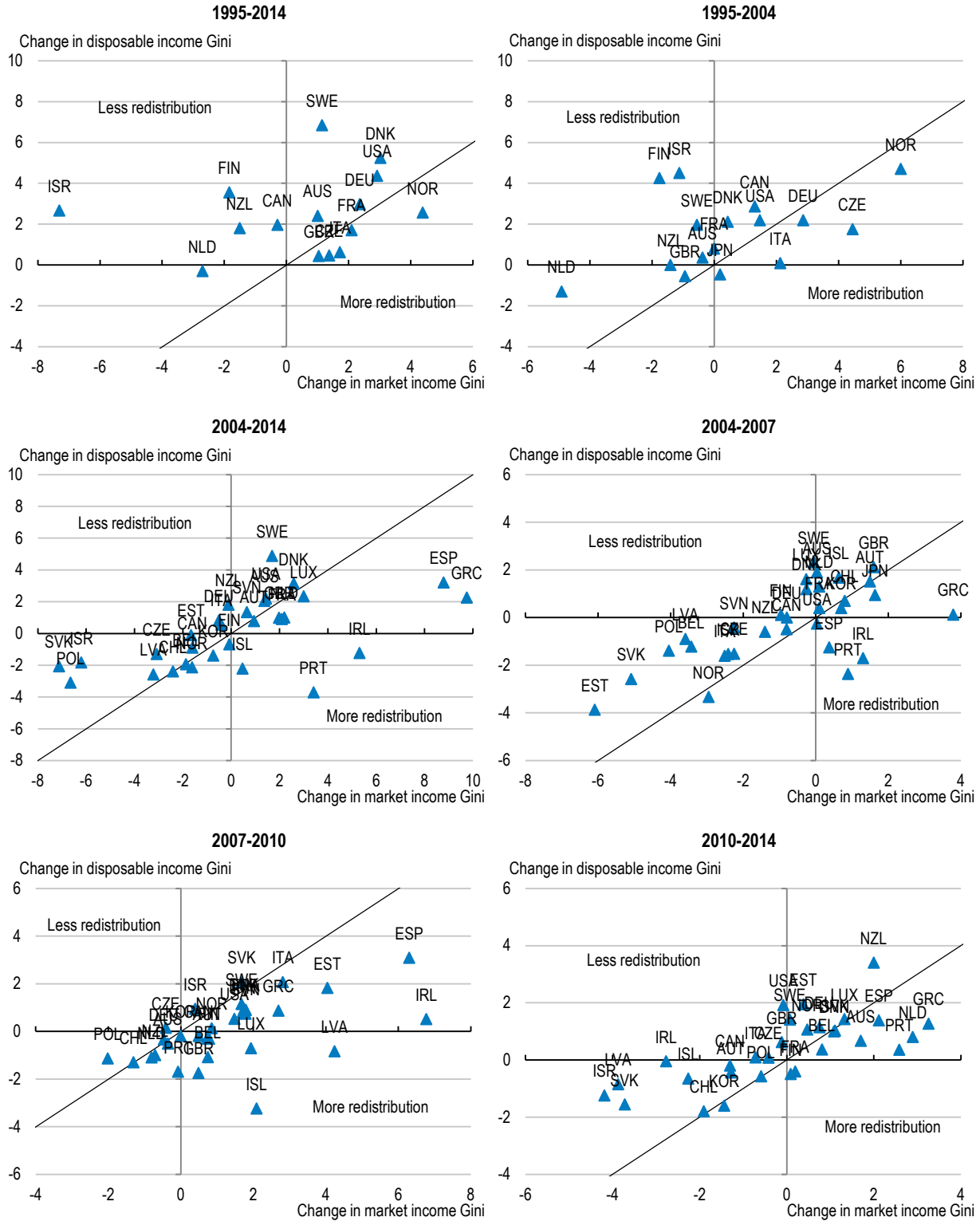
B. Mid-2000s to 2014 or latest available year



Note: For Panel A data refer to 1994-2015 for the United Kingdom; 1995-2012 for Japan; 1995-2015 for Finland, Israel, the Netherlands and the United States; 1996-2014 for Czech Republic and France; and 1995-2014 for the rest. For Panel B data refer to 2003-2012 for Japan; 2003-2014 for New Zealand; 2004-2015 for Finland and the United Kingdom; 2005-2014 for Denmark, France and Poland; 2005-2015 for Israel, the Netherlands and the United States; 2006-2015 for Chile and Korea; and 2004-2014 for the rest. See note to Figure 8 for further details on redistribution measure and working-age population.

Source: OECD Income Distribution Database.

Figure 16. The widespread decline in redistribution was most pronounced in the decade before the crisis



Note: The figure shows the absolute change in Gini coefficients between selected years and for all OECD countries with available data.

Source: OECD staff calculations based on the OECD Income Distribution Database.

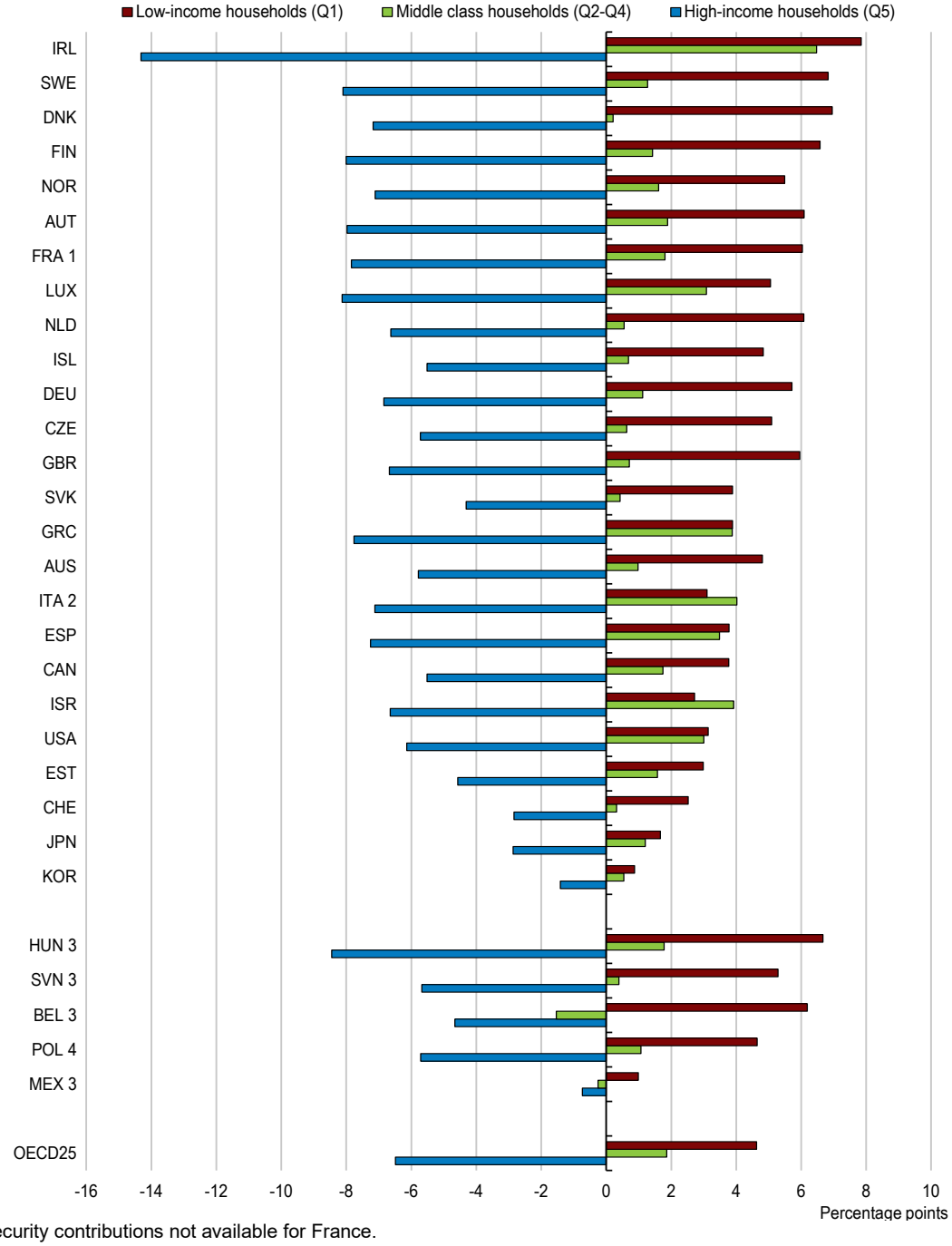
4.2. Redistribution across different income groups

44. How different income groups are affected by observed levels and changes in redistribution is a question of considerable policy relevance that cannot be properly captured by relying on the Gini coefficient which is known to be relatively less sensitive to changes occurring at the tails of the distribution. One way to shed light on this issue is to calculate relative changes in income shares accruing to different income groups before and after taxes and transfers, analogous to the redistribution measure based on the Gini coefficient. For the purpose of this analysis, households are grouped in high (last quintile), low (first quintile) and middle (middle three quintiles) income households. For example, in Denmark 2.7% of total market income earned by the working-age population accrued to the bottom quintile in 2013, while 9.6% of total disposable income accrued to the bottom quintile, hence the difference due to redistribution by taxes and transfers is equal to 7 percentage points. For the middle quintiles, this difference is equal to 0.2 percentage points. Conversely, redistribution by taxes and transfers tends to reduce the share of income accruing to the top quintile so this difference is negative, equal to -7.2 percentage points in Denmark. By construction, the differences in income shares across the considered groups sum to zero. This analysis is relatively crude and simplistic yet informative of the different patterns of redistribution across OECD countries, in particular as regards the differential treatment of the middle class (Figure 17):

- In most OECD countries the middle class is better off after redistribution through taxes and transfers as the change in its income share is significantly positive. However, departures from the average are sizeable:
  - In a few countries, middle class households tend to gain in equal proportion or more from redistribution than low income households. This only happens among relatively low redistribution countries such as Israel, the United States and Italy, as well as Greece and Spain.
  - In most countries, middle class households tend to gain from redistribution but less so than low income households. This applies to most redistributive countries such as Ireland but also least redistributive ones such as Japan.
- In a number of OECD countries, the middle class is neither better nor worse off after redistribution through taxes and transfers as the change in its income share is close to zero. In such cases, the change in the income share accruing to high and low-income households tend to roughly offset each other. This pattern is observed both in high-redistribution countries such as Denmark where the rise in the income share accruing to low-income households and the corresponding decline in the income share accruing to high-income households is relatively important; as well as in low-redistribution countries such Switzerland where the rise in the income share accruing to low-income households and the corresponding decline in the income share accruing to high-income households are relatively limited.

Figure 17. Across the OECD, the middle class is either better off or nor worse off after redistribution

Difference between household disposable income share and market income share for the working-age population, 2013 or latest available year



1. Social security contributions not available for France.
2. For Italy taxes and social security contributions are based on imputed values (see LIS documentation).
3. Households incomes reported net of personal income taxes in the data (net country).
4. Information on personal income taxes and social security contributions are incomplete for Poland.

Note: Income shares are calculated for equivalised household market and disposable incomes, with individuals ranked by the respective income distribution. The figure shows the difference between income shares after and before personal income taxes and transfers. Countries are ranked from the most to the least redistributive according to the standard measure based on Gini coefficients (see Section 3). Data refer to 2000 for Belgium; 2005 for Sweden; 2008 for Japan; 2010 for Australia, Canada, France, Iceland and Ireland; 2012 for Hungary, Israel, Korea, Mexico and Slovenia; 2014 for Italy; and 2013 for the rest.

Source: OECD staff calculations based on Luxembourg Income Study.

45. Tracking changes in pre-post redistribution income shares for low, middle and high-income households over the last two decades allows for a better understanding and qualification of the broad redistribution trends documented in the previous section. For the purpose of this exercise, households in the three middle quintiles are from here on treated separately as lower-middle class, middle class and higher-middle class (Figure 18). The following insights emerge (Figure 18; see Figure A1.4 for detailed country profiles):

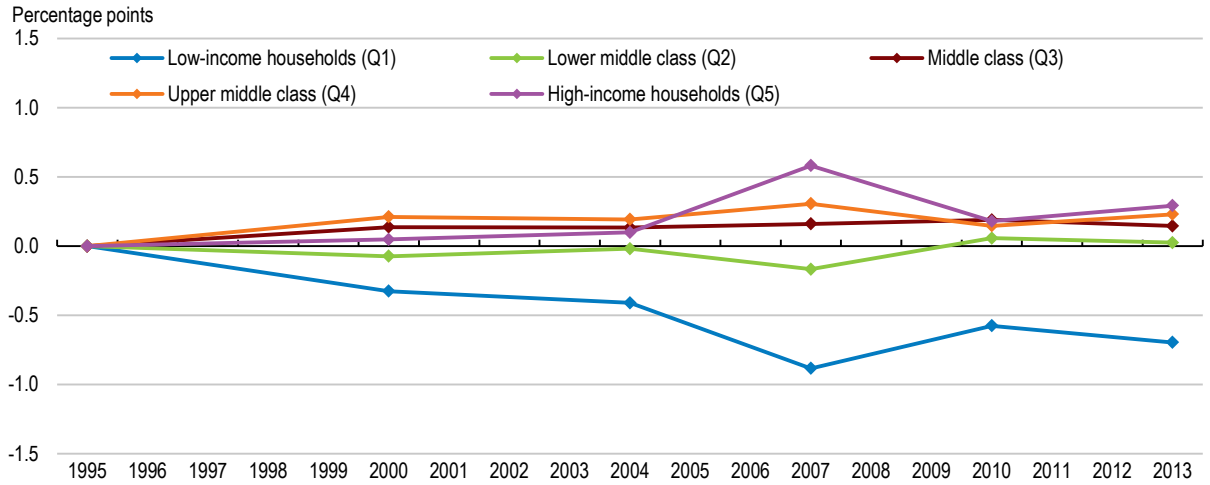
- Low-income households, that is, the bottom 20 per cent, have lost the most from changes in redistribution over the last two decades: the change in income share pre and post-tax transfers has been declining on average and among most OECD countries. Households in the second quintile have been also losing from redistribution in a number of countries although comparatively much less than those in the first quintile so that on average the change in their income share has not evolved over the last two decades. The decline in redistribution towards low-income households took place essentially between the mid-1990s and the onset of the crisis: during the first phase of the crisis the decline reversed, as observed for overall redistribution, a reflection of the cushioning effect of automatic stabilisers and temporary income support measures.

- Upper-middle class and high-income households, that is, the top 40 per cent, have gained the most from changes in redistribution: the change in income share pre and post-tax transfers accruing to the top 40 per cent has been increasing on average across the OECD and in a majority of OECD countries (for this group, the change means a less negative difference between the income share based on market and disposable income, respectively). This pattern was most pronounced between the mid-2000s and the onset of the crisis; it temporarily stopped during the first phase of the crisis.

- Middle class households, that is, those between the top and bottom 40 per cent, have been little affected from changes in redistribution, on average and in the vast majority of OECD countries.

Figure 18. Redistribution to low-income households has declined markedly across OECD countries

Change in household disposable income share less market income share for the working-age population
A. Mid-1990s to 2013, unbalanced average across 17 OECD countries



B. Mid-1990s to 2013 or latest year

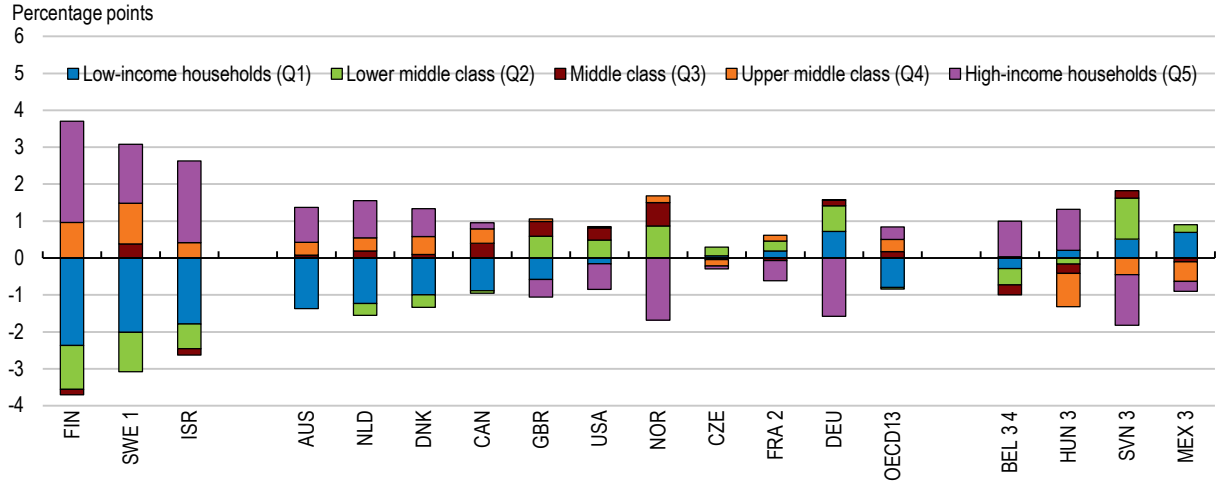
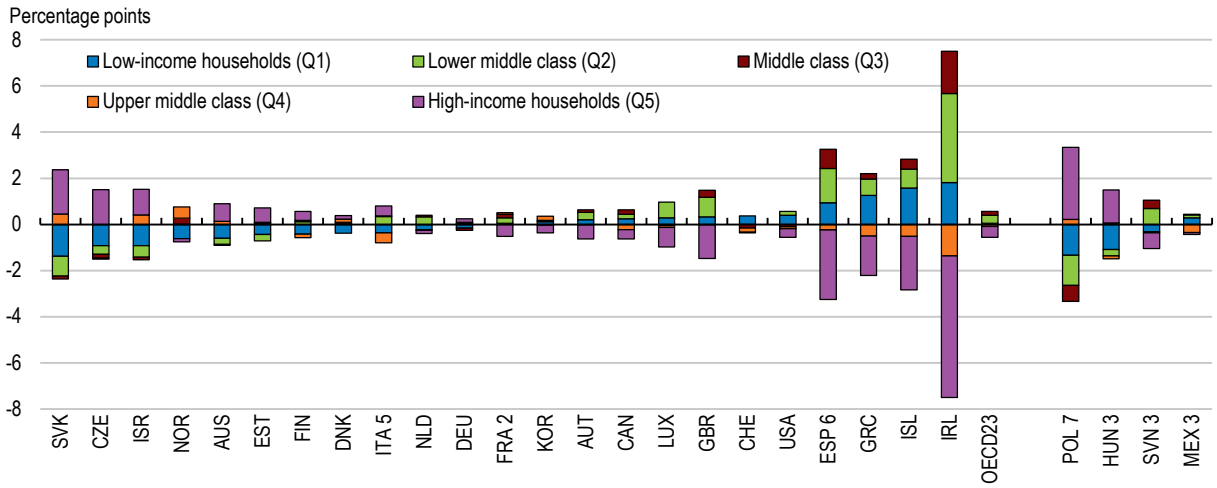


Figure 18. (cont.)

C. Mid-2000s to 2013 or latest year



1. Sweden only available for 1995-2005.
2. Social security contributions not available for France.
3. Households incomes reported net of personal income taxes in the data (net country).
4. Belgium only available for 1995-2000.
5. For Italy taxes and social security contributions are based on imputed values (see LIS documentation).
6. Changes over time for Spain should be interpreted cautiously due to a change in methodology (use of administrative sources for the latest year).
7. Information on personal income taxes and social security contributions are incomplete for Poland.

Note: An increase (decrease) for a particular quintile implies an increase (decrease) in redistribution to the quintile in the sense that the share of total disposable income accruing to the quintile increases relative to the share of total market income accruing to the quintile. For each year, changes across quintiles sum to zero. Income shares are calculated for equivalised household market and disposable incomes, with individuals ranked by the respective distribution. For Panel A the unbalanced average is based on 17 OECD countries (Australia, Austria, Canada, Czech Republic, Denmark, Estonia, Finland, Germany, Israel, Italy, Luxembourg, the Netherlands, Norway, Slovak Republic, Switzerland, the United Kingdom and the United States) and constructed by first computing the average change between two consecutive periods, then cumulating the period averages from mid-1990s to 2013. Only countries with observations for more than half of the included time periods are included. See Figure A1 in the Annex for a balanced average across 9 OECD countries. Panel B data refer to 1993-2013 for the Netherlands; 1994-2010 for Canada and France; 1994-2012 for Hungary; 1994-2013 for Germany, the United Kingdom and the United States; 1995-2000 for Belgium; 1995-2005 for Sweden; 1995-2010 for Australia; 1995-2013 for Denmark, Finland and Norway; 1996-2012 for Mexico; 1996-2013 for Czech Republic; 1997-2012 for Israel and Slovenia. For Panel C data refer to 2003-2010 for Australia; 2004-2010 for Canada, Iceland and Ireland; 2004-2012 for Mexico and Slovenia; 2004-2014 for Italy; 2005-2010 for France; 2005-2012 for Hungary and Israel; 2006-2012 for Korea; 2007-2013 for Spain and Greece; and 2004-2013 for the rest.

Source: OECD staff calculations based on Luxembourg Income Study.

46. Overall, this analysis shows that in many OECD countries the bottom 20 per cent, hence poor households (based on a relative poverty criterion) have been the primary losers from the decline in redistribution. However, this broad picture does not equally apply at all countries and in all periods. In particular, it does not apply to Greece, Ireland and, Spain and Portugal over the latest decade, a likely reflection of the strong and sustained increase in unemployment which implied rising measured redistribution to low-income groups. It also reflects strong policy reactions to limit income hardship and rising poverty in the first stage of the crisis especially in Ireland (see Bargain et al., 2015). Again, an exception to this is Italy where despite the prolonged labour market crisis, all households except the top 20 per cent have been losing from changes in redistribution and poor households have been losing the most.

4.3 The impact of ageing and rising senior employment on measured changes in redistribution

47. The widespread decline in redistribution documented above has taken place in the context of population ageing across all OECD countries, as life expectancy increased on average by around 5 years from 1995 to 2015. Although this paper excludes the elderly from the analysis, the working-age population has also been ageing in the sense that the share of "seniors" (i.e. aged between 55 and 64) in the working-age population has been trending upwards (Box 2). This compositional change may affect measured changes in redistribution in two main directions: i) it may drive changes in redistribution upwards since seniors approaching retirement are more likely to receive transfers than younger age groups and such transfers are likely to be sizeable, e.g. from early retirement, pension benefits available before age 65 or disability insurance, ii) it may drive changes in redistribution downwards since seniors tend to work more than in the past: rising life expectancy has generally been associated with more years in good health, which, combined with widespread policy reforms to reduce early withdrawal from the labour market, has implied substantive increases in employment rates among seniors. As a result of these two offsetting forces, the net effect of ageing on redistribution among the working-age population is a priori ambiguous and thus an empirical question.

48. A simple way to address this question is to exclude households aged 55-64 from the assessment of trends in redistribution, the result of which is presented in Figure 19, focusing only on the countries for which data are available since the mid-1990s.[41] This exercise shows that in most OECD countries redistribution has declined more for the full working-age population than for the population excluding seniors. This may indicate that generally the effect of rising senior employment (hence less transfers going their way than in the past) has dominated that of rising redistribution associated with an ageing working-age population. However, for most countries the impact on measured redistribution is limited and does not change the overall development. One exception is the Netherlands where the entire decline in redistribution seems to be driven by developments among seniors, as well as, to a lesser extent, Germany and the United Kingdom.

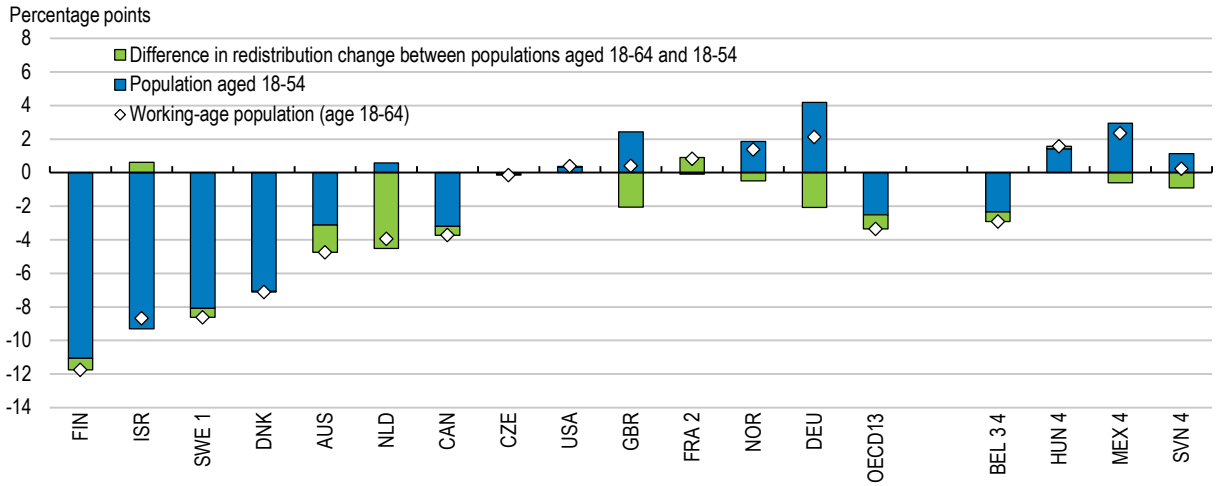
49. Comparing changes in the share of seniors in total employment to changes in the share of seniors in the working-age population (Figure 20) supports the intuition that rising senior employment has been the dominating force.[42] In almost all OECD countries the share of seniors in total employment has tended to increase by more than their share in the working-age population. Cross-country differences are important and generally coherent with differences in the impact of seniors on measured redistribution (Figure 19). For instance, Germany, the Netherlands and the United Kingdom are all placed well above the 45-degree line, consistent with the sizeable downward impact on redistribution. While ageing and rising employment rates are important channels by which seniors influence redistribution trends for the working-age population, other factors are also present, not least policy changes in tax and transfer systems that directly affect disposable incomes among senior households.

41. The changes in redistribution for the whole working-age population presented in Figure 15 differ from those presented in Figure 11 because different data sources are used (see Section 3.1). Part of these differences can be explained by different initial and terminal years, see the notes to Figure 11 and 15.

42. Figure A2.2 shows the changes in the share of senior households by employment status based on the micro-data used for assessing redistribution trends, hence covering fewer countries. It shows that the share of working senior households has increased markedly in most countries, which has not been matched by a similar decline in the number of workless households. In fact, the share of workless senior households in per cent of the working-age population is almost unchanged in most countries due to a general ageing effect. This confirms and qualifies the analysis presented here in the main text.

Figure 19. Redistribution has declined less for the population aged 18-54 than for the total working-age population

Changes in redistribution from mid-1990s to 2013 or latest available year



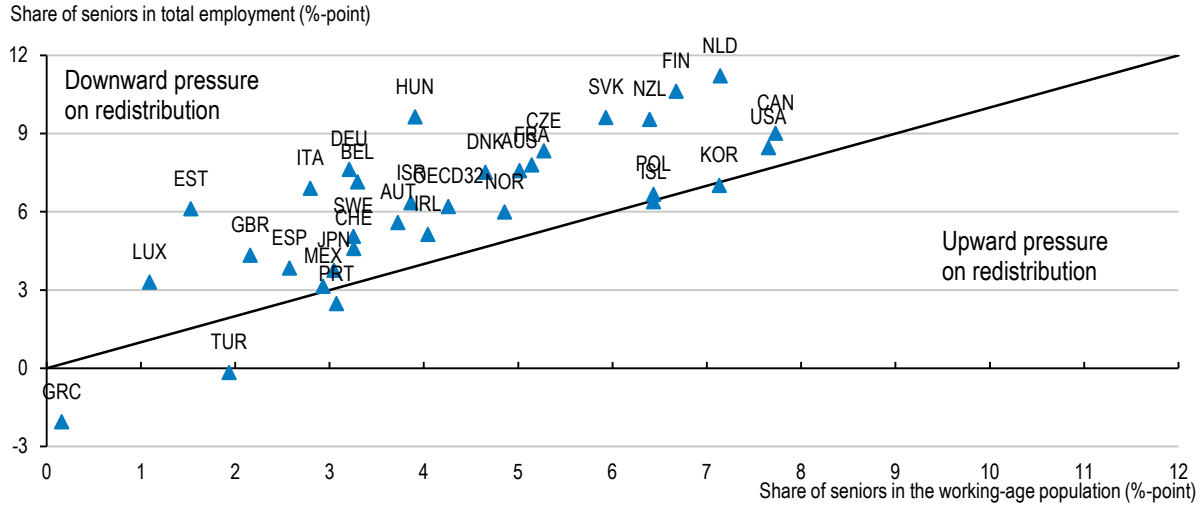
1. Sweden only available for 1995-2005.
2. Social security contributions not available for France.
3. Belgium only available for 1995-2000.
4. Households incomes reported net of personal income taxes in the data (net country).

Note: The populations of households are selected based on the age of the household head. See note to Figure 14 for country-year coverage.

Source: OECD staff calculations based on the Luxembourg Income Study.

Figure 20. The rise in senior employment tends to dominate the impact of ageing in most OECD countries

Share of seniors (aged 55-64) in the working-age population and in total employment
Changes from 1995 to 2015



Note: The horizontal axis shows the change in number of seniors aged 55-64 in per cent of the working-age population (aged 20-64) from 1995 to 2015. The vertical axis shows the corresponding change in the number of employed seniors in per cent of all employed individuals in the working-age population.

Source: United Nations, World Population Prospects: The 2015 Revision; OECD Labour Force Statistics.

5. Redistribution in different parts of the tax-transfer system

5.1 The relative role of income taxes, social security contributions and cash transfers in reducing income inequality, across OECD countries and over time

50. This section goes deeper into the analysis of household income data to shed light on the redistributive effect of different parts of the tax-transfer systems and how this has changed over time. It starts by decomposing overall redistribution along the tax and transfer components; then, within each of these components, it turns to decomposing redistribution along the size (average tax/transfer rate) and progressivity (targeting in the case of transfers) components. This framework for analysing redistribution comes closer to key policy issues, notably the question of fiscal deployment. Nevertheless, it should be kept in mind that this analysis cannot disentangle the policy and non-policy drivers of observed changes in either overall redistribution or tax/transfer redistribution. This issue will be partly addressed in the next step of the project, by moving from decomposition to regression and microsimulation analysis.

51. Measuring redistribution achieved by individual parts of the tax-transfer system is far from straightforward in practice and cannot be performed in the same way as all taxes and transfers taken together. The reason is that transfers and taxes interact with each other in different ways across countries. For example, when transfers are taxed, many transfer recipients with zero market incomes will have positive tax burdens. As a result, determining the redistributive effect of taxes based on comparison between market income and market income minus taxes would give a distorted picture, as positive taxes paid by those with zero market income would make taxes appear regressive. In other words, the sequence used for the Gini comparisons of the different tax/transfer elements matters (the sequence is obviously not an issue when calculating redistribution for the tax transfers system as a whole).

52. This paper adopts the so-called sequential approach to identify the redistributive effect of different part of the tax-transfer systems (Box 4), following in particular Immervoll and Richardson (2011). The idea is that the measurement approach that is chosen depends as far as possible on the actual legal sequence that is implicit in each country tax-transfer system. Annex A2 reports robustness analysis by applying the so-called marginal contribution approach.

Box 4. Measuring redistribution achieved by individual parts of the tax and transfer system

The redistributive effect of individual instruments of the tax and transfer system can in principle be quantified in a similar way as the overall redistributive effect of taxes and transfers (Section 3.4 and Table 1). For example, the redistributive effect of cash transfers can be measured by comparing Gini coefficients of household incomes before and after cash transfers. However, taxes and transfers interact with each other in different ways across countries and the pre-intervention income concepts used to calculate the inequality-reducing effect of different tax and transfer elements can make a significant difference for the results. For instance, if most transfers are taxed, households with zero market incomes will still have positive tax payments; the redistributive effect of taxes would thus appear overly regressive if their redistributive effect is assessed by comparing inequality of market incomes against inequality of market incomes minus taxes.

Several analytical approaches have been developed to measure and isolate the redistributive effect of individual parts of the tax and transfer taking into account inter-dependencies in tax and transfer systems. The marginal contribution approach compares inequality of household disposable incomes against inequality of household incomes excluding the specific tax or transfer instrument whose redistributive effect is being measured. While this has a straightforward interpretation and avoids considerations on inter-dependencies, it comes with the disadvantage that the contributions of the various instruments do not sum to the overall redistributive effect, i.e. it is not a formal decomposition. This limitation can be overcome by applying the sequential approach, which ranks the tax and transfer interventions in a particular order and compares Gini coefficients starting from market incomes and finishing by disposable incomes. Choosing an appropriate sequence is however difficult, especially in a cross-country context. This is sometimes avoided by averaging across all possible sequences, based on the so-called Shapley value (see Shorrocks, 2013). Yet, the fundamental problem that some sequences are inappropriate with respect to the actual tax and transfer system in question still remains.

This paper applies the sequential approach and addresses the problem of choosing an appropriate sequence by following Immervoll and Richardson (2011) and, as far as possible, replicate the actual sequence that is implicit in each country's tax and transfer system. In this respect, the main criteria are the degree to which transfers are taxed and the degree to which transfers are means-tested. In the latter case, entitlement to transfers usually depends on after-tax income, which can distort the redistributive effect of transfers if assessed by comparing inequality in market incomes and in market income plus transfers. The sequencing applied to identify the redistributive effects of personal income taxes and social security contributions is based on the fact that SSC are often deductible from the income-tax base, implying that they tend to affect personal income taxes, while the reverse is unlikely. As a result, the redistributive effect of personal income taxes is always assessed on the basis of income net of SSC.

Against this background, countries are grouped by two main approaches, corresponding to different sequencing for computing the redistributive effect of individual instruments (see Table 2) :

- ***Case I: Taxation of benefits is important and means-testing is relatively unimportant***: in this case, households with zero market incomes tend to have positive tax payments, while entitlement to transfers is relatively independent of tax payments. As a result the applied sequence starts by assessing the redistributive effect of transfers by comparing market income inequality against inequality of market incomes plus transfers. Next, the redistributive effect of social security contributions is assessed by comparing inequality of market incomes plus transfers against inequality of market incomes plus transfers minus SSC. Last, the redistributive effect of personal income taxes is assessed by comparing inequality of market incomes plus transfers minus SSC against disposable income inequality. This approach is used for Austria, Denmark, Estonia, Finland, Greece, Iceland, Luxembourg, the Netherlands, Norway, Spain, Sweden and Switzerland.

- ***Case II: Taxation of benefits is relatively unimportant and means-testing is important***: in this case, transfers tend to be influenced by tax payments through means-testing based on after-tax incomes, while tax payments for households with zero market incomes are less of a problem. As a result the applied sequence starts by assessing the redistributive effect of SSC by comparing inequality of market incomes against inequality of market incomes minus SSC. Next, the redistributive effect of personal income taxes is assessed by comparing inequality of market incomes minus SSC against inequality of market incomes minus SSC minus personal income taxes. Last, the redistributive effect of transfers is assessed by

comparing inequality of market incomes minus SSC and PIT against disposable income inequality. This approach is used for Australia, Canada, Czech Republic, France, Germany, Ireland, Israel, Italy[1], Japan, Korea, Slovak Republic, the United Kingdom and the United States.

Table 2. Assessing the redistributive effect of individual parts of the tax and transfer system

Instrument	Household income before intervention	Household income after intervention
All	Ym	yd = ym + tr – pit – ssc
Case I: Taxation of benefits is important and means-testing is relatively unimportant		
Cash transfers	Ym	ym + tr
SSC	ym + tr	ym + tr – ssc
PIT	ym + tr – ssc	ym + tr – ssc – pit
PIT+SSC	ym + tr	ym + tr – ssc – pit
Case II: Taxation of benefits is relatively unimportant and means-testing is important		
SSC	Ym	ym – ssc
PIT	ym – ssc	ym – ssc – pit
Cash transfers	ym – ssc – pit	ym – ssc – pit + tr
PIT+SSC	Ym	ym – ssc – pit

Note: "yd" refers to household disposable incomes, "ym" refers to household market income, "tr" refers to cash transfers, "pit" refers to personal income taxes and "ssc" refers to employees' social security contributions.

The applied measurement approach addresses some of the limitations associated with assessing redistribution in a cross-country comparative perspective (Ferrarini and Nelson, 2003). A potential problem arises if the legal sequence of taxes and transfers in a given country changes over time. Complete reversals of the sequence are rare in practice, and the problem is, in any case, also encountered by the alternative approach that uses an arbitrary sequence.[2] Another limitation is the inevitably simplistic or stylized nature of the groupings for instance because in many countries there are both taxable and non-taxable transfers, so that the chosen sequence is the one that best though imperfectly adapts to countries' reality. All of that said, the results reported in the paper are found to be robust to the use of alternative approaches, as reported in Annex A2.

Size and progressivity of taxes and transfers

The redistributive effect of separate tax and transfer instruments can be further decomposed into a size effect (i.e. the average tax or transfer rate) and a progressivity effect (targeting in the case of transfers), following Kakwani (1977). This requires first isolating vertical equity (*V*) from reranking (*R*) effects resulting from differences in the ordering of households' incomes before and after taxes and transfers. Vertical equity can then be formally decomposed as the product of size (*t*) and progressivity (*P*):

$$RE = G^{pre} - G^{post} = V - R = \frac{t}{1-t}P - R$$

- *Vertical equity (V)*: The vertical equity principle requires that those with higher incomes should pay more in taxes relative to those with lower incomes. In the decomposition used here, vertical equity measures the inequality-reducing effect of a particular tax or transfer as the difference between the Gini coefficient pre-intervention and the concentration coefficient post-intervention.[3] The latter measure departs from the Gini because it ranks households by pre-intervention incomes, which allows for isolating the pure redistributive effect from that of reranking (see below).

- *Reranking (R)*: The reranking term measures how much vertical redistribution is reduced as a result of differences in the ordering of incomes before and after taxes and transfers. For instance, a household may have close to zero market income and thus be ranked at the bottom of the market income distribution, but be entitled to a generous transfer (typically the case for pensioners), resulting in a ranking closer to the middle in the disposable income distribution. Such changes in the ranking of households are not straightforward to interpret and qualify as intended or unintended outcomes of redistribution; some early theoretical studies on the notion of equity in redistribution have interpreted reranking as the departures from horizontal equity, that is, the requirement that taxpayers in the same economic position pay the same amount of tax (see Plotnick,1981 and Atkinson, 1980), while more recent work has taken reranking as an indication of inefficiencies in the tax and transfer system.[4] In any case, the reranking term is found to be small in most countries (to a good extent because the working-age population covered here largely excludes pensioners for which most of the reranking occurs) and thus only reported in the Annex (Figure A2.5).

- *Progressivity (P):* Personal income taxes are progressive if tax payments rise more than proportional with income. In the decomposition, progressivity is defined as the concentration coefficient of the tax minus the Gini coefficient of pre-tax income, thereby quantifying the departure of the distribution of tax payments from proportionality. Progressivity is zero if taxes are paid proportional to pre-tax incomes, while maximum progressivity (100) is achieved if all taxes are levied on the person with highest income. The Kakwani progressivity indicator is computed in the same way for transfers as for taxes, implying that transfers are technically regressive. The progressivity measure is thus negative for transfers and declines with the degree of targeting of transfers to the bottom of the income distribution, with maximum targeting (-200) achieved if all transfers go to the poorest person.

- *Size (t)*: The size is measured as the effective tax (or transfer) rate by computing total taxes or transfers paid by households in percentage of income before taxes or transfers; and averaging across all households. The size measure is negative for transfers, which ensures that the overall redistributive effect for transfers becomes positive since both progressivity and size are negative.

1. Transfers are generally taxed in Italy, but transfers are reported net of taxes in the LIS data, while personal income taxes and social security contributions have been imputed.
2. The United Kingdom was placed in Case I in Immervoll and Richardson (2011), but is placed in Case II in this paper because of changes in legislation that has tended to increase the extent of means-testing.
3. The concentration coefficient is an indicator calculated in a way analogous to the Gini, except that households are ranked based on an income measure different from the element, whose distribution effect is being considered.
4. See Urban (2009) for an in-depth discussion.

53. Decomposing the redistributive effect of income taxes, social security contributions and cash transfers strongly suggests that the largest part of fiscal redistribution comes from the expenditure side of the budget, although income taxes also play an important role in many countries (Figure 21). On average in the OECD, around three quarters of the reduction in inequality from market to disposable incomes are due to transfers. Personal income taxes and social security contributions (SSC) account for the remaining quarter of redistribution. Going further, for countries for which the split between income taxes and social security contributions is available, social security contributions have a weak yet non-negligible disequalising effect. For example in Germany, social security contributions offset around 11 per cent of redistribution by income taxes and transfers. Personal income taxes play a relatively large role in reducing income inequality in countries that achieve relatively little redistribution overall like Japan, Korea, Italy,[43] Israel and the United States. To a good extent, this reflects relatively undeveloped welfare states compared to other OECD countries, especially in terms of support to the working-age population. In the United States, this rather reflects a heavy reliance on tax provisions.[44] The finding of a much greater role of transfers in redistribution is in line with previous cross-country empirical studies such as inter alia OECD (2008; 2011), Immervoll et al. (2005), Joumard et al. (2012) and Brys et al. (2016). This finding should be kept in mind when discussing the role of taxes in promoting inclusiveness but the implication should not be

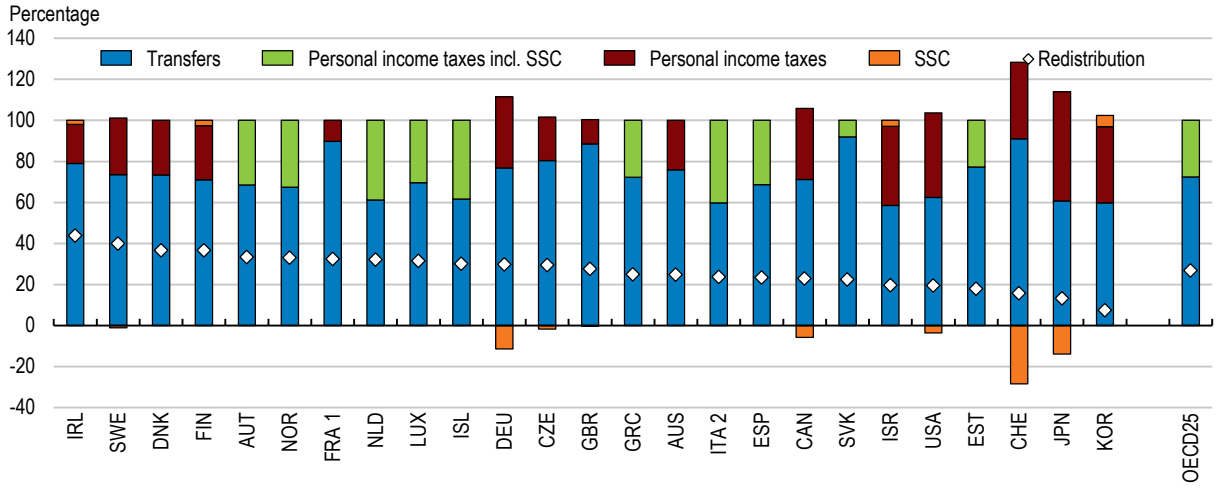
43. The numbers should be interpreted with care for Italy because taxes and social security contributions are based on imputed values in the LIS.

44. Tax credits, such as the earned income tax credit and the child tax credit, are treated as cash transfers in the LIS data.

that taxes have no role. For one, revenue needs being raised to finance social spending; but then, the role of taxes in promoting inclusiveness is very dependent on their design, as discussed below.[45]

Figure 21. In all OECD countries transfers account for the largest proportion of redistribution

Share of total redistribution, working-age population, 2013 or latest available year



1. Social security contributions not available for France.
2. For Italy taxes and social security contributions are based on imputed values (see LIS documentation).

Note: See Box 4 for the approach to assess the redistributive impact of individual parts of the tax and transfer systems. For some countries only the total amount of personal income taxes and social security contributions are reported, while for others the split is available in LIS. Working-age populations include all households with a household head aged 18-65. Data refer to 2005 for Sweden; 2008 for Japan; 2010 for Australia, Canada, France, Iceland and Ireland; 2012 for Israel and Korea; 2014 for Italy; and 2013 for the rest.

Source: OECD staff calculations based on the Luxembourg Income Study.

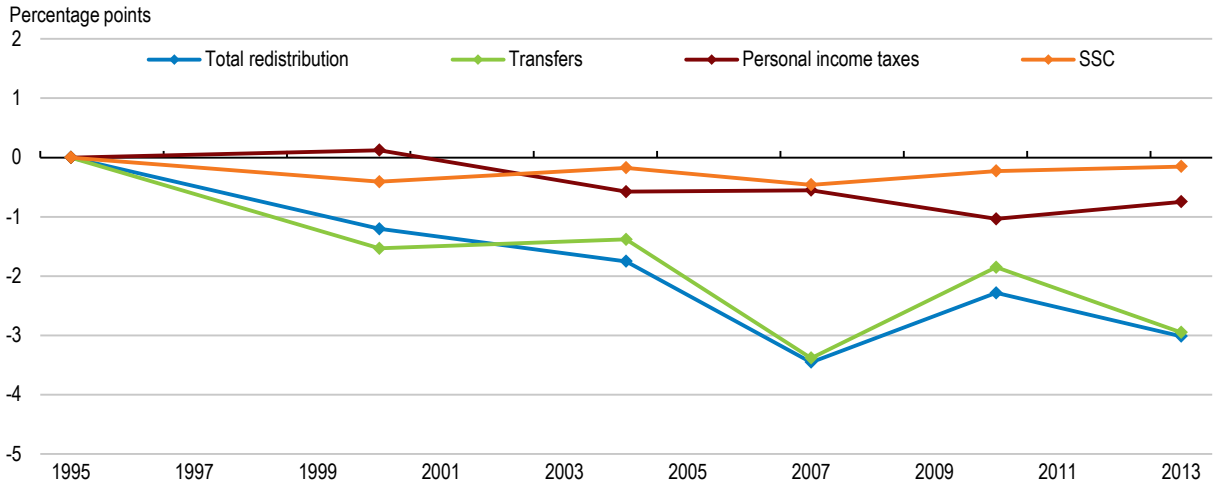
54. Assessing changes in the equalising role of taxes and social security contributions relative to that of cash transfers provides some indication of the sources of changes in overall redistribution achieved by the tax and transfer system. The broad message from this exercise is that the widespread decline in overall redistribution has been primarily driven by a decline in redistribution by cash transfers although personal income taxes have also contributed, while changes in social security contributions have been distributionally neutral overall (see Figure 22 and Figure A1.5 for detailed country profiles). On average across OECD countries for which data are available, redistribution by cash transfers has declined by 3 percentage points over the last two decades. This corresponds to the current difference in the redistributive effect of transfers between Austria and Finland (based on LIS data for the latest year available). The effectiveness of personal income taxes in reducing inequalities has also declined, though the downward trend has been partly reversed after the crisis.

45. See Brys et al. (2016) for a qualitative analysis and detailed discussion. As stressed before, taxes other than income taxes cannot be considered here because of data unavailability, nor employer contributions and payroll taxes, which limit the capacity to deliver evidence-based recommendations on overall tax design. The evidence here is limited to the design of personal income taxes and employee social security contributions.

Figure 22. The redistributive effects of transfers has declined markedly across OECD countries

Change in redistribution for the working-age population

A. From mid-1990s, unbalanced average across 17 OECD countries



B. From mid-1990s to 2013 or latest available year

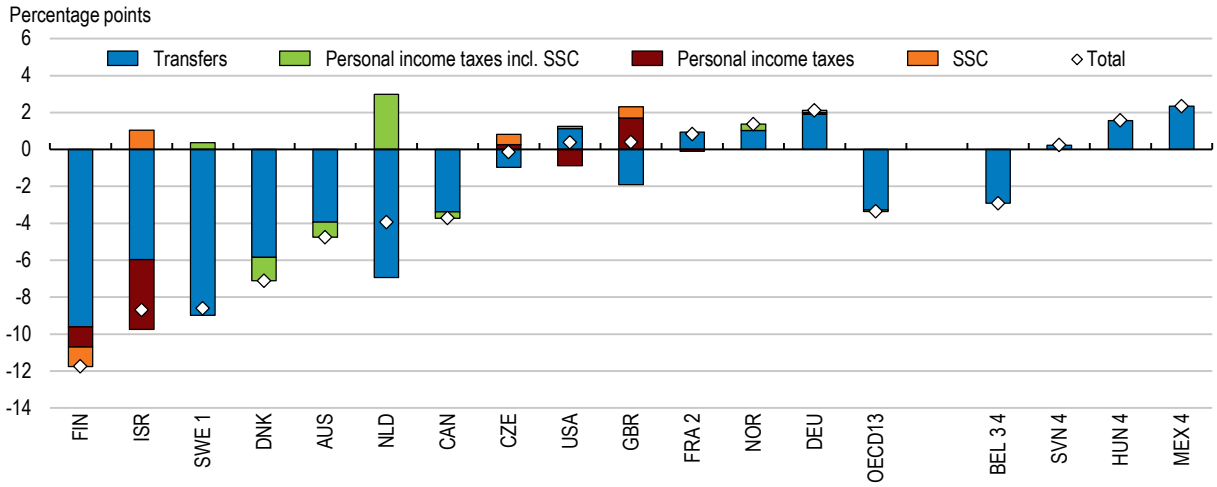
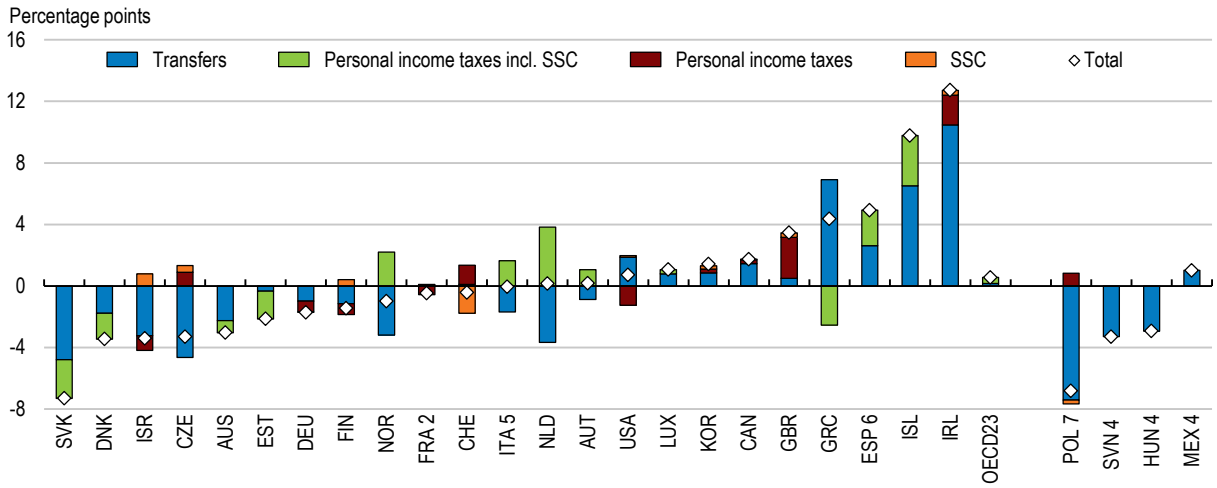


Figure 22. (cont.)

C. From mid-2000s to 2013 or latest available year



1. Sweden only available for 1995-2005.
2. Social security contributions not available for France.
3. Belgium only available for 1995-2000.
4. Households incomes reported net of personal income taxes in the data (net country).
5. For Italy taxes and social security contributions are based on imputed values (see LIS documentation).
6. Changes over time for Spain should be interpreted cautiously due to a change in methodology (use of administrative sources for the latest year).
7. Information on personal income taxes and social security contributions are incomplete for Poland.

Note: See Box 4 for the approach to assess the redistributive impact of individual parts of the tax and transfer systems. For Panel A the unbalanced average for total redistribution and the impact of transfers are based on 17 countries (Australia, Austria, Canada, Czech Republic, Denmark, Estonia, Finland, Germany, Israel, Italy, Luxembourg, the Netherlands, Norway, Slovak Republic, Switzerland, the United Kingdom and the United States), of which 10 countries are available for personal income taxes and 8 countries for SSC. All trends are constructed by first computing the average change between two consecutive periods, then cumulating the period averages from mid-1990s to 2013. Only countries with observations for more than half of the benchmark years shown are included. See Figure A4 in the Annex for a balanced average across 7 OECD countries. For Panel B data refer to 1993-2013 for the Netherlands; 1994-2010 for Canada and France; 1994-2012 for Hungary; 1994-2013 for Germany, the United Kingdom and the United States; 1995-2000 for Belgium; 1995-2005 for Sweden; 1995-2010 for Australia; 1995-2013 for Denmark, Finland and Norway; 1996-2012 for Mexico; 1996-2013 for Czech Republic; 1997-2012 for Israel and Slovenia. For Panel C data refer to 2003-2010 for Australia; 2004-2010 for Canada, Iceland and Ireland; 2004-2012 for Mexico and Slovenia; 2004-2014 for Italy; 2005-2010 for France; 2005-2012 for Hungary and Israel; 2006-2012 for Korea; 2007-2013 for Spain and Greece; and 2004-2013 for the rest.

Source: OECD staff calculations based on the Luxembourg Income Study.

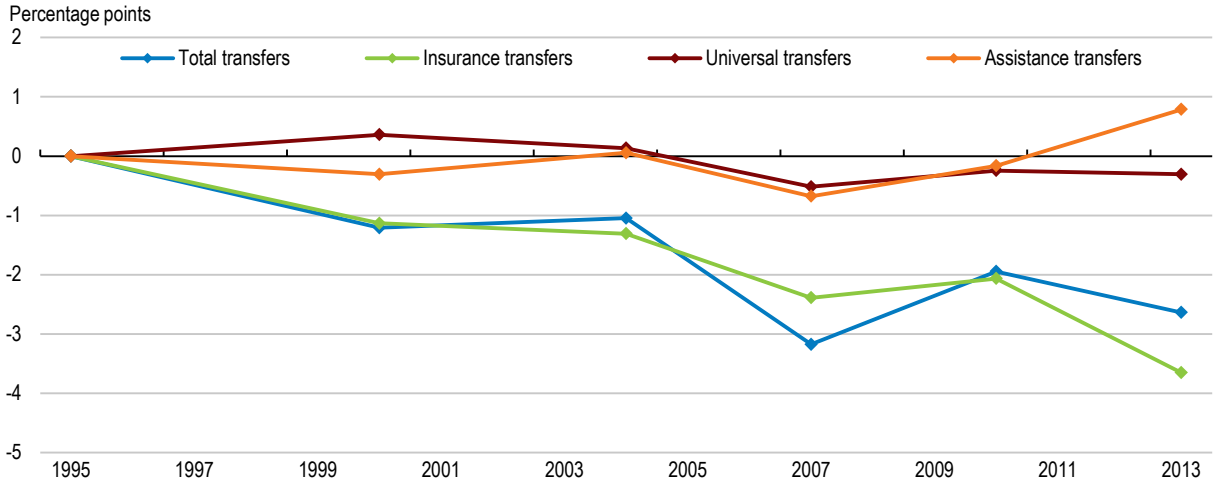
55. The finding that the trend decline in redistribution over the last two decades is primarily explained by less effective cash transfers is to be expected insofar as they explain the bulk of redistribution levels in all OECD countries. However, taxes also played a role in shaping that trend, despite their lower weight in redistribution. Moreover, average findings do not equally apply to all countries and periods. In countries where overall redistribution declined markedly since the mid-90s, such as Australia, Canada, Denmark Finland, Israel, the Netherlands and Sweden this was indeed driven primarily by less redistributive cash transfers while income taxes played a less important and more heterogeneous role (in the Netherlands income taxes tended to counteract the trend decline in transfer redistribution). In countries hard hit by the crisis and where overall measured redistribution increased markedly over the last decade this was also driven by more effective transfers rather than by taxes (Ireland), while again income taxes played a less important and more heterogeneous role (in Greece income taxes tended to counteract the increase in transfer redistribution).

56. Despite the aforementioned heterogeneity in countries' experiences, one common pattern is that the decline in the redistributive effect of cash transfers was largely driven by less redistributive insurance

transfers (e.g. work-related unemployment and disability transfers), which was only partly mitigated by more redistributive assistance transfers (e.g. minimum income transfers, means-or income-tested social safety net) (Figure 23). Insurance transfers represent a higher proportion of mean household disposable income but they are relatively spread out across the distribution. By contrast, assistance transfers represent a lower proportion of mean household disposable income but they are concentrated in the bottom of the distribution (Section 3.2). It may be somewhat counterintuitive to find that the decline in redistribution was driven by the type of transfers that by nature are less targeted at the bottom of the distribution and that the increase in redistribution through targeted transfers did not achieve reverting the trend towards less redistribution. As discussed throughout this paper, this is due to the fact that the inequality-reducing effect of assistance transfers is lower than that of insurance transfers because the size of assistance transfers is smaller than that of insurance transfers. The broad implication is that their inequality-reducing effect needs to increase quite substantially in order to offset the trend towards less redistributive insurance transfers.

Figure 23. The decline in transfer redistribution was largely driven by less redistributive insurance transfers

Change in transfer redistribution for the working-age population
A. From mid-1990s, unbalanced average across 10 OECD countries



B. From mid-1990s to 2013 or latest available year

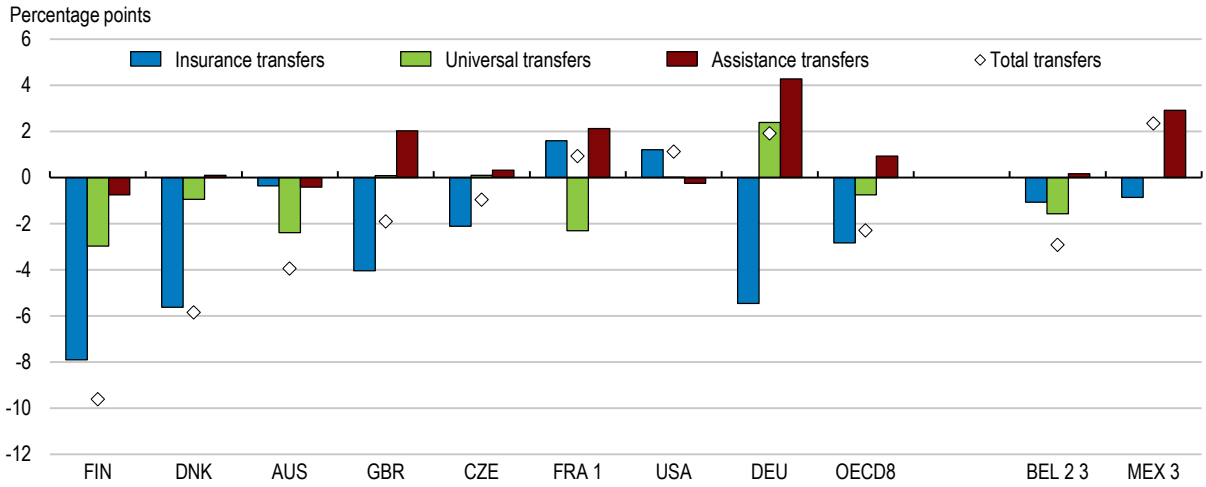
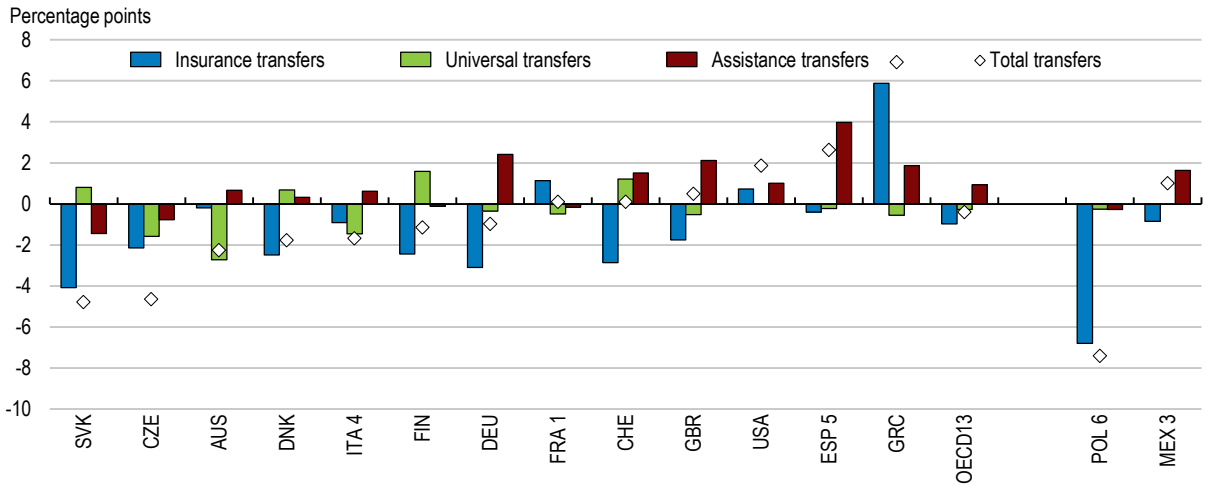


Figure 23. (cont.)

C. From mid-2000s to 2013 or latest available year



1. Social security contributions not available for France.
2. Belgium only available for 1995-2000.
3. Households incomes reported net of personal income taxes in the data (net country).
4. For Italy taxes and social security contributions are based on imputed values (see LIS documentation).
5. Changes over time for Spain should be interpreted cautiously due to a change in methodology (use of administrative sources for the latest year).
6. Information on personal income taxes and social security contributions are incomplete for Poland.

Note: See Box 4 for the approach to assess the redistributive impact of individual parts of the tax and transfer systems. For Panel A the unbalanced averages are based on 10 countries with detailed information on transfers by categories (Australia, Czech Republic, Denmark, Finland, Germany, Italy, Slovak Republic, Switzerland, the United Kingdom and the United States). See note to Figure 18 for details on the construction and Figure A4 in the Annex for a balanced version.

Source: OECD staff calculations based on the Luxembourg Income Study.

5.2 The relative role of size of taxes and transfers, of tax progressivity and of transfer targeting in reducing income inequality, across OECD countries and over time

57. As explained in Box 4, the inequality-reducing effects of taxes and transfers is essentially determined by the interplay between their size (i.e. transfers received/taxes paid relative to household income, averaged across all households – not only taxpayers/transfer recipients) and their progressivity (targeting in the case of transfers). The relative importance and combination of size and progressivity for achieving income redistribution differs markedly across OECD countries, as illustrated in Figure 24 through the use of so-called "iso-redistribution" curves: these curves allow for measuring and visualising how a given level of redistribution is achieved by different combinations of size and progressivity.[46] For example, transfers reduce market income inequality by around 7 Gini points in both Estonia and the United States (Figure 24, Panel A). This results from relatively weakly targeted yet moderately-sized transfers in the case of Estonia by contrast with highly targeted yet small-sized transfers in the case of the United States.

58. The iso-curves also allow for comparing the magnitude of the rise in either targeting or size that would be required to achieve a given increase in redistribution. For instance, Canada would raise the redistributive effect of transfers by slightly more than 2 Gini points by stepping-up social spending so as to

46. The redistributive effect is reported as the difference between the Gini before and after intervention, i.e. no normalisation by the initial level of inequality as in the main part of the paper (see Table 1). The re-ranking effect has been set to zero for the construction of the iso-redistribution curves (see Box 4).

increase the size of its transfer system from its current level to the OECD average level, while keeping targeting unchanged. Such a change in transfer size broadly corresponds to two thirds of the OECD standard deviation. To achieve the same inequality-reducing effect by more targeting, while keeping size unchanged, Canada would have to increase the targeting of transfers to the highest OECD levels, close to that observed in Australia. Such a change in transfer targeting broadly corresponds to 2.5 OECD standard deviations. This would likely require substantial shifts in the composition of transfers towards more means-tested benefits for low-income households.

59. In line with the descriptive evidence presented in Sections 2 and 3, the size of transfers is found to vary substantially across countries, from less than 10 per cent of household incomes in Japan and Korea[47] to around 30 per cent of household income in Hungary and Ireland, even though part of these differences are likely to reflect differences in cyclical conditions (in particular unemployment).[48] The degree to which transfers target lower-income households also varies across the OECD and is not systematically associated with the size of transfers (nor with the level of social spending). Transfers are highly targeted in Australia and the United Kingdom, but they are of bigger size hence relatively more redistributive in the latter compared to the former country.

60. Whether more targeting of transfers actually enhances redistribution has been a matter of long controversy in the literature, fostered by an influential study by Korpi and Palme (1998) which highlighted a negative cross-country association between targeting and redistribution, giving the name to the so-called "paradox of redistribution".[49] Recent studies have delivered more nuanced conclusions on the basis of a weak positive association between the degree of targeting of transfers and their redistributive effect (e.g. Marx et al., 2013, and, more recently, Guillaud et al., 2017), as also suggested here (see also Figure A2.5). Even so, many OECD countries are placed along relatively steep transfer iso-redistribution curves, indicating that, all else equal, increasing the targeting of transfers would be less effective than increasing their size for inequality reduction (Figure 24, Panel A).

61. Overall, cross-country differences in transfer redistribution partly reflect differences in the mix between various categories of transfers which feature different size and targeting (see Figure A2.5): insurance transfers play the largest role in reducing overall inequality because of their large size. Assistance transfers are usually targeted and smaller in size by design, so that their impact on overall inequality is limited in most countries. Still, such transfers play a key role in ensuring income adequacy among vulnerable groups and securing minimum living standards. Across OECD countries for which data are consistently available, the United Kingdom features the largest inequality-reducing effect of assistance transfers, which reflects a significantly larger size than other countries (the average benefit rate is around 8.5%, compared to less than 3% for the rest of the countries available).

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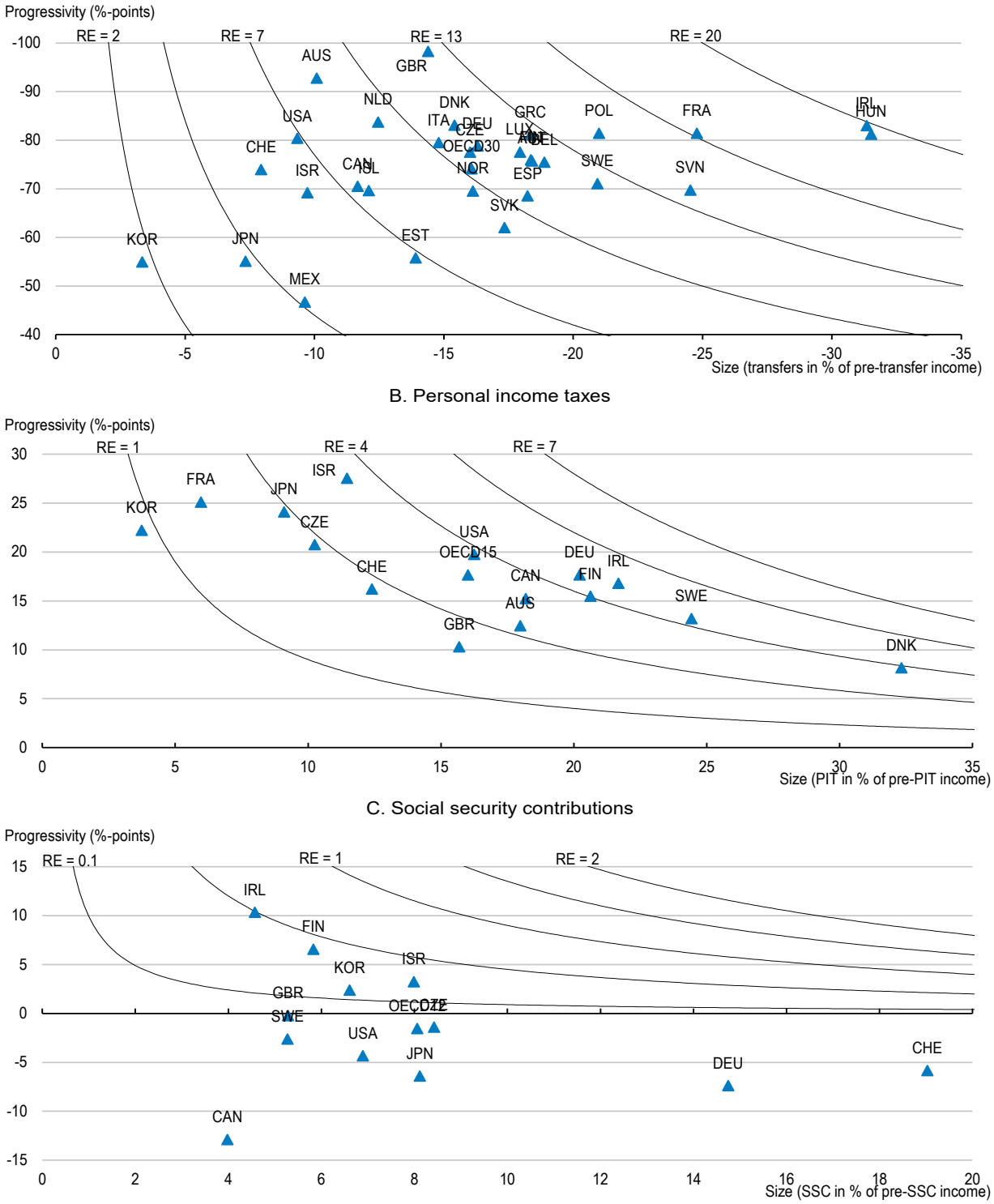
47. The redistributive effects of taxes and transfers in Korea is likely to be underestimated since total revenues and spending levels in the LIS data are substantially lower than corresponding measures from national accounts (Endeweld and Alkemade, 2014).

48. The average transfer size shown in Figure 24 (based on LIS data) may differ from the one shown in Figure 5 (based on IDD). In addition, the comparison of the redistributive effect, size and progressivity (targeting) of individual parts of tax and transfer systems should be taken with some caution since levels are sensitive to the measurement approach applied. This is less problematic for the analysis of developments in redistribution (see Box 4).

49. The result has been interpreted as resulting from a political process: a high degree of targeting towards low-income households is unlikely to gain political support unless combined with limited total spending on transfers since financing falls on the majority of households via income taxes. Given this likely trade-off, it has been argued that universal or insurance-based transfers, non- or weakly targeted by construction, may be needed to ensure support for redistribution and can be as effective in reducing overall inequality as attempts to implement highly targeted transfers to low-income groups.

Figure 24. Size is what matters most for redistribution in the case of transfers and personal income taxes

Working-age population, 2013 or latest available year



Note: See Box 4 for details on the decomposition and the approach to assess the redistributive impact of individual parts of the tax and transfer systems. The solid curves show different combinations of size and progressivity with the same redistributive effect, reported as the difference between the Gini before and after intervention, i.e. no scaling by the initial level of inequality as in the main part of the paper (see Table 1). The re-ranking effect has been set to zero for the construction of the iso-redistribution curves (see Box 4).

Source: OECD staff calculations based on the Luxembourg Income Study.

62. Designing well-targeted transfers towards low-income groups is challenging, even though in principle targeting is a cost-effective instrument to reduce inequality and poverty. This reflects various obstacles associated with means- or income-testing such as considerable non-take up and high administration costs, but also that targeted transfers can be distortive by creating low-income traps. The bottom line is that even though in principle the same level of redistribution may be achieved by different combinations of average transfer rates and targeting, the data tend to suggest that in practice observed transfer rates are in many OECD countries too low for targeting to have a major impact.

63. On the tax side, simple statistical analysis of the association between size and progressivity of PIT delivers a negative and significant cross-country correlation, in contrast to the weak correlation found in the case of transfers (Figure 24, Panel B).[50] This may be tentatively explained by the need for countries with relatively high tax burdens (typically Nordic countries) to rely on a tax mix that minimises distortionary costs, which may then call for relatively low levels of PIT progressivity. Conversely, countries with relatively low tax burdens (typically Anglo-Saxon countries) may "afford" higher levels of progressivity because (given the limited size of the PIT system) this would result in minor efficiency losses (Lindert, 2004).

64. Countries' relative positions along PIT iso-redistribution curves tend to suggest that size rather than the progressivity is what matters most for redistribution, as in the case of transfers (Figure 24, Panel B, see also Figure A5). However, countries are not placed along PIT iso-redistribution curves as steep as transfer iso-redistribution curves, indicating that increasing the progressivity of PIT while keeping size unchanged would be relatively effective for PIT-driven inequality reduction compared to increasing the targeting of transfers while keeping size unchanged for transfer-driven inequality reduction.[51]

65. Employees' social security contributions are sizeable, representing 8 per cent of household incomes on average and as much as 15 per cent in Germany and Switzerland. They tend to be mildly regressive, with their overall redistributive effect being relatively small (Figure 24, Panel C). The disequalising effect of SSC reflects the frequent use of upper contribution limits and the flat payment below those limits. SSC tend to be slightly progressive in Finland and Ireland, which can be related to the absence of ceilings, and for Ireland to a lower threshold on contributions. In Germany, SSC in percentage of household disposable incomes declines markedly from the 9th to the 10th decile due to an upper contribution limit, resulting in an overall highly regressive effect of SSC. In the lower parts of the income distribution SSC tend to be progressive or close to neutral (see Figure A1.2 and Bach et al., 2016). The regressive nature of SSC needs to be qualified by considering the tax and transfer system as whole as SSC can play a key role in financing redistributive transfers.

66. As shown above, tax and transfer systems have in many OECD countries become less redistributive since the mid-1990s, which was mainly driven by a decline in the redistributive effect of transfers and, to a much lesser extent, of personal income taxes (Figure 22). The size-progressivity decomposition further shows that such decline in redistribution was largely driven by declines in the size of transfers as well as of personal income taxes (Figure 25, Panel A; see Figure A1.6 for country profiles); the latter effect contributed comparatively less than the former because transfers have a much stronger

50. This finding is in line with the bulk of the literature (Lindert 2004; Prasad and Deng, 2009) and in particular one recent LIS-based paper by Guillaud et al (2017). OECD (2008), Chapter 4 delivers a negative association between size and targeting of transfers but based on a different approach and in particular considering the total population which in the case of transfers makes a big difference due to pensions.

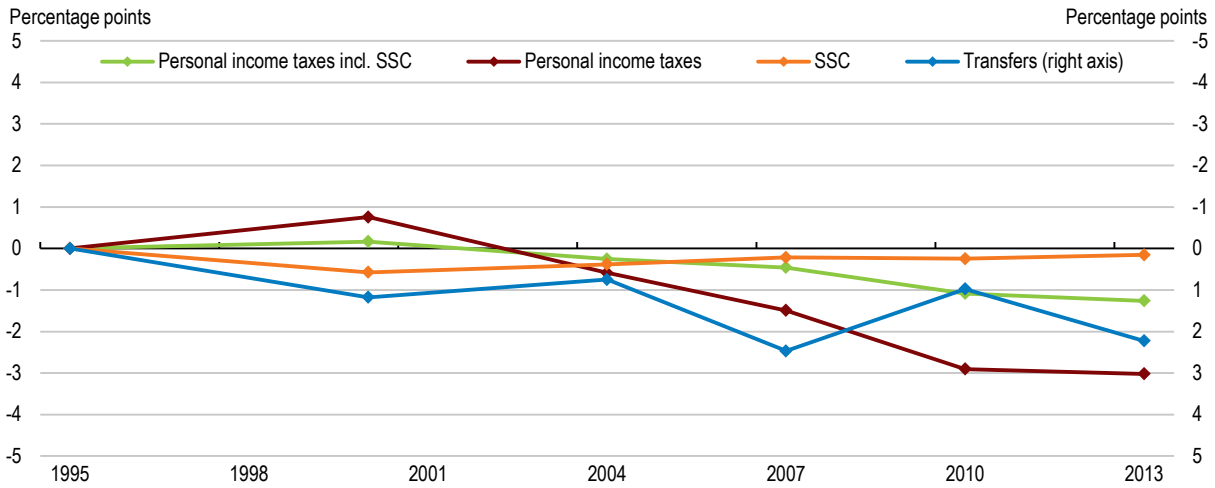
51. This comparison is not *between* PIT and transfers but *within* each of these broad instruments: it does not consider the relative effectiveness of PIT versus transfers for inequality reduction. As shown and discussed, transfers are more in most countries more effective than PIT for inequality reduction.

impact on inequality reduction than personal income taxes. The targeting of transfers changed little between the mid-1990s and 2013 while the progressivity of PIT tended to increase, hence mitigating the decline in redistribution, on average across countries for which data are consistently available (Figure 25, Panel B). Finally, social security contributions remained on average fairly unchanged both in terms of size and progressivity.

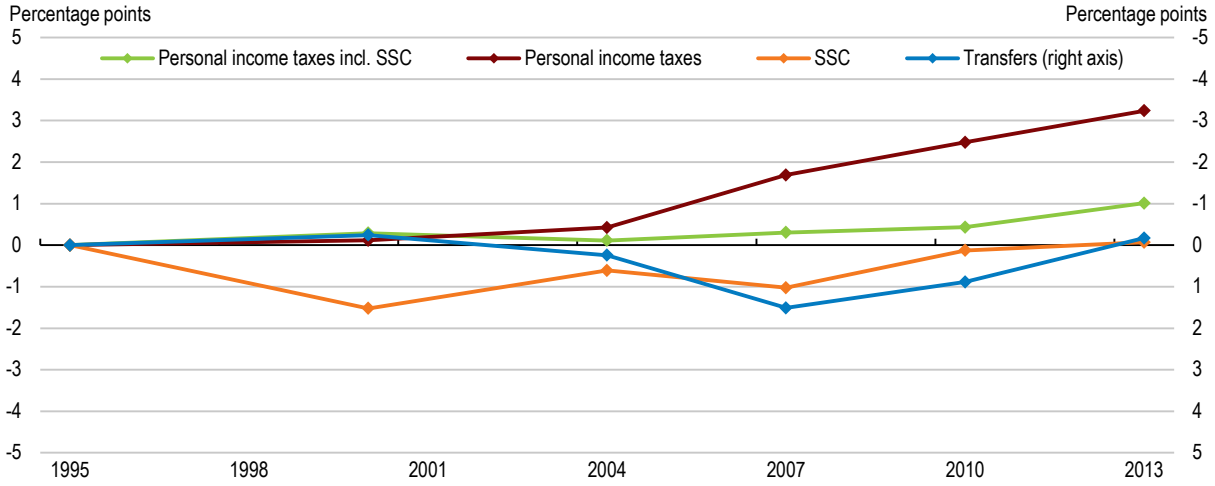
Figure 25. Declines in redistribution were largely driven by declines in the size of both personal income taxes and transfers

Working-age population, unbalanced average across 17 OECD countries

A. Size (transfers received and taxes paid in % of household income)



B. Progressivity



Note: The unbalanced averages for transfers and personal income taxes incl. SSC are based on 17 countries; personal income taxes only is based on 10 countries; and SSC is based on 8 countries. The difference in country coverage explains why the size of PIT+SSC declines less than the sum of the two trends in Panel A. See note to Figure 18 for details on the unbalanced average. See Box 4 for the approach to assess the redistributive impact of individual parts of the tax and transfer systems. See Figure A2.8 for a balanced average across 7 OECD countries.

Source: OECD staff calculations based on the Luxembourg Income Study.

67. Tracking OECD averages over time gives an idea of broad trends in the size and progressivity of taxes and transfers and is useful for illustrating the influence of automatic stabilisers, as can be seen in the

cyclical evolution of transfers over the crisis and recovery period. However, this average approach needs being complemented with a more granular country-by-country approach. Starting with transfers, this indeed suggests that OECD countries experienced heterogeneous developments over the last two decades (Figure 26, Panel A; see Figure A2.7 for a transfer-by-transfer analysis):

- The size of transfers declined, while their targeting increased in Australia, Belgium, Denmark, Finland, Hungary, and the United Kingdom. In all cases the net effect was a decline in redistribution, except Hungary for which the increase in targeting was particularly strong.

- Both size and targeting declined in Israel, the Netherlands and Sweden, while size was almost unchanged and targeting declined in Canada, resulting in sizeable declines in the redistributive effect of transfers.

- The size of transfers increased in France, Germany, Mexico, Norway and the United States. While targeting remained stable in France, Germany and the United States, it declined in Mexico and Norway. As a result the redistributive effect remained unchanged or increased in these countries.

68. Focusing on the last decade from mid-2000s to 2013 (or latest available year) allows for expanding the country coverage (Figure 26, Panel B), but cross-country differences tend to reflect cyclical differences associated with the recession, including variation resulting from different available years across countries in the micro data. For instance, the size of transfers increased substantially in Greece, Ireland and Spain, a result of the surge in unemployment. Although the targeting of transfers remained unchanged on average across countries, the country-by-country examination shows that it actually increased significantly in a number of OECD countries. The bottom line is that over the last two decades more targeted transfers did not deliver more redistributive transfers, not least because increased targeting often was combined with decreased size.

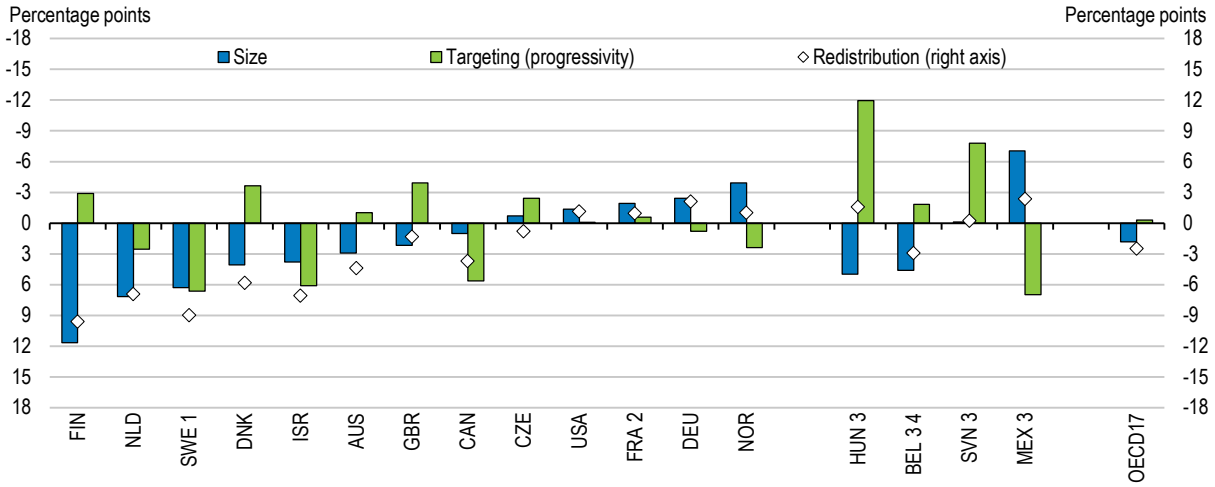
69. The decline in the size of cash transfers is likely to have been driven by a mix of structural, policy and cyclical factors. For instance, many OECD countries have tightened unemployment insurance eligibility rules over the last decades and reduced the duration of benefit support; such changes, combined with the rising employment share of non-standard workers (who are often not covered by unemployment insurance), may have: i) reduced the number of unemployment insurance recipients and, ii) shifted unemployment income support from insurance to assistance schemes with typically lower coverage and lower replacement rates (OECD, 2015a).[52]

70. Changes in the composition of transfer recipients are also likely to have contributed to changes in the size of transfers, in particular over the last decade. As the crisis started over the period 2008-2009, a large share of the newly unemployed were entitled to first-tier unemployment insurance, implying a rise in the share of unemployed receiving associated transfers (Figure 27), especially in Estonia, Finland, Norway, Slovenia and the United States (in which case this also is likely to reflect the 2008-2010 unemployment insurance extensions). As the prolonged recession unfolded, many unemployed exhausted rights to first-tier unemployment benefits and moved to social safety net transfers characterised by lower replacement rates. Changes in the composition of unemployed meant a rise in the share of long-term unemployed. Accordingly, the share of unemployed covered by unemployment insurance transfers declined in almost all countries from 2009 to 2014 (Figure 27).

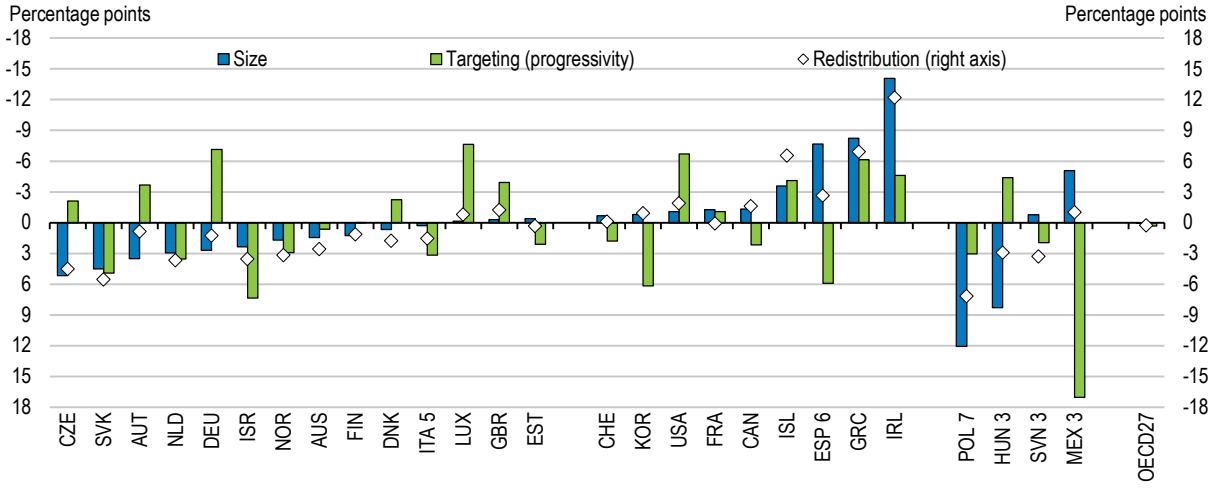
52. Immervoll and Richardson (2011) also show that in a number of OECD countries over the period 1995-2005 benefit levels have tended to decline relative to earnings, either as a result of benefit cuts or due to incomplete indexation to earnings growth.

Figure 26. In many countries transfers became less redistributive because of declining size

Change in size and progressivity of cash transfers to the working-age population
A. From mid-1990s to 2013 or latest available year



B. From mid-2000s to 2013 or latest available year



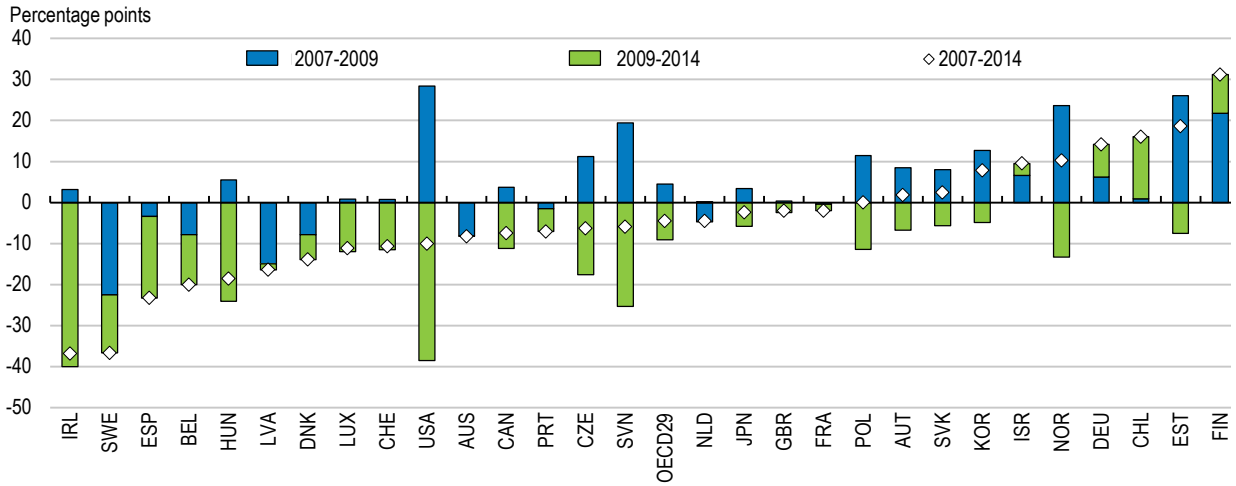
1. Sweden only available for 1995-2005.
2. Social security contributions not available for France.
3. Households incomes reported net of personal income taxes in the data (net country).
4. Belgium only available for 1995-2000.
5. For Italy taxes and social security contributions are based on imputed values (see LIS documentation).
6. Changes over time for Spain should be interpreted cautiously due to a change in methodology (use of administrative sources for the latest year).
7. Information on personal income taxes and social security contributions are incomplete for Poland.

Note: See Box 4 for the approach to assess the redistributive impact of individual parts of the tax and transfer systems. For Panel A data refer to 1993-2013 for the Netherlands; 1994-2010 for Canada and France; 1994-2012 for Hungary; 1994-2013 for Germany, the United Kingdom and the United States; 1995-2000 for Belgium; 1995-2005 for Sweden; 1995-2010 for Australia; 1995-2013 for Denmark, Finland and Norway; 1996-2012 for Mexico; 1996-2013 for Czech Republic; 1997-2012 for Israel and Slovenia. For Panel B data refer to 2003-2010 for Australia; 2004-2010 for Canada, Iceland and Ireland; 2004-2012 for Mexico and Slovenia; 2004-2014 for Italy; 2005-2010 for France; 2005-2012 for Hungary and Israel; 2006-2012 for Korea; 2007-2013 for Spain and Greece; and 2004-2013 for the rest.

Source: OECD staff calculations based on the Luxembourg Income Study.

Figure 27. The coverage of unemployment benefits tended to increase in the initial phase of the crisis but to decline strongly thereafter

Change in number of recipients of unemployment insurance benefits in percentage of unemployed



Note: The data refer to primary out-of-work benefits typically received during an initial phase of unemployment, unemployment insurance in most countries, but unemployment assistance in countries that have no unemployment insurance and instead operate means-tested unemployment assistance as the primary benefit, such as Australia.

Source: OECD Benefit Recipients Database (SOCR).

71. Turning to the analysis of changes in tax redistribution associated along the size and progressivity dimensions delivers the following main insights, from the mid-1990s to 2013 (Figure 28, Panel A):

- The size of PIT and SSC declined while progressivity increased in Australia, Czech Republic, Israel and the United Kingdom. The interplay between these two offsetting forces was a decline in redistribution in Israel as well as (but to a much lesser extent) in Australia, and an increase in Czech Republic and the United Kingdom.

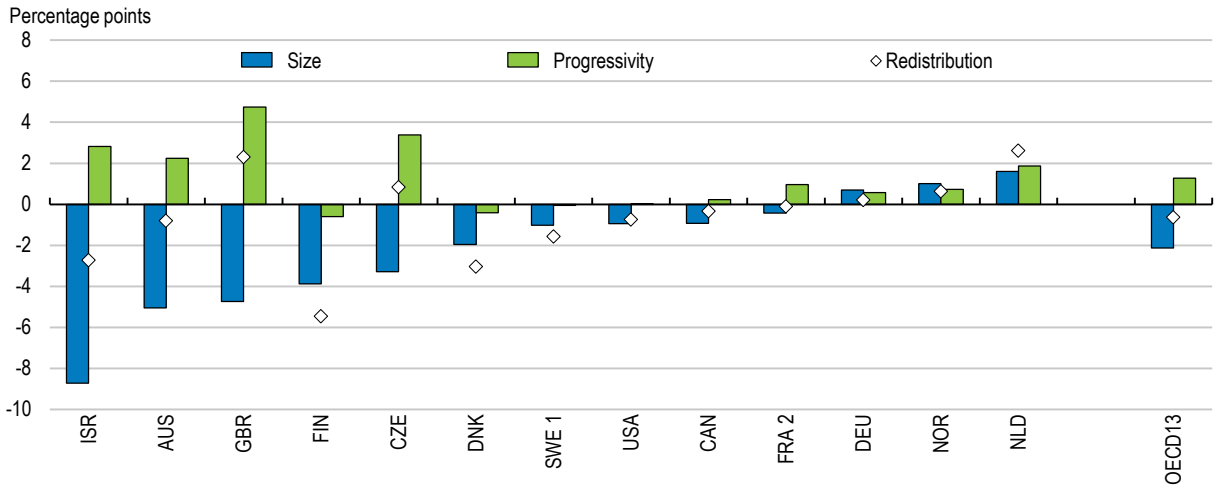
- The size of PIT and SSC declined while progressivity changed little in Canada, Denmark, Finland, Sweden and the United States, resulting in a decline in redistribution.

- Size and progressivity tended both to increase in Germany, the Netherlands and Norway. Associated changes were of relatively low magnitude resulting in small changes in redistribution, except for the Netherlands, experiencing a significant increase in tax redistribution.

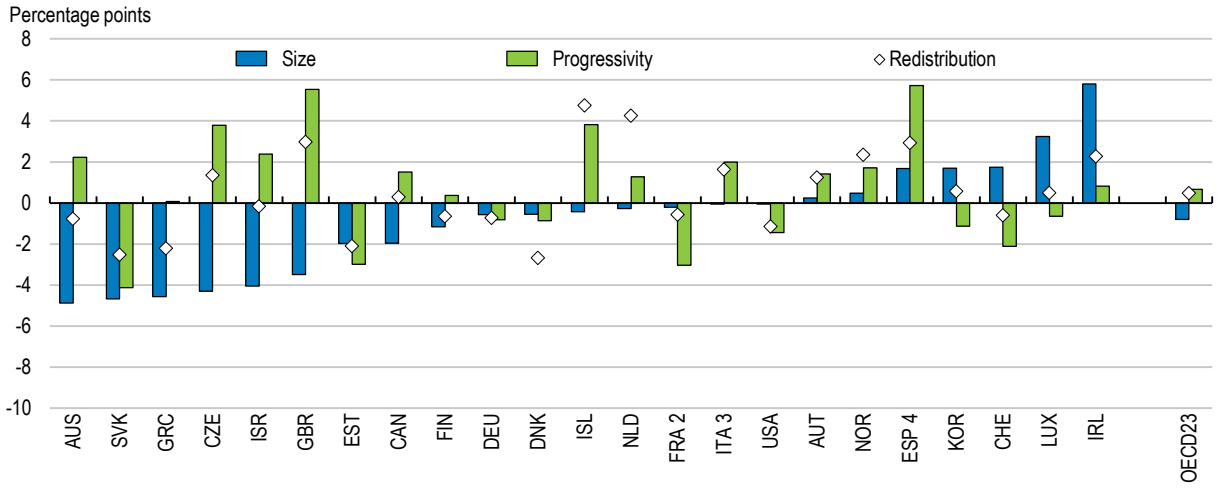
Figure 28. Declines in the size of personal income taxes in most OECD countries tended to reduce redistribution

Change in size and progressivity of PIT and SSCs paid by the working-age population

A. From mid-1990s to 2013 or latest available year



B. From mid-2000s to 2013 or latest available year



1. Sweden only available for 1995-2005.
2. Social security contributions not available for France.
3. For Italy taxes and social security contributions are based on imputed values (see LIS documentation).
4. Changes over time for Spain should be interpreted cautiously due to a change in methodology (use of administrative sources for the latest year).

Note: See Box 4 for the approach to assess the redistributive impact of individual parts of the tax and transfer systems. See note to Figure 22 for data country-year coverage.

Source: OECD staff calculations based on the Luxembourg Income Study.

72. From the mid-2000s to 2013, the size of PIT and SSC also declined in the majority of countries with available data, but was in most cases counteracted by rising progressivity (Figure 28, Panel B). Part of the decline in the size of direct household taxes is likely to be cyclical, that is, to reflect the effects of declining tax revenues over the crisis period. At the same time, this was counteracted by fiscal consolidation measures in a number of European countries (OECD, 2015a), which could explain the rise in the size of PIT and SSC in Ireland and Spain. In line with observed differences in the steepness of iso-redistribution curves between taxes and transfers, counteracting changes in size and progressivity of PIT

and SSC tended to shape redistribution with fairly equal forces, in contrast to transfers for which changes in size tended to dominate over changes in targeting. The bottom line is that over the last two decades more tax progressivity did deliver more tax redistribution, which in a number countries offset the counteracting general decline in the size of the tax system.

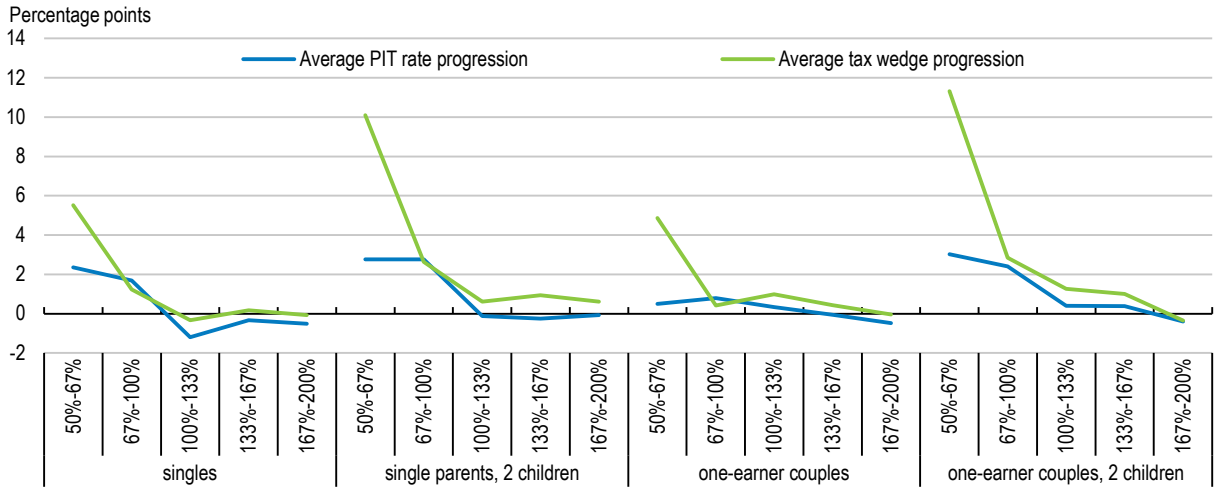
73. Besides cyclical effects, the finding of a general decline in the size of PIT and SSC is likely to reflect policy reforms that have sought to reduce labour and personal income taxation across OECD countries. Recent analysis based on *OECD Taxing Wages* models documents widespread declines in average tax wedges and income tax burdens of tax policy changes for different family types: from 2000 to 2016 the average personal income tax rate has been declining in 29 out of 35 OECD countries for all or some of the family types considered in *Taxing Wages* models, with the largest declines observed for families with children (OECD, 2017c, Chapter 6).

74. The finding that the progressivity of PIT has tended to increase over the last decades is in line with other micro-based studies, including Immervoll and Richardson (2011). Such increase in overall progressivity of PIT may reflect differential developments across the income distribution and over time.[53] For instance, the well-known decline in top statutory PIT rates across OECD countries took place in most cases over the 1980s and early 1990s, with a slight reversal over the last decade (Brys et al., 2016). Recent work based on *OECD Taxing Wages* (OECD, 2014a) allows for a granular assessment of PIT progressivity by measuring the increase in the average effective tax rate across a range of wage levels (and for different family types). This shows that the rise in overall PIT progressivity from 2000 to 2015 across OECD countries has been driven by developments in income taxation at the low-end of the wage distribution (Figure 29): the data indicate a substantive increase in progressivity across incomes from 50 to 100 per cent of average wages, and a slight decline in progressivity across incomes from 167 and 200 per cent of average wages. This increase in progressivity at the bottom is likely to reflect tax reforms to encourage hiring of workers and to make work pay at the low end of the earnings distribution, in the latter case particularly so for families with children. Reforms in this area include cuts to labour taxes and SSC targeted to low-income workers but also expansions of in-work benefits and tax credits as well as child-related tax reliefs and cash transfers.

53. One note of caution is needed here: top incomes data suffer from underreporting in household surveys like the LIS. See Section 7 for a brief discussion of the likely effect on the assessment of changes in redistribution.

Figure 29. Progressivity of personal income taxes has increased at lower income levels and decreased at higher income levels

Average change from 2000 to 2015 across OECD countries, by household type and income interval



Note: The indicator measures how the average PIT rate or the average tax wedge increases per percentage point increase in income over a given income range. Income is expressed in percentage of average wage. See OECD (2014) for methodology and country-by-country results.

Source: Special feature in Taxing Wages 2014 and additional calculations by CTP.

6. Changes in redistribution to the bottom 40%

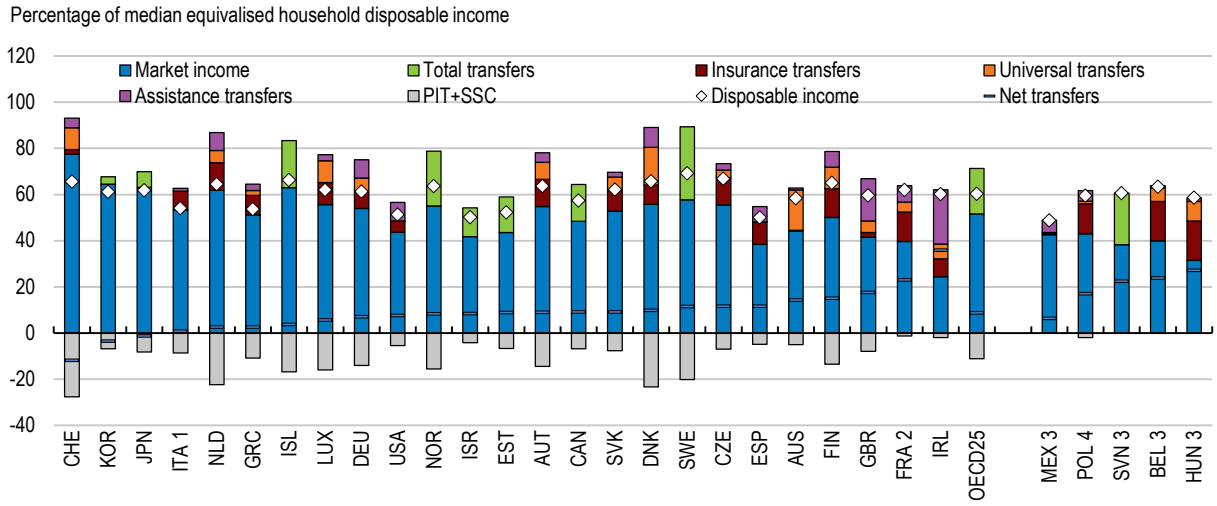
75. The evidence gathered in this paper suggests that redistribution to low-income households has declined in a number of OECD countries over the last two decades and that this was largely driven by less redistribution through cash transfers, in particular insurance-based transfers. Relatively widespread declines in the size of both transfers and personal income taxes were only partly mitigated by increases in the progressivity of personal income taxes and, in some countries, in the targeting of transfers. While the analysis cannot disentangle between policy and non-policy drivers of such decline in redistribution, this picture raises the concern that welfare systems are becoming less effective at ensuring income adequacy among vulnerable households.

76. This section attempts to shed more light on the nature and sources of such changes in redistribution by focusing on "the bottom 40%", a key target group from the perspective of social policy. As is the case for the broader distribution, changes in inequality and redistribution within this group are the result of interactions between structural and cyclical drivers on the one hand, and discretionary policy changes on the other. The structural drivers include for instance the labour-market situation of low-skilled workers and households' socioeconomic composition. Examples of policy factors are the availability and generosity of various forms of insurance, assistance and universal transfers, with eligibility conditions and generosity being often associated with the presence of children in the household. As a result, this section analyses developments in market and redistribution income among different categories of the bottom 40%, tracking relevant socioeconomic groups. Before looking at changes over time it starts with an overview of cross-country differences in the balance between market and redistribution income among the bottom 40%, and the extent to which this reflects cross-country differences in the composition of socioeconomic groups within the bottom 40% (Figure 30).

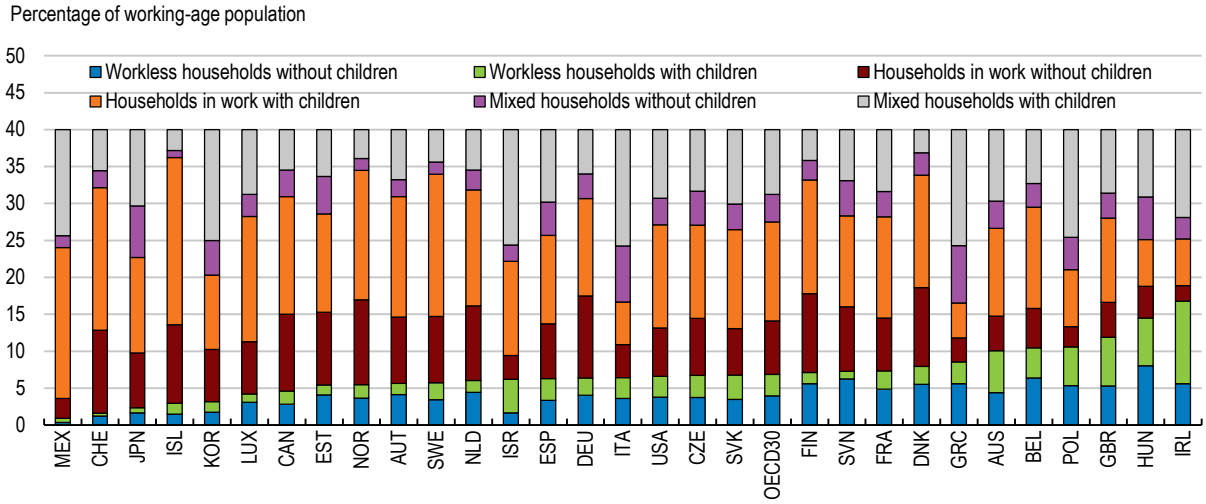
Figure 30. The relative reliance on transfer income among bottom 40% households partly reflects their socioeconomic composition

Bottom 40% of household disposable income distribution, working-age population, 2013 or latest available year

A. Household income composition



B. Socioeconomic composition



1. Social security contributions not available for France.
2. For Italy taxes and social security contributions are based on imputed values (see LIS documentation).
3. Households incomes reported net of personal income taxes in the data (net country).
4. Information on personal income taxes and social security contributions are incomplete for Poland.

Note: Panel A is sorted by net transfers received. For Panel B household types are defined by number of household members in work and presence of children below age 17. A household member is working if (annual) labour income is positive. Mixed households are households of at least two adults with only one earner. Panel B is sorted by share of workless households. Median equivalised household disposable income is computed for the working-age population.

Source: OECD staff calculations based on the Luxembourg Income Study.

77. For the bottom 40% as a whole, market income represents around half of median disposable income, while net transfers, both insurance and non-insurance-based, represent only around 9% of median income, on average across OECD countries for which data are available (Figure 30, Panel A). The reliance on transfer income among the bottom 40% is therefore fairly limited on average in the OECD but highly variable across countries. In some countries cash transfers are key to ensure minimum living standards among bottom 40% households. For instance in Ireland, cash transfers (especially assistance-based)

represent more than half of disposable income among bottom 40% households.[54] In others, like Korea and Switzerland, bottom 40% households pay more in taxes than they receive in transfers.[55] Such differences partly reflect cross-country differences in the socioeconomic composition of the bottom 40%, as different socioeconomic groups have different "needs" for redistribution. For instance workless households and low-income households with children have higher needs relative to others. Indeed, Ireland displays the greatest share of workless households with children across OECD countries for which data are available, at around 11% of the working-age population,[56] whereas Switzerland displays one of the lowest, at less than 0.5% (Figure 30, Panel B). At the same time, household structure alone is unlikely to explain the extent to which social transfers help achieving income adequacy for vulnerable households. For example in Italy and Greece, the share of one-earner couple households with children in the bottom 40% is amongst the highest across the OECD (more than 15% of the working-age population), yet such households receive virtually no transfer income (Figure A2.9). This is consistent with previously-presented findings on the very poor targeting of transfers in these countries.

78. Measured changes in redistribution relative to changes in market income suggest that in most OECD countries over the last two decades bottom 40% households experienced relatively widespread declines in income support from cash transfers (Figure 31, Panel A), in particular from insurance transfers in line with previous findings on developments in overall redistribution. This was mitigated by relatively widespread declines in income taxes and social security contributions. Overall, lower transfers accentuated the downward trend in market incomes, while lower taxes and social security contributions mitigated the resulting decline in disposable incomes. The picture is more diverse over the last decade, as net transfers have increased markedly to cushion the steep decline in market incomes in countries hard hit by the crisis such as Greece, Iceland, Ireland and Spain (Figure 31, Panel B).

79. At the same time, the majority of OECD countries for which data are available over the last two decades experienced an increase in the proportion of households in work and a decline the proportion of one-earner couple and workless households with children.[57] Part of this, especially the rise in the proportion of households in work without children, reflect the impact of ageing and rising senior employment among the working-age population (see Section 4.3). The remaining part of this section analyses separately changes in income support provided by net transfers for selected socioeconomic groups within the bottom 40%. This allows for isolating the effect of changes in population structure from other changes, in particular policy changes, hence tentatively coming closer to identifying changes in tax and transfer systems that may have reduced redistribution at the bottom of the income distribution.

54. This number refers to 2010 hence is likely to be cyclically inflated by the crisis. The share of net transfers in disposable income among the bottom 40% was 21 per cent in 2004 in Ireland.

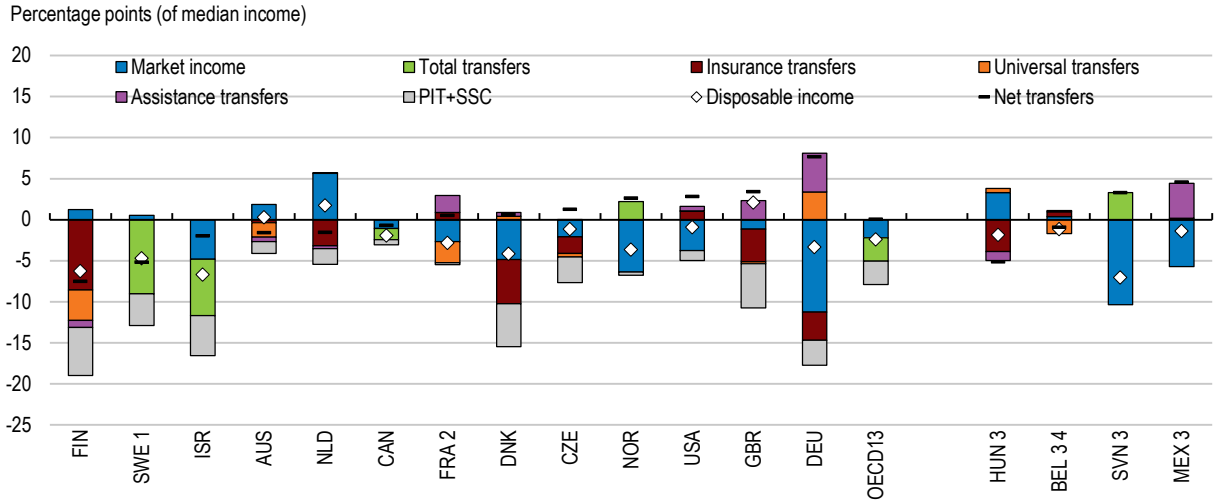
55. See Section 3.2 and Figure A1.2 with country profiles per deciles.

56. This number refers to 2010 hence is likely to be cyclically inflated by the crisis. The share of workless households with children was 7 per cent in 2004 in Ireland.

57. With the last decade exception of countries hard hit by the crisis (Figure A2.8).

Figure 31. For the bottom 40% as a whole, income levels provided by cash transfers have tended to decline while this was mitigated by declining income taxes and social security contributions

A. Change in taxes and transfers in percentage of median household disposable income, from mid-1990s to 2013 or latest available year



B. Change in taxes and transfers in percentage of median household disposable income, from mid-2000s to 2013 or latest available year

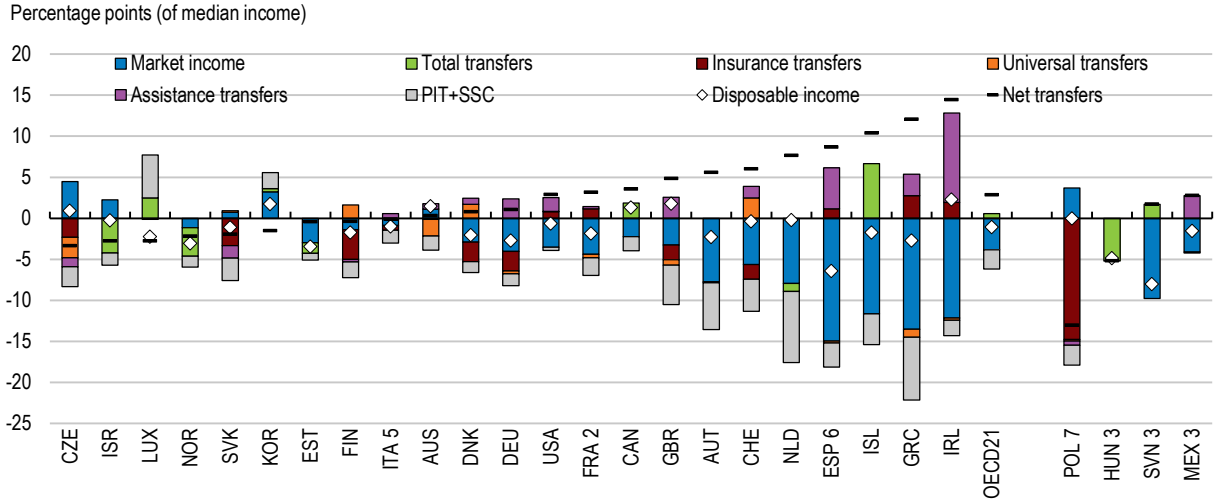
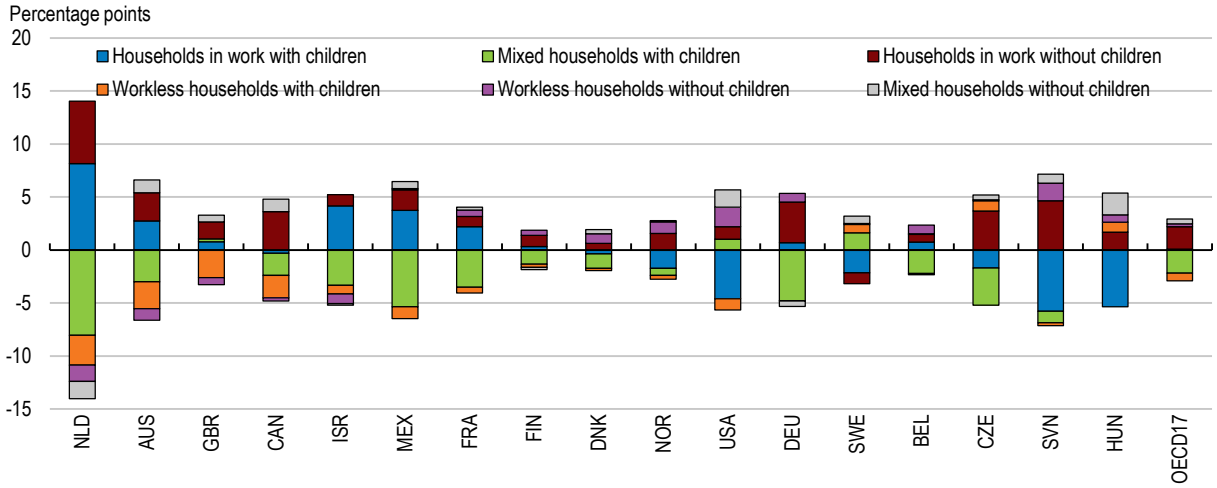


Figure 31. (cont.)

C. Change in the socioeconomic composition of the bottom 40% from mid-1990s to 2013 or latest available year



1. Sweden only available for 1995-2005.
2. Social security contributions not available for France.
3. Households incomes reported net of personal income taxes in the data (net country).
4. Belgium only available for 1995-2000.
5. For Italy taxes and social security contributions are based on imputed values (see LIS documentation).
6. Changes over time for Spain should be interpreted cautiously due to a change in methodology (use of administrative sources for the latest year).
7. Information on personal income taxes and social security contributions are incomplete for Poland.

Note: Panel A and B are sorted by net transfers received. Panel C is sorted by the total share of workless households. See note to Figure 18 for country-year coverage. See note to Figure 26 for defintion of socioeconomic groups.

Source: OECD staff calculations based on the Luxembourg Income Study.

80. For the purpose of this analysis, the focus is primarily on workless relative to working households since redistribution "needs" are clearly the lowest when all adults work and the highest when no adult household member works.[58] Households are further split depending on the presence of children as this is often a defining condition for transfer eligibility and level. As a result, four groups are considered depending on work (workless/working) and family (with/without children) status. This assessment needs to be confined to a limited number of OECD countries, some of which cannot be consistently covered across the whole range of the bottom 40% groups. This reflects the need to draw inference on the basis of sufficiently-sized samples within each group, which implies the cautious omission of countries with a too limited number of observations for a given group.[59] Bearing in mind these statistical caveats, the analysis delivers the following insights (Figures 32 and 33):

- Income support provided by social transfers to bottom 40% workless households has declined in the majority of countries for which data are available over the last two decades, as well as in many of those for which data are available over the last decade only (Figure 32, Panels A and B). The decline in transfer income support was largely driven by declining insurance transfers which was partially mitigated by increasing assistance transfers in a number of countries, further qualifying the findings from Section 5. Given the overwhelming weight of transfers relative to market income for most workless households, disposable income among workless households in

58. One-earner couple ("mixed") households are covered in the Annex (Figure A2.9) because the data indicate very similar developments to that of working households.

59. A lower limit of 100 households is applied.

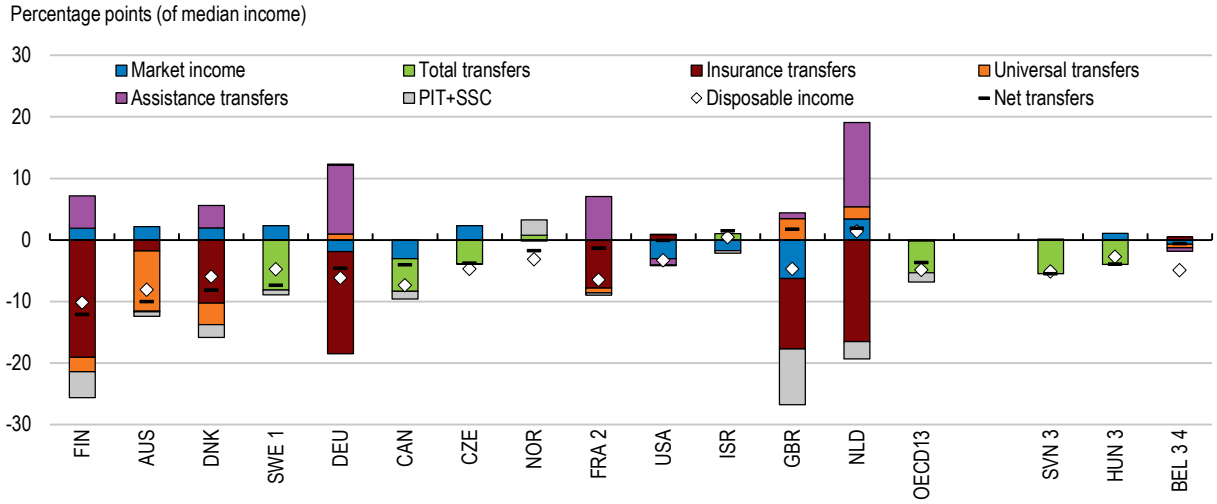
the bottom 40% declined markedly relative to the median. Overall, this implies that cash transfers have become increasingly ineffective at preventing workless households from falling into relative poverty and, more broadly, at providing minimum levels of income adequacy.

- By contrast with workless households, income support provided by taxes and transfers to bottom 40% working households has increased in the majority of countries for which data are available over the last two decades; as well as in most of those for which data are available over the last decade only (Figure 33, Panels A and B). Gross transfers, especially insurance-based, tended to decline, as found for workless households, but in a few cases such as Germany, assistance transfers increased. The increase in net transfer support was largely driven by declines in income taxes and social security contributions that tended to mitigate widespread declines in market incomes; part of which is likely to reflect crisis-driven declines in personal income taxes paid over the crisis period. The implication is that overall disposable income among bottom 40% working households also declined or in any case did not increase relative to the median. Overall, the contribution of net transfers to disposable income among bottom 40% working households remains either null or negative because taxes paid exceed transfers received (Figure 33, Panel C).

Figure 32. Income adequacy implied by tax and transfers have become less supportive of bottom 40% workless households

Workless households without children

A. Change in taxes and transfers in percentage of median household disposable income, from mid-1990s to 2013 or latest available year



B. Change in taxes and transfers in percentage of median household disposable income, from mid-2000s to 2013 or latest available year

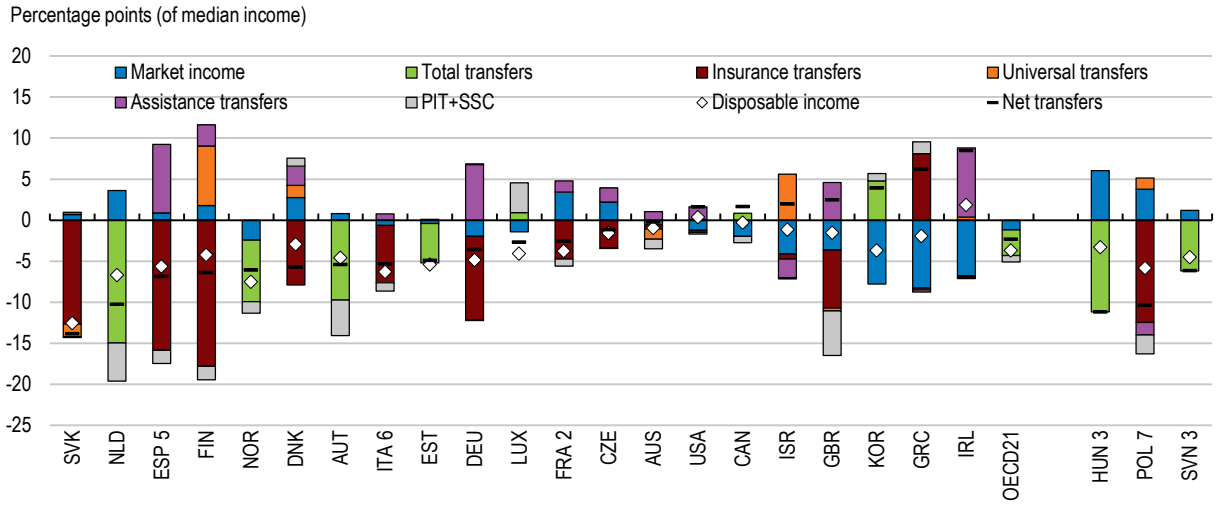
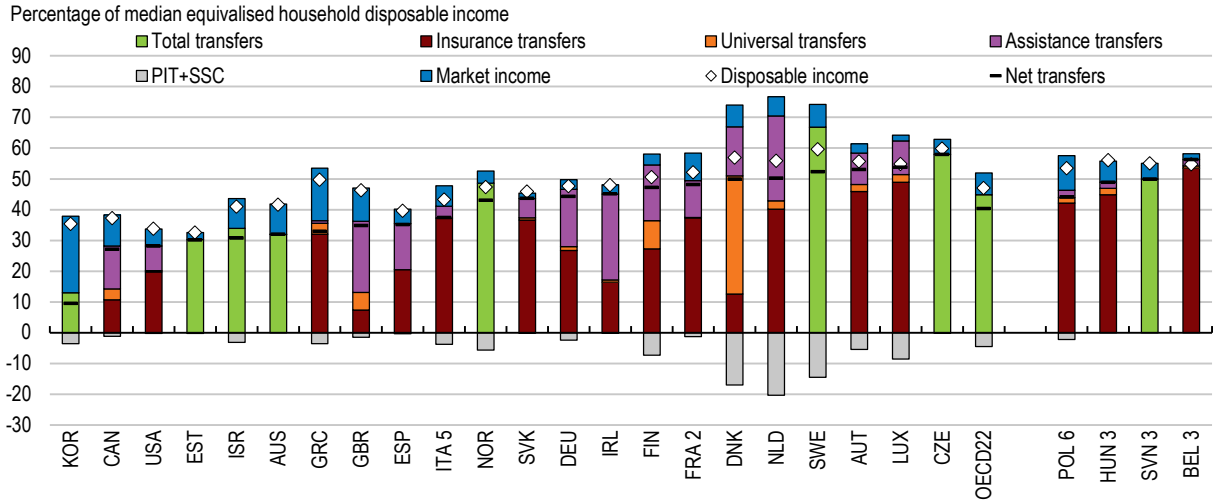


Figure 32. (cont.)

C. Income composition for 2013 or latest available year



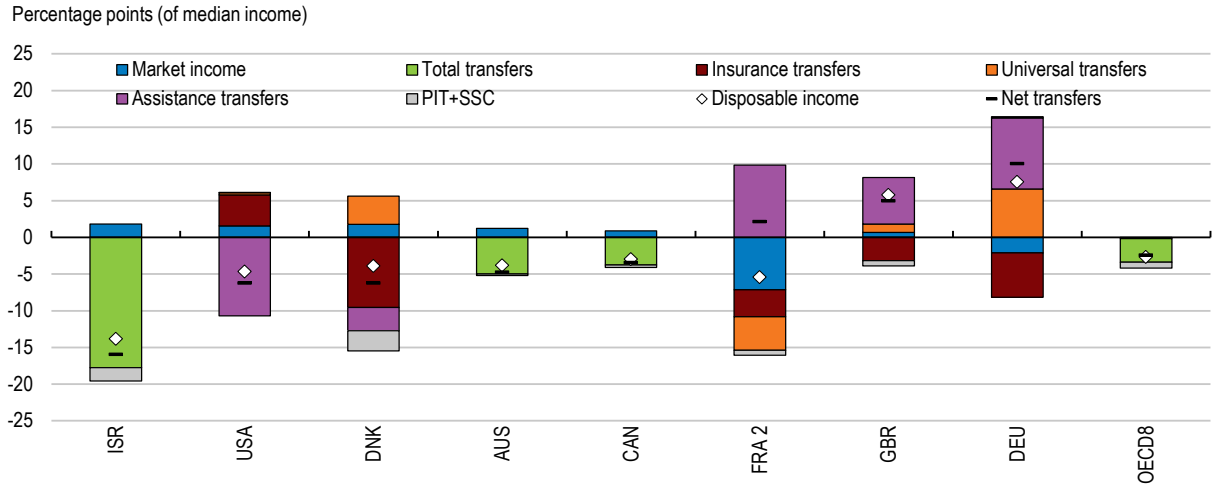
1. Sweden only available for 1995-2005.
2. Social security contributions not available for France.
3. Households incomes reported net of personal income taxes in the data (net country).
4. Belgium only available for 1995-2000.
5. Changes over time for Spain should be interpreted cautiously due to a change in methodology (use of administrative sources for the latest year).
6. For Italy taxes and social security contributions are based on imputed values (see LIS documentation).
7. Information on personal income taxes and social security contributions are incomplete for Poland.

Note: Countries are sorted by net transfers received. See note to Figure 18 for country-year coverage. See note to Figure 26 for defintion of socioeconomic groups. Countries with sample sizes less than 100 households have been excluded.

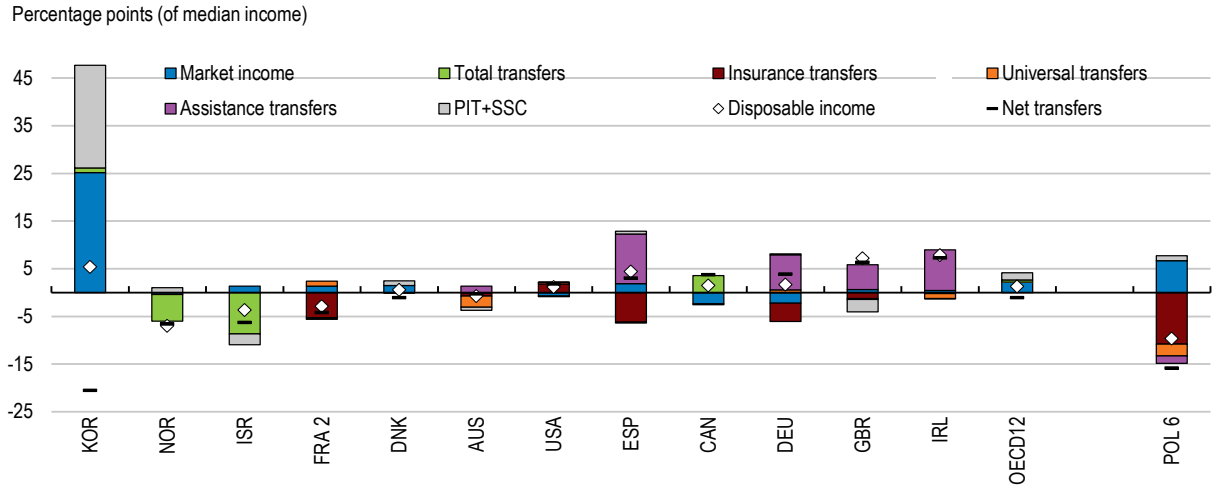
Source: OECD staff calculations based on the Luxembourg Income Study.

Figure 32. (cont.)
Workless households with children

D. Change in taxes and transfers in percentage of median household disposable income, from mid-1990s to 2013 or latest available year



E. Change in taxes and transfers in percentage of median household disposable income, from mid-2000s to 2013 or latest available year



F. Income composition for 2013 or latest available year

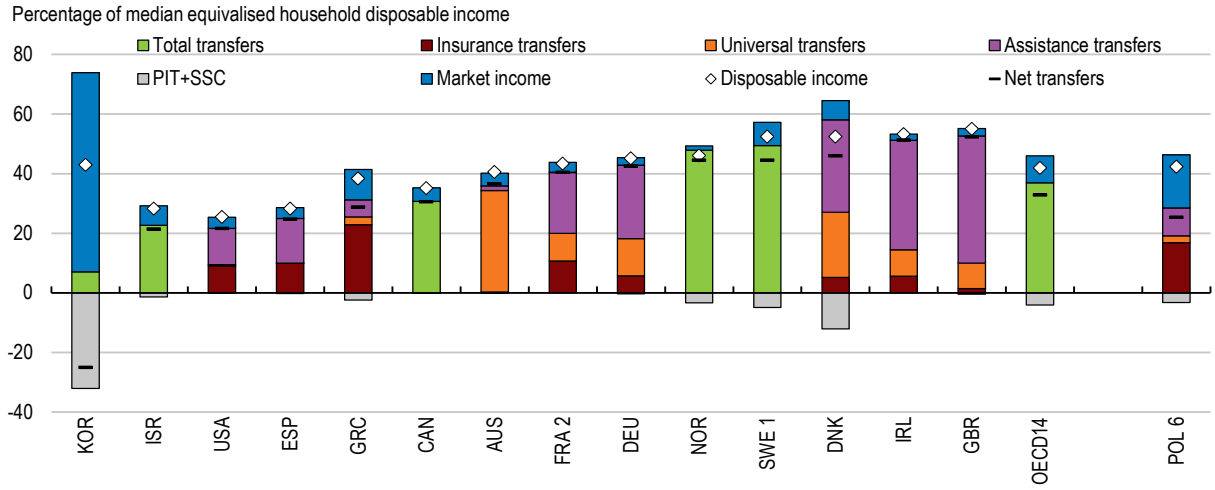
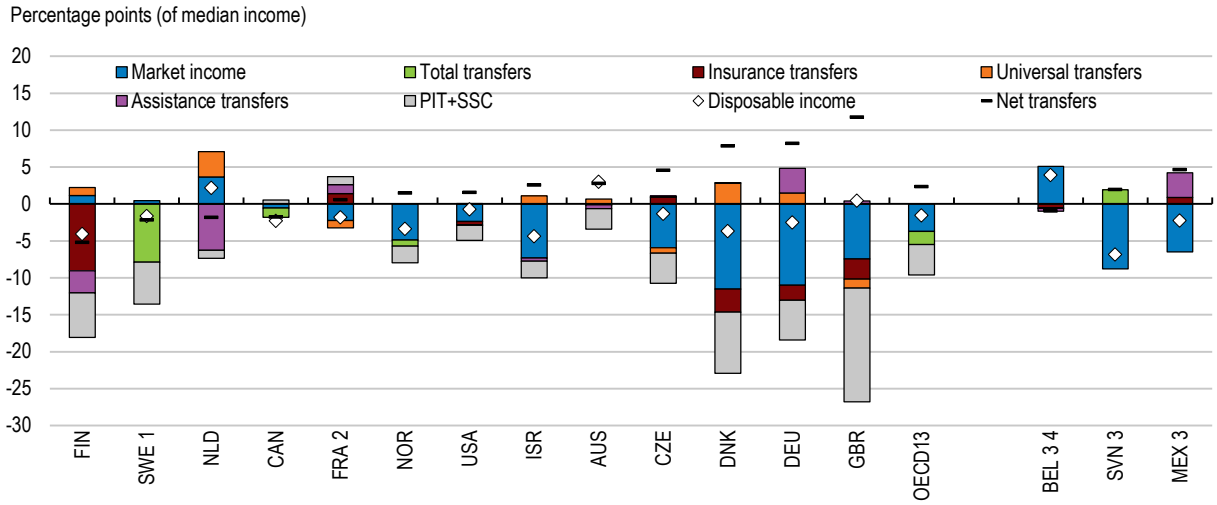


Figure 33. Taxes and transfers have become more supportive of bottom 40% working households, but their incomes still fell behind the median

A. Change in taxes and transfers in percentage of median household disposable income, from mid-1990s to 2013 or latest available year



B. Change in taxes and transfers in percentage of median household disposable income, from mid-2000s to 2013 or latest available year

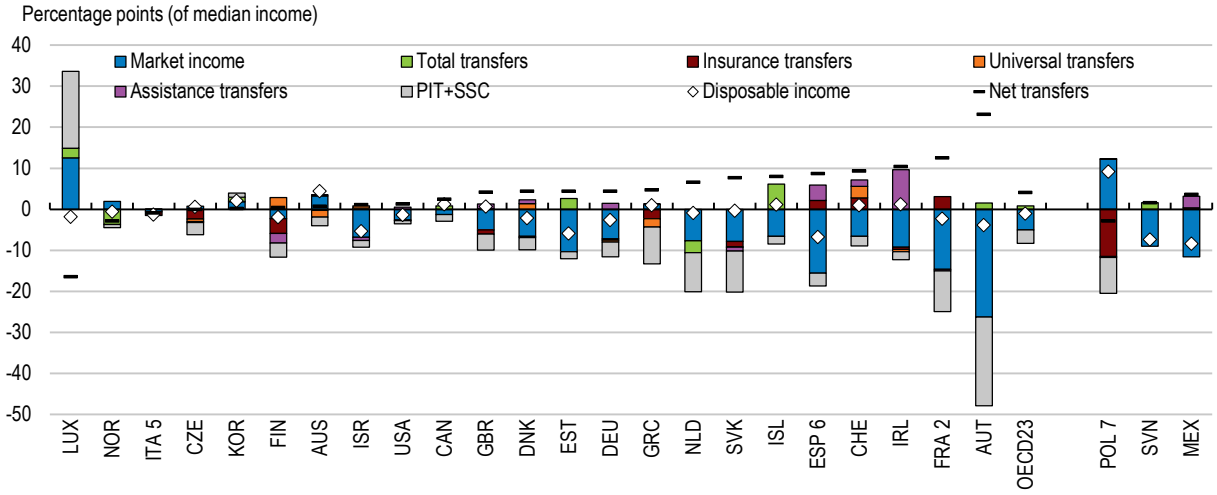
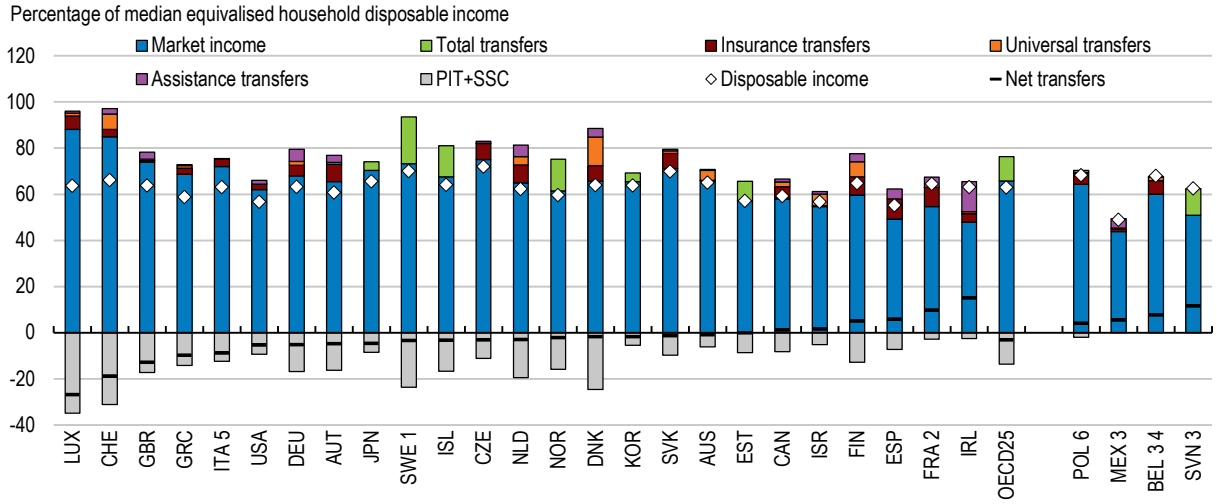


Figure 33. (cont.)

C. Income composition for 2013 or latest available year



1. Sweden only available for 1995-2005.
2. Social security contributions not available for France.
3. Households incomes reported net of personal income taxes in the data (net country).
4. Belgium only available for 1995-2000.
5. For Italy taxes and social security contributions are based on imputed values (see LIS documentation).
6. Changes over time for Spain should be interpreted cautiously due to a change in methodology (use of administrative sources for the latest year).
7. Information on personal income taxes and social security contributions are incomplete for Poland.

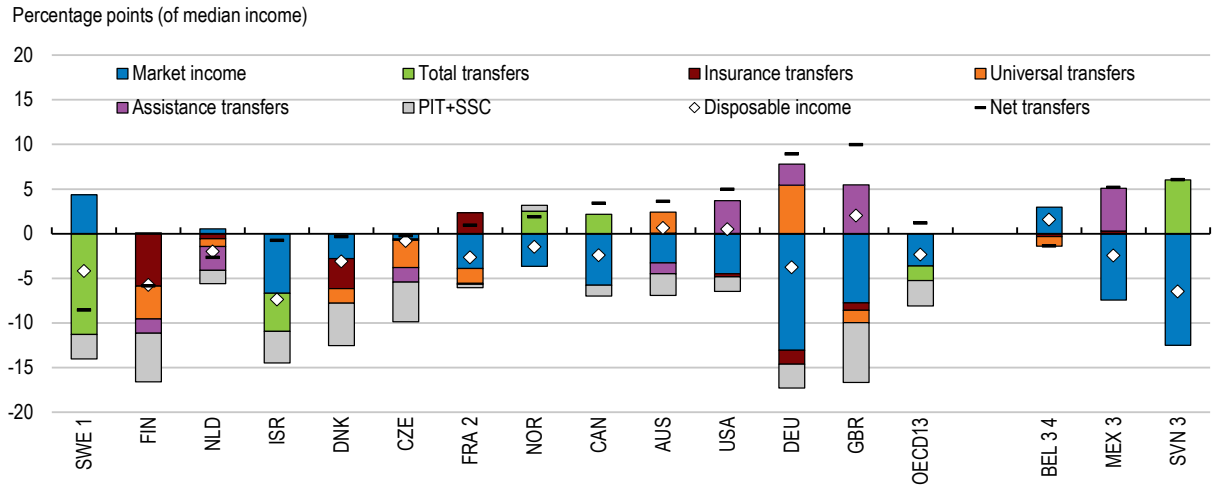
Note: Countries are sorted by net transfers received. See note to Figure 18 for country-year coverage. See note to Figure 26 for defintion of socioeconomic groups. Countries with sample sizes less than 100 households have been excluded.

Source: OECD staff calculations based on the Luxembourg Income Study.

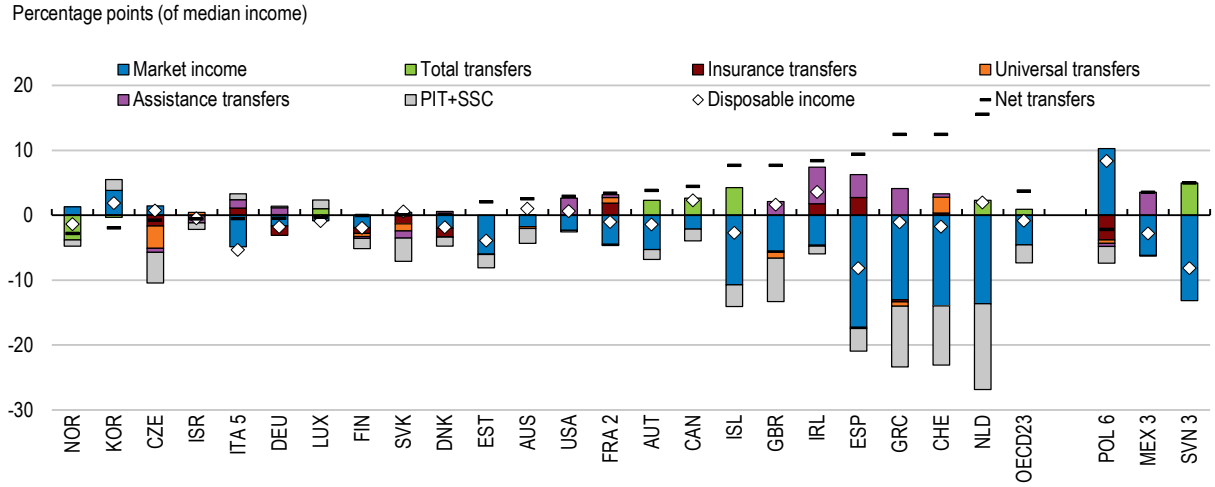
Figure 33. (cont.)

Households with all members in work, with children

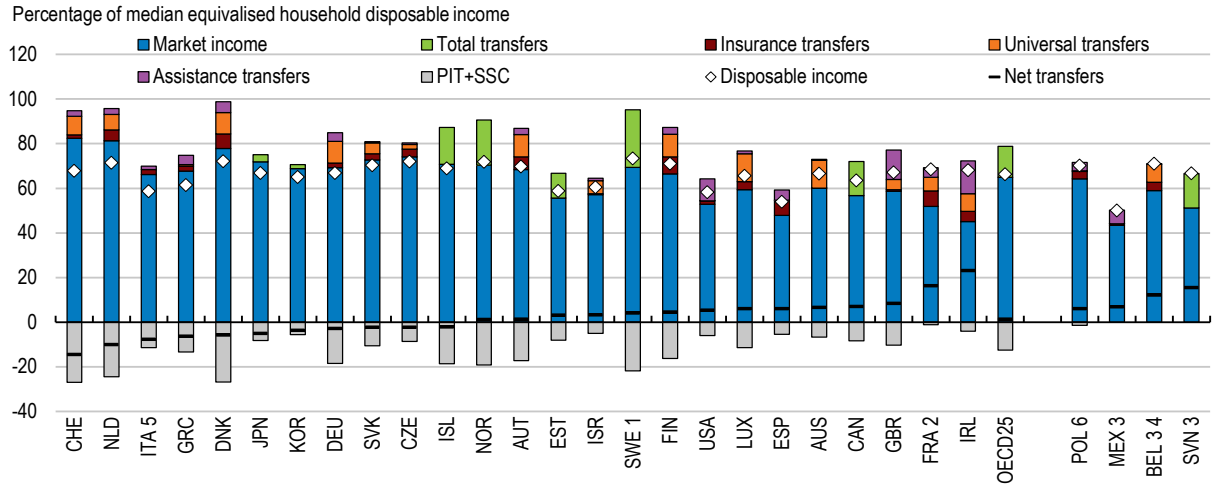
D. Change in taxes and transfers in percentage of median household disposable income, from mid-1990s to 2013 or latest available year



E. Change in taxes and transfers in percentage of median household disposable income, from mid-2000s to 2013 or latest available year



F. Income composition for 2013 or latest available year



7. Wrap-up and policy implications

7.1. Wrap-up

81. This paper has documented a widespread decline in redistribution through taxes and transfers across OECD countries over the last two decades. Going further, in many countries redistribution has declined by a sufficient margin to push up inequality after taxes and benefits despite a mild decline (or stagnation) in market income inequality. To put these findings in a longer-term perspective and in the perspective of previous work by Immervoll and Richardson (2011), Figure 34 summarises developments in market and disposable income inequality and in redistribution for the working-age population since the mid-1980s.[60] This suggests that redistribution through taxes and transfers over these three decades tended to follow three distinct phases:

- From the mid-1980s to the mid-1990s market income inequality increased rapidly and substantially, by almost 5 Gini points, on average across OECD countries for which data are available (Figure 34, Panel A). This was partly mitigated by taxes and transfers,[61] resulting in a smaller rise in disposable income inequality in most countries, of around 2.3 Gini points on average (Figure 34, Panel B).

- From the mid-1990s to the mid-2000s, market income inequality flattened as the rise in the Gini coefficient was less than 0.3, on average across countries for which data are consistently available since the mid-1980s. At the same time, disposable income inequality continued to rise in the majority of countries and the change in the Gini coefficient was around 1.7 on average. In other words, compared to the previous decade, tax and transfer systems achieved less inequality reduction (Figure 34, Panel C) and in some cases the changes made contributed to increase disposable income inequality.

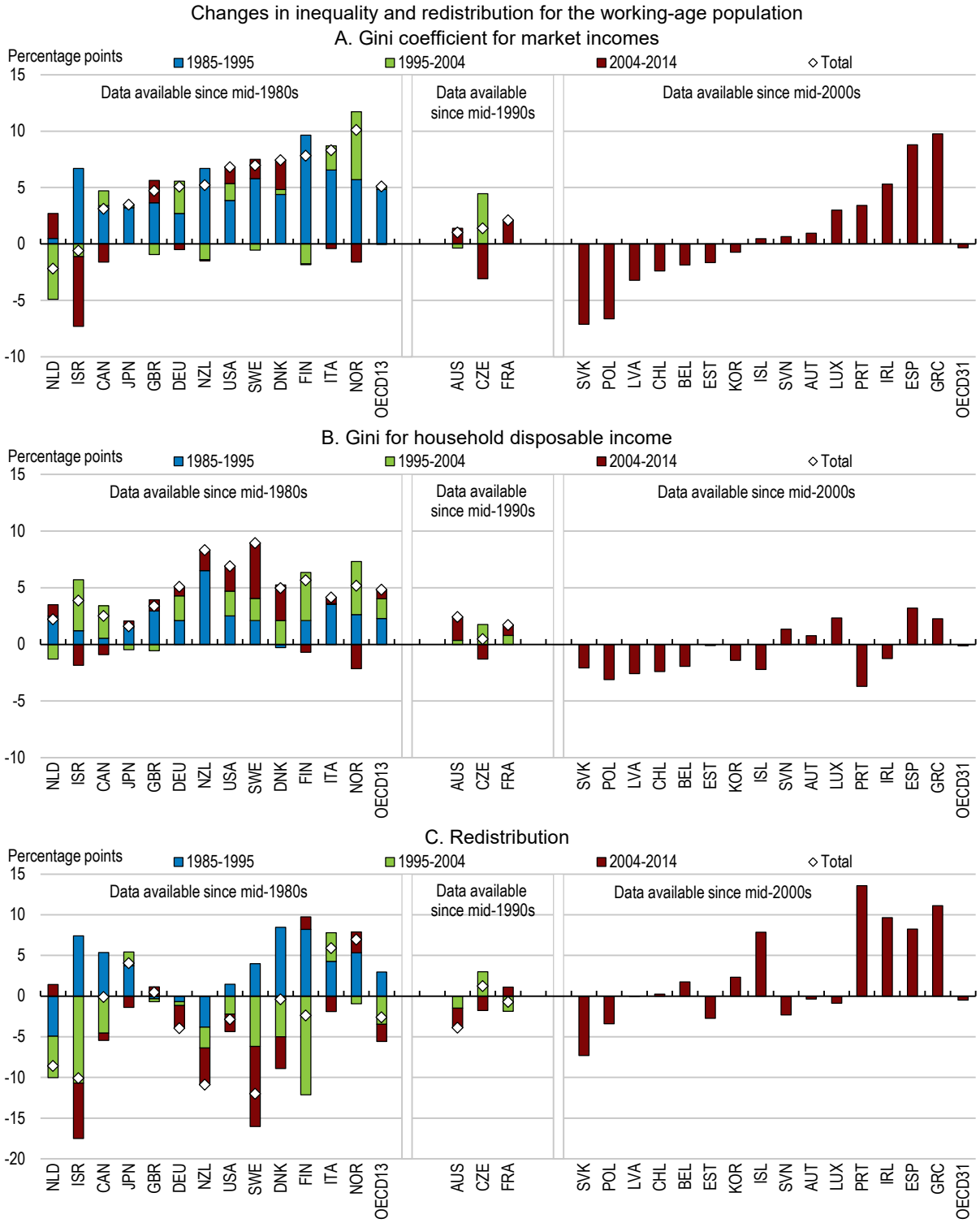
- From the mid-2000s to the latest available year, there was little change in either market or disposable income inequality, on average across the 31 OECD countries covered. Still, this covers heterogeneous developments across countries and over time, to some extent reflecting differences in the extent to which the 2008-09 recession affected unemployment, with strong disequalising effects in Greece, Ireland, Portugal and Spain. Taxes and transfers were relatively effective at reducing market-driven inequalities in those countries hard-hit by the crisis especially in the first phase of the crisis, that is, before the move towards fiscal consolidation measures (Section 4). By contrast, in other countries less severely affected, changes in taxes and transfers led to further increase disposable inequality, extending the trend observed in the previous decade. This has been the case for Sweden, where disposable income inequality grew more than twice as much as market income inequality, and to a lesser extent, Germany and Australia, where disposable income inequality grew while market income inequality stagnated.

  In sum, a relatively long-term perspective on income redistribution through taxes and transfers in OECD countries for which data are consistently available since the mid-1980s points to an initial decade of increasing redistribution; this was reversed from the mid-1990s to the mid-2000s and followed by a period of more heterogeneous developments across countries. Shifting the point of reference to the mid-1980s thus qualifies the finding of a persistent and widespread decline in redistribution. Nevertheless, redistribution remains lower in 2014 compared to the mid-1980s for around half of the countries for which data are consistently available (Figure 34, Panel C).

60. This broadly corresponds the starting period of Immervoll and Richardson (2011).

61. As documented by Immervoll and Richardson (2011).

Figure 34. Market income inequality has been flattening since the mid-1990s, while disposable income inequality continued to rise until the mid-2000s



Note: Countries are ranked by the total change in household market income inequality. Data for 1985 refer to 1983 for Sweden; 1984 for Italy and the United States; and 1986 for Finland and Norway. Data for 1995 refer to 1994 for the United Kingdom; and 1996 for Czech Republic and France. Data for 2004 refer to 2003 for Japan and New Zealand; 2005 for Denmark, France, Israel, the Netherlands, Poland and the United States; and 2006 for Chile and Korea. Data for 2014 refer to 2012 for Japan; and 2015 for Chile. A change in the income definition implies a break in the series around 2011 for some countries and an estimated series correcting for the break have been used.

Source: OECD Income Distribution Database.

82. Declining redistribution since the mid-1990s was largely driven by declines in the size of both cash transfers and, to a lesser extent, personal income taxes, which were partly mitigated by increases in the progressivity of income taxes and, for some countries, in the targeting of cash transfers. In turn, declining transfer redistribution was largely driven by declining income support through insurance transfers. Focusing on bottom 40% households, the analysis shows a substantive decline in income support to low-income workless households in a number of countries, which was only partly mitigated by increasing income support through assistance transfers. For the bottom 40% of households as a whole, income levels provided by cash transfers have therefore tended to decline. This was somewhat mitigated by declining personal income taxes paid by the bottom 40% working households, part of which, however, could mechanically result from the losses in market incomes experienced by these households. Importantly, these broad findings do not apply to all countries, and developments in redistribution have not been uniform. Countries' experiences point to episodes of increases in redistribution taking place outside the immediate reaction to the 2008 crisis. Such is the case of the United Kingdom between the mid-1990s and 2010; but also of Greece and Portugal between 2004 and 2007.

83. Before discussing the potential policy and non-policy drivers behind the decline in redistribution, it is useful to question the extent to which such finding would change if the analysis could have been more comprehensive in the coverage of taxes and transfers and the population analysed. Table 3 provides a tentative assessment of the likely impact on developments in redistribution of taking into account some of the missing categories of taxes, transfers and population covered in this paper. The assessment is far from exhaustive and just considers the cases where a clear redistributive effect can be established. For example taxes on property are not considered because their redistributive effect is likely to depend on country-specific characteristics and policy design. Overall, this exercise suggests such "missing factors" do not consistently increase or decrease redistribution so that it is not clear if the downward trend in redistribution would be weaker or stronger if such factors could be accounted for:

- Extending the transfer coverage to include in-kind transfers would imply a lesser decline in redistribution given the rise in public spending on in-kind support, foremost on healthcare, part of which is likely to have accrued to working-age households (Section 2).

- Extending the coverage to taxes on goods and services along with environmental taxes would imply a more pronounced decline in redistribution in countries where such taxes have increased and have the opposite effect in countries where such taxes have declined (Section 2).

- Properly capturing the top of the household income distribution in the data would imply a more pronounced decline in redistribution in light of rising top income shares in a number of OECD countries (OECD, 2011; Morelli et al., 2015).

- Extending the working-age population coverage beyond the upper-bound age limit of 65 to account for longer working lives, for instance by indexing the upper-bound age limit to changes in life expectancy, would imply a lesser decline in redistribution.[62]

62. This paper has defined the working-age to be 18-64 across the entire period considered. Since some people retire before age 65, the redistribution measure analysed in this paper also captures some pension transfers. However, effective retirement ages for men and women have risen by almost one year from 1995 to 2014, on average across OECD countries (from 63.8 to 64.6 for men and from 62.2 to 63.1 for women, see OECD, 2015b). As a result, the influence of pension transfers has declined over time, which contributes to the measured decline in redistribution (Section 4.3). Therefore, it may be argued that the working-age population should be gradually extended over time to avoid this mechanical decline in redistribution and to reflect longer working lives as a result of rising life expectancy. However, one limitation to this approach is

Table 3. The likely impact on developments in overall redistribution of taking into account some of the factors missing from this paper's analysis

	Likely to mitigate the decline in measured redistribution	Likely to reinforce the decline in measured redistribution
Taking into account rising social transfers in-kind	X	
Taking into account taxes on goods and services along with environmental taxes, effect of an increase in those taxes		X
Fully taking into account rising top incomes		X
Extending the working-age population beyond age 64	X	

84. There are number of non-mutually exclusive potential structural explanations for the main findings reported in this paper, pointing to policy and non-policy drivers, along with their interaction:

- *Changes in the age composition of the working-age population and rising employment rates among seniors:* over the last decades, all OECD countries have experienced a marked increase in the share of senior households (here defined as aged 55-64) in the working-age population and this has been associated with a more than proportional increase in the share of seniors in total employment (Section 4.3). Indeed, employment rates among seniors have increased dramatically in most OECD countries (Figure 35, Panel A). This has partly been driven by pension and welfare reforms that have sought to induce behavioural effects by increasing statutory retirement ages and reducing access and generosity to early retirement (e.g. through disability and unemployment benefits).[63] The substantive rise in employment among seniors has largely contributed to employment growth in OECD countries, as did the continued rise in women employment. This is likely to have mitigated market income inequalities, but at the same time this has contributed to the decline in insurance transfer redistribution and therefore in the size of transfers. It has also potentially contributed to the decline in income adequacy achieved by net transfers among the bottom 40% (Sections 5 and 6).[64]

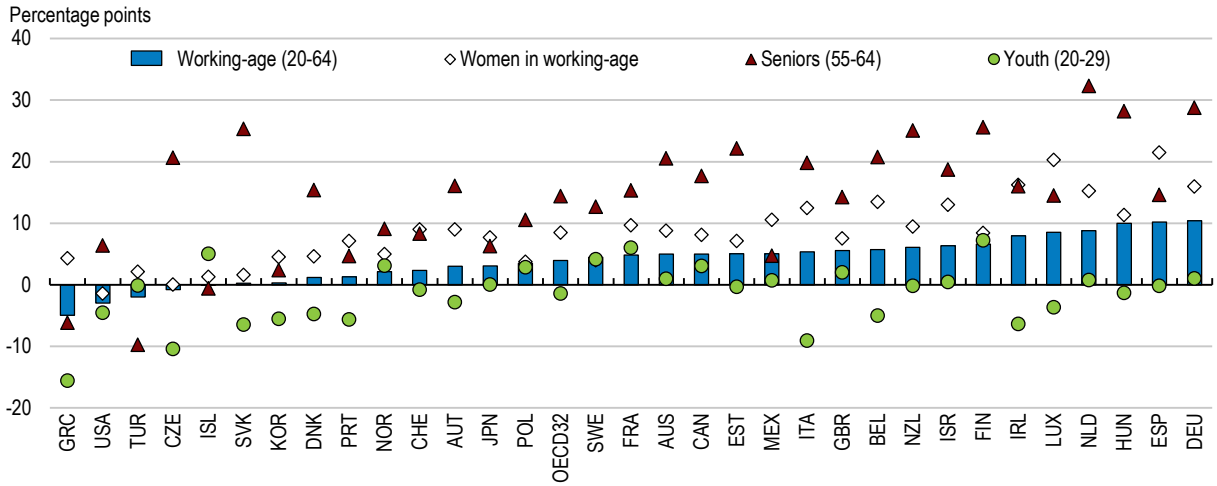
that any indexation of the upper-bound working-age limit would be arbitrary and would not allow for capturing heterogeneity in retirement patterns and life expectancy across countries.

63. See Ageing and Employment Policies - OECD, see http://www.oecd.org/els/emp/older-workers-scoreboard.xlsx and OECD (2015b).

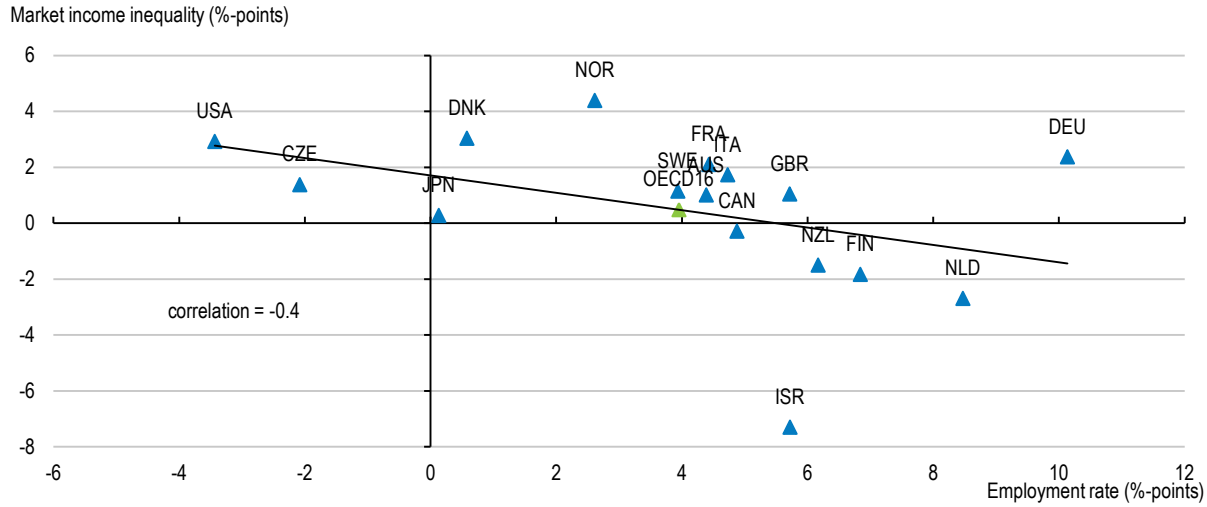
64. This assertion cannot be formally tested. The data do not allow for analysing income adequacy for different age groups among the bottom 40 per cent, due to small samples for inference purposes.

Figure 35. Employment and market income inequality

A. Employment has risen in most OECD countries, driven by seniors and women
Change in employment to population ratios from 1995 to 2015



B. Rising employment rates tend to contain market income inequality
Change in employment and market income inequality, mid-1990s to 2014 or latest available year



Note: For Panel B data refer to 1994-2014 for the United Kingdom; 1995-2012 for Japan; 1996-2014 for Czech Republic and France; and 1995-2014 for the rest.

Source: OECD Labour Force Statistics; OECD Income Distribution Database.

- *Policy reforms to boost work incentives among target groups and to shift from passive to active support for the unemployed*: Over the last decades many OECD countries have implemented welfare reforms aimed at boosting labour market participation and work incentives, especially for socioeconomic groups with weak labour market attachment. The focus has been on activation and conditionality within the "mutual obligation" framework,[65] which has often implied a tightening of eligibility conditions or a reduction in the duration of benefits and more demanding job search requirements for unemployment benefits claimants. Reforms have also aimed at increasing labour

65. Under the mutual obligation model, governments have the duty to provide jobseekers with income benefits and effective re-employment services, while beneficiaries are required to take active steps to find work or improve their employability.

supply by reducing labour taxes and social security contributions for low-income workers, including through earned income tax credits.[66] This is consistent with the finding of widespread declines in the size of transfers and in particular insurance transfers as well as widespread declines in the size of personal income taxes and in personal income taxes and social security contributions paid by bottom 40% working households (Section 6). Such reforms have been found effective at increasing labour market participation for specific target groups such as lone parents and second earners and this is likely to have amplified the increase in women employment (Figure 35, Panel A). Overall, reforms to make work pay are likely to have mitigated the rise in market income inequalities to the extent that they have created employment (Figure 35, Panel B). But, at least when and where they were not complemented with effective job search, counselling and training measures to enhance employability among more marginal or low-skilled populations, such reforms may have contributed to increase disposable income inequality, hence to reduce redistribution.[67]

- *Changes in the nature of work*: Jobs based on non-standard type of contract have accounted for a significant share of new job creation in many OECD countries over the last two decades (OECD, 2015a, Chapter 4). Such structural changes may have contributed to a decline in redistribution through tax and transfer systems. The reason is that a rising proportion of workers is likely to lack income protection in the event of a job loss (or sickness), which reflects the fact that non-standard workers often fail to meet eligibility criteria, for instance because of short tenures or self-employment status.[68] Overall, such structural changes in the labour market may have contributed to employment growth, hence via this channel mitigated market income inequalities (Figure 35).[69] But at the same time, they may have reduced the responsiveness of redistribution to unemployment, at least in the absence of complementary reforms to social protection systems to adapt to the changing nature of work. This is consistent with the finding of a decline in the size of

66. The literature on the labour market effects of the EITC in the United States is voluminous, see e.g. Eissa and Hoynes (2006); Nichols and Rothstein (2015); Chetty et al (2013) and Meyer and Rosenbaum (2001). For an assessment of the labour market impact of the Working Families' Tax Credit in the United Kingdom see Blundell et al. (2000). For an overview of in-work benefits in OECD countries see Immervoll and Pearson (2009).

67. See Moffitt (2015) for a discussion on the United States. The US case is, however, controversial. In particular, the expansion of the EITC has recently been found to help reducing income poverty. Hoynes and Patel (2016) find that static calculations of the effects of the EITC, by ignoring the behavioural employment response, underestimate the anti-poverty effects of the credit by up to 50 percent. Overall, the authors find that EITC is extremely effective at reducing income poverty, with effects concentrated between 75% and 150% of the federal poverty line.

68. OECD (2015a), Chapter 4 reports than in 19 out of 34 OECD countries self-employed workers are not eligible for unemployment benefits and in 10 countries self-employment workers are not eligible for work injury benefits. Another recent study from the European Commission (Matsaganis et al 2016) estimates that in the EU, 13% of all those in employment aged 15-64 (and 54.5% of the self-employed) were at risk of not being entitled to unemployment benefits, while 8% (and 37.5% of the self-employed) were at risk of not being entitled to sickness benefits. Average EU figures mask substantive cross-country variation, reflecting different institutional settings regarding insurance transfers in interaction with different proportions of non- standard employment types (e.g. incidence of self-employment and temporary work). For example, in Italy almost one quarter of those in employment aged 15-64 are not entitled to unemployment benefits, mainly because self-employed represent a major share of employment and are not entitled to unemployment benefits.

69. The effect of rising non-standard employment on market income inequality is ambiguous in principle, reflecting equalising effects from rising employment but also disequalising effects from rising earnings dispersion since non-standard jobs tend to pay lower wages than standard jobs (see OECD, 2015a, Chapter 4)

transfers and income support from insurance transfers together with an increase in income support from social assistance transfers among the bottom 40% (Section 6).

- *Compositional effects associated with changes in the pool of unemployed during the great recession and prolonged recovery period:*[70] Changes in labour market conditions, interacting with a number of structural drivers, are likely to have contributed to the main trends described in this paper. This is especially important for understanding developments in redistribution over the last decade, reflecting the strong and sustained labour market impact of the 2008-09 crisis in a number of OECD countries (Section 5.2). The compositional shift among the pool of unemployed from short to long-term unemployed does not increase market income inequality but it may contribute to the measured rise in redistribution in the first phase of the crisis and the measured decline in redistribution in the second phase of the crisis. This is consistent with the change in unemployment insurance coverage presented in Section 5.2 and the shift from insurance transfers to assistance transfers among workless bottom 40% households presented in Section 6. In fact, the shift towards long-term unemployed in the pool of unemployed may have been reinforced by the trend towards non-standard work in the workforce. Indeed, some of the countries hardest hit by the crisis are also characterised by a particularly high share of non-standard workers and high labour market dualism.

85. The analysis in this paper cannot assess the relative contributions of these policy and non-policy explanations of the decline in redistribution and this will be pursued in follow-up work. More work, for instance using microsimulation- and regression-based analysis, is needed to identify the respective roles of changes in the main tax and transfer policy features, in the population structure, in structural and cyclical labour market conditions such as the prevalence and incidence of joblessness along with that of non-standard work, as well as, the roles of globalisation and technological change in shaping the inequality-reducing effect of taxes and transfers.

7.2. Policy implications

86. Notwithstanding the above-mentioned limitations of the analysis, one notable finding in this paper is a marked decline in the size of transfer systems across OECD countries over the last two decades. This was largely driven by insurance-based transfers, with income protection tending to shift to assistance-based transfers in some countries, resulting in an increase in the targeting of transfers overall. Yet more targeted transfers did not generally deliver more redistributive transfers because increased targeting was in most cases combined with decreased size. Going further, such decline in the size of cash transfers could point to welfare spending retrenchment, a potential reflection of budgetary constraints in a number of OECD countries over the last decades. This is consistent with the finding of a decline in social spending on cash support to the working-age population (Section 2). This is also consistent with preliminary analysis published in Chapter 2 of OECD (2014a) which, based on country responses to OECD questionnaires, showed that of all areas of public spending, social transfers and in particular transfers to the working-age population were by far the focus of the greatest number of consolidation measures since 2011.

87. This picture underscores the policy challenge of designing cost-effective transfer redistribution, one issue being enhancing the redistributive effects of means-tested and/or conditional income programmes which currently tend to suffer from low benefit take-up hence low coverage.[71] At the same time, the challenge of transfer conditionality motivates ongoing debate around the Basic Income, a universal and unconditional transfer that would replace the bulk of existing transfers. In this respect,

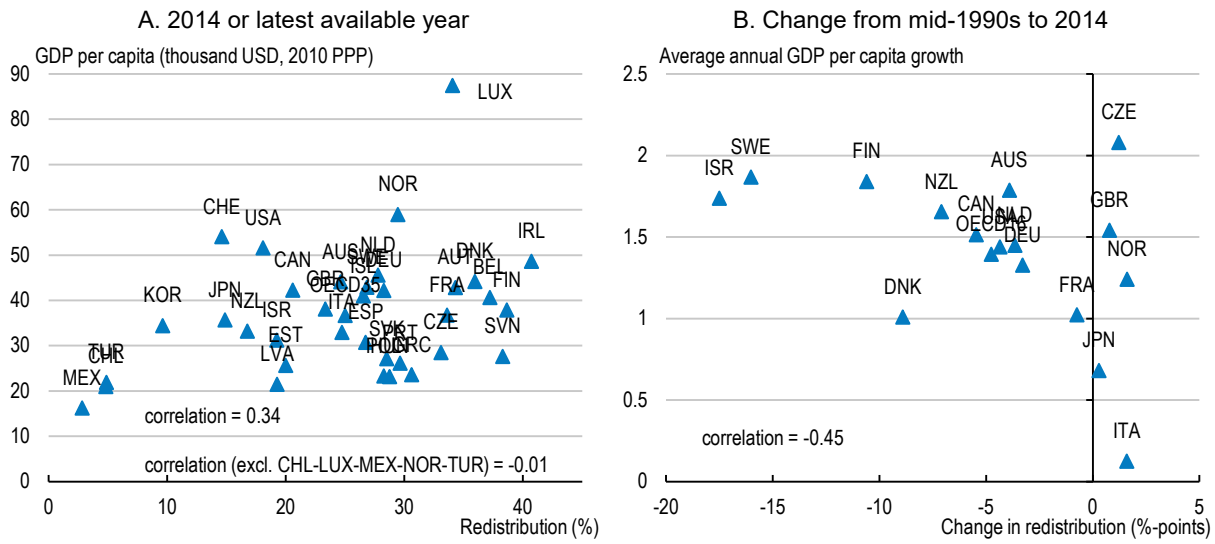
70. This discussion complements the comprehensive though preliminary assessment of crisis effects on social protection systems in Chapter 2 of OECD (2014a).

71. http://www.oecd.org/social/recipients.htm

OECD analysis has quite clearly shown that an unconditional payment to everyone at a meaningful level would require substantial tax increases and would often not be an effective tool for reducing poverty (OECD, 2017d). That said, evidence-backed ongoing debates in this area have the merit of facing countries with a needed discussion about the type of social protection that they want, the outcome of which will depend on country-specific context, constraints and social preferences.

88. Another broad finding of the current analysis is a shift from out-of-work to in-work transfers, including through reductions in personal income taxes which has contributed to reduce the size of personal income taxes across OECD countries. These changes may have been at least partly driven by reforms to make work pay, especially for socioeconomic groups with weak labour market attachment. Such reforms may have helped mitigating market income inequality, but in some cases they may have implied lower income adequacy among households disconnected from the labour market, hence contributing to reduce redistribution. This should not lead to the conclusion that countries have no choice but to trade more efficiency for less equity. Rather, it may indicate that countries make different policy choices, reflecting different economic and social context but also different preferences. A simple statistical exercise looking at the correlation between GDP per capita ("efficiency") and the redistribution measure applied in this paper ("equity") can be used to illustrate the point (Figure 36):

Figure 36. OECD countries need not trade less equity for more efficiency



Note: Panel A: data refer to 2012 for Japan; 2015 for Chile, Finland, Israel, Korea, the Netherlands, the United Kingdom and the United States; and 2014 for the rest. Panel B: data refer to 1994-2014 for the United Kingdom; 1995-2012 for Japan; 1996-2014 for Czech Republic and France; and 1995-2014 for the rest.

Source: OECD National Accounts; OECD Income Distribution Database.

- The cross-country correlation between GDP per capita and redistribution is very weak because equally-affluent countries achieve very different levels of redistribution through taxes and transfers (Figure 36, Panel A). For instance, Austria, Denmark, Ireland, Switzerland and the United States are all ranked among the top OECD countries in terms of GDP per capita. Yet Austria, Ireland and Denmark are among the most redistributive OECD countries, while Switzerland and the United States are among the least redistributive. One interpretation would be that countries do have policy options to strengthen efficiency and growth without having to give up on equity, and that some economic models or welfare systems, can deliver on both equity and efficiency.

- The correlation between changes in redistribution and GDP per capita growth over the last two decades is slightly negative, across the subset of countries for which the data are available (Figure 36, Panel B). Such simple correlation provides no evidence of a causal relationship between growth and redistribution. In particular reverse causality is likely since redistribution tends to be counter-cyclical due to automatic stabilisers. That said, it is noteworthy that Finland and Sweden, experiencing marked declines in redistribution, also displayed among the strongest economic performance for the period under consideration. Some scholars have argued that these countries, and the Nordics in general, which started from very high levels of redistribution, may have faced a binding equity-efficiency trade-off and opted for less redistribution in exchange for more economic growth (see Andersen and Maibom, 2016; OECD, 2017e; Pareliussen et al., forthcoming).

89. More fundamentally, the finding that the decline in redistribution may to some extent reflect the effects of efficiency-oriented tax and transfer reforms would fail to consider redistribution policies as part of broader policy packages to make growth more inclusive. For example well-designed "springboard" packages should combine tax and transfer policies to make work pay and boost jobs with policies to improve employability, skill adaptability and wage prospects. In other words, to raise job quality for less-skilled and at-risk individuals such as disadvantaged youth and immigrants, but also for older workers facing displacement in declining sectors. To the extent that such packages have not been broadly deployed by OECD countries, potentially reflecting budgetary constraints, reforms to make work pay may have resulted in declining redistribution. The policy implication is that tax and transfer reforms should be designed within an array of complementary policy instruments to address equity and efficiency objectives, taking into account country-specific context, constraints and social preferences.[72]

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72. See OECD (2017a) for a general discussion.

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ANNEX 1

The annex 1 figures are available here:

Annex 1

ANNEX 2

The annex 2 figures are available here:

Annex 2